NEW MEXICO OIL CONSERVATION COMMISSION

COMMISSION HEARING

SANTA FE, NEW MEXICO

Hearing Date OCTOBER 25, 1990 Time: 9:00 A.M.

NAME	REPRESENTING	LOCATION
Craig Kent	Marathon Oil	Midland, TX
Eric D. Carlson	"	"
RW Tracy	Marathon Oil Co.	Midland TX
Maurice Trimmier	Byrom Co.	SF
David Rojas	ORYX Energy Co.	Midland Tx
Bonnie Wilson	ORYX Energy Co	Midland TX
[illegible]	[illegible]	[illegible]
Laurence R. Harris	Marathon Oil Co.	Houston
William F. Carr	Campbell and Black, P.A.	Santa Fe

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STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION COMMISSION

IN THE MATTER OF:

Application of Marathon Oil Company for an addendum to Division Order No. R-9050-A, to include provision for dual completion and an unorthodox gas well location, Eddy County, New Mexico. Case 9954

TRANSCRIPT OF PROCEEDINGS

BEFORE: CHAIRMAN BILL LEMAY
COMMISSIONER BILL HUMPHRIES
COMMISSIONER BILL WEISS

STATE LAND OFFICE BUILDING

SANTA FE, NEW MEXICO

October 25, 1990

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I N D E X

E X H I B I T S

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P R O C E E D I N G S

CHAIRMAN LEMAY: Good morning. This is the Oil Conservation Commission hearing, October 25, 1990. Commissioners Bill Weiss, Bill Humphries, and Bill Lemay presiding. We shall now call our first case, which is Case No. 9954.

MR. STOVALL: The application of Marathon Oil Company for an addendum to Division Order No. R-9050-A, to include provision for dual completion and an unorthodox gas well location, Eddy County, New Mexico.

CHAIRMAN LEMAY: Appearances in Case 9954.

MR. KELLAHIN: Mr. Chairman, I am Tom Kellahin of the Santa Fe law firm of Kellahin, Kellahin & Aubrey. Appear on behalf of Marathon Oil Company. Assisting me today is an attorney with Marathon, Mr. Larry D. Garcia. Mr. Garcia is standing to my left.

CHAIRMAN LEMAY: Glad to have you with us, Mr. Garcia.

MR. CARR: May it please the Commission, my name is William F. Carr with the law firm of Campbell & Black, P.A. of Santa Fe. We represent Oryx Energy Company in this matter.

CHAIRMAN LEMAY: Thank you, Mr. Carr. Any additional appearances in Case 9954? If not, will the witnesses please stand, raise your right hand and be sworn in.

(All witnesses sworn at this time)

CHAIRMAN LEMAY: Thank you. Would you care to make opening remarks, Mr. Kellahin and Mr. Carr? I understand we're going to be incorporating the record, the Examiner's record into this case; is that correct, or is there a motion to do such?

MR. KELLAHIN: I would like to address myself to that topic for a moment, Mr. Chairman, before we get into the actual discussion of the case. Let me visit the topic of how I want to suggest we present it to you today.

CHAIRMAN LEMAY: Fine. Please do.

MR. KELLAHIN: Take a moment and perhaps refresh your recollection. We are once again visiting the Indian Basin Pool. There is a copy of a display here that I might use for reference. The display is Marathon's Exhibit No. 3.

But to give you a visual reference, back in January of this year this Commission heard a very similar presentation made by Mr. Carr and I for our representative clients with regards to the question of whether or not a well should be penalized because it was at a particular location. And that if there was a penalty what that penalty ought to be.

In that presentation back in January Mr. Carr and I both presented reservoir engineers that had done reservoir modeling and some simulation in attempt to help quantify the recoverable gas reserves in the upper Pennsylvanian portion of the pool. And thereby form a basis to establish everyone's

correlative share of that productive gas.

The Commission in its decision determined that the evidence was not sufficient to give you a comfortable basis for the allocation of production among the properties in order to address the unorthodox location of the well. And therefore you substituted in a geometric -- or a penalty based upon location.

What was unusual about that case is that it's the first instance that I can recall perhaps in the last decade where the objecting party, Oryx, was in the position of being the diagonally offsetting operator for whom that was the only objection.

The presentation then and the presentation now is that Marathon operates on a unit basis. A number of sections that for purposes of discussion today include both Sections 9 and 16, and that the Oryx-operated section is 17. The pool involved in the upper Penn is spaced on 640 gas spacing. Standard setbacks for a well location are 1,650 from the side boundaries. And the discussion then in terms of the Commission order was to give Marathon and its other interest owners credit for developing the gas reserves in the adjoining Section 16 on a unit basis and not to penalize it for that.

This display shows the closest standard location which would be 1,650 from the west and 1,650 from the side boundary. The dimension shown on the display is out of the corner was 17, and it's 2,333 feet. I'll refresh your memory

as to why that was meaningful in just a moment. The unorthodox location is 1,650 standard from the west dimension, but is 330 from the south boundary.

The majority of the Commission then in the order with regards to the upper Penn took the ratio between 1,683 and 2,333 and came up to about 28 percent. Then there was the finding in the order that says that mathematically as a well moves towards this corner there will always be a mathematical relationship where the effect on Section 16 is always twice or more than the effect on 17. And so the order has a provision where the 28 percent was divided in half. So we have 14 percent penalty on the upper Penn.

Thereafter, Marathon drilled the well and during the course of drilling management made the decision to go ahead and deepen the well and penetrate into the Morrow. Marathon, as operator, came back to the Oil Conservation Commission -- I am sorry, the Division, in May of this year. The Commission order was entered in January 18 of '90. We come back to the Examiner May 30 of '90 to address then whether or not there should be a production penalty for the Morrow and to get approval to dual complete the well and produce out of the upper Penn which the Commission has already acted on, and to get authority to produce out of the Morrow.

The discussion before Examiner Catanach was confined to a discussion of the Morrow. It is not my purpose to reopen,

revisit or ask you to redecide your deliberations on the upper Penn. But to use that as a point of reference. And to determine for us today what is to be the policy of the Division and the Commission with regards to the penalties to be imposed where the only party objecting is the diagonal offset because Mr. Catanach adopted a penalty for the lower Morrow that is different than what the Commission did in this very same fact situation in the upper Penn.

In order to focus your attention on that topic it is not my plan to present to you the entire case from start to finish. I would like to suggest as a procedural matter that we have the record of the Examiner's case, the transcript and the exhibits, both Mr. Carr and I have available copies of all the exhibits, we have brought both of the witnesses for each of the clients. Those witnesses testified before Examiner Catanach. They are the same witnesses that testified before you back in January. And they are here available to talk about any of the topics that you want to talk about.

My plan, though, is with your permission to introduce the transcripts, spend a few moments talking about what I as a layman consider to be some of the key exhibits to look at, and then to go into Mr. Craig Kent, the reservoir engineer of Marathon's, presentation with regards to the possible penalty calculations in order to give you a basis or a form for discussion of those penalties.

Let me say that at the Examiner Hearing as well as now it was Mr. Kent's professional opinion as an expert that there should be no penalty on the lower Morrow. And that is still his position.

I recognize, however, and I think you can see for yourselves the Examiner order. Mr. Catanach has carefully laid out the positions of both Oryx and Marathon. Both of them are predicated on a different geologic interpretation, and there is a substantial difference. It's my own personal opinion if you were not persuaded on the upper Morrow with the additional information developed from simulation of the reservoir, I am not sure I can persuade you today that there is a basis of geologic agreement by which you can apportion recoverable gas reserves among the tracts. If you want to hear that discussion I am fully prepared to present it to you.

I am also prepared to recognize that as with many Morrow reservoirs, it is not reasonably practicable to construct a penalty for an encroaching well based upon your confidence that the technical people can accurately determine for you the recoverable gas assigned to each proportionate tract. And rather than spend the next four or five hours talking about that I am prepared to go into the topic of the geometric concepts and the math involved in constructing appropriate penalty.

The whole point of my presentation is to ask this

Commission as a matter of policy to determine whether or not the Division examiner order can be explained as an exception from what you have established in this very case earlier this year, or whether or not you want to use the same penalty that you applied in the upper Penn in January to the lower Morrow that you have before you today. And so for my own comfort for other clients as well as the advice of these clients we need some consistency in understanding what the policy of this Commission will be with regards to this type of case.

MR. STOVALL: Mr. Chairman, might a play a little lawyer stuff here with Mr. Kellahin for a minute.

CHAIRMAN LEMAY: Sure.

MR. STOVALL: Mr. Kellahin, is it not correct that the Commission decision to which you referred, I think that's Order 9050-A, is that not?

MR. KELLAHIN: Yes, sir.

MR. STOVALL: Is on appeal in the district court in, what is it, in Carlsbad; is that correct?

MR. KELLAHIN: That's correct.

MR. STOVALL: So that order is currently on appeal before the district court.

MR. KELLAHIN: That's true.

MR. STOVALL: Are you proposing to offer the record from the upper Penn case -- I've forgotten the case number which resulted in 9050-A, are you proposing to offer that

record in this case?

MR. KELLAHIN: We could talk about that. I had not planned to do that.

MR. STOVALL: Okay. Well that's -- what I am trying to do here, my purpose in this discussion is to make sure we have procedurally cleared it. Obviously we recognize that this case can conceivably end up in district court as well.

MR. KELLAHIN: But let me explain myself. I think the Commission has the authority, and certainly the obligation, to remember what it's done in the past. And I don't think I have to build a record of all the things that you've done in similar cases and have you have them before you.

What I have proposed to do is show you the order that you've entered in this case. But I don't think it's necessary to go through all the details of the past technical presentation and to have that record incorporated. I think you are fully within the authority to rely upon your recollection of that case and to use as precedent for some guidance your past decision. And I intend to treat them as separate cases. But you need to recognize that at least my position is there should be some continuity by the Commission in how this type of case is decided.

MR. STOVALL: I understand. The thing I want, you made a point that you intend to treat them as separate cases. For all practical purposes the fact that they are in the same

wellbore really doesn't make a lot of difference, does it? They are dual completions, they are separate formations, they are separate wells for all purposes as far as production; is that correct?

MR. KELLAHIN: With the exception that the mechanics of the prior order have concluded that you can't rely on a technical engineering or geologic basis to construct the penalty. And therefore the Commission applied a generic geometric penalty. And that is the very case we have before you now in the Morrow portion of this wellbore. And it's that portion I think that you need to be sensitive about.

MR. STOVALL: You are saying evidentiary -- as far as the evidence is concerned, there is no substantial difference in the evidence that you can demonstrate here as opposed to say the upper Penn formation as far as for the Commission to make a determination with respect to penalty. And that's the comparison between the two; is that correct?

MR. KELLAHIN: No, sir, I think I've confused you.

CHAIRMAN LEMAY: Let me ask you a question at this point. Are you both willing to stipulate that the Morrow geology is not sufficient for the Commission to put a penalty in place based on agreement as to the geology in the Morrow?

MR. KELLAHIN: I am not going to presume to make that choice for you. I would like to make a quick demonstration and you can reach your own conclusion. But I am

not here to represent to you that you can't. I am here to tell you that Examiner Catanach looked at the entire case and he was unable to do it.

MR. CARR: And I can tell you that when we look at this case and you will have -- because we're going to stipulate that the record be incorporated, you will have before you two geologic interpretations. One was a map of net clean gamma ray, the other was mapping of porosity and gross sand. So you are going to some extent have apples and oranges before you and there is a difference in the geological presentations. That may answer your question.

What we're talking about here though is not, as I understand it, re-presenting to you all of the geological testimony. We think that that is in the record. If you want to hear it -- we're trying in fact to cooperate with what you understand your desire is and not to drag these hearings out forever. So what do lawyers do, talk for 15 minutes.

But it's our intention to have that incorporated and it's my understanding, certainly what we intend to do, is then focus on the penalty as it relates to the Morrow.

There is an upper Penn factor in this only because the same wellbore, same ownership, same locations, with all of those same factors this Commission has previously penalized the well. And it is precedent, and I think Tom and I agree, that we certainly find when we try to look for precedent we find it

difficult to advise our clients on what the Commission is likely to do. And in this case we're now with the same wellbore before you for the fourth time, and the penalties have ranged from 80 percent to 14 percent to 28 percent, and now we're asking for zero percent.

And so with that as a background it's our intention to focus on the penalty and present a case and then ask you to look at all these factors. And it would be helpful to us and we think appropriate to put all of this before you, perhaps determine what is an appropriate way to penalize a well in a case like this where there obviously is certain disagreement as to the technical aspects of the case.

COMMISSIONER HUMPHRIES: Can I ask a question?

CHAIRMAN LEYMAY: Sure.

COMMISSIONER HUMPHRIES: This is to both of you because I am not sure that I understand the distinction you are trying to draw. In my terms what I think you are asking us to do is look at production zone and production characteristics that only accidentally happen to be related to the same wellbore.

MR. CARR: I think what we're asking you to do is look at those things and impose or not impose a penalty. But do that with the background that you have before you from the previous decisions that have varied substantially.

COMMISSIONER HUMPHRIES: But won't the penalty be --

MR. CARR: Imposed on the Morrow alone, yes.

COMMISSIONER HUMPHRIES: And so it will be talking about the production characteristics of the Morrow --

MR. CARR: Yes.

COMMISSIONER HUMPHRIES: -- with no relationship to the production characteristics of the Penn.

MR. CARR: Again, if you can make the call on production characteristics without getting into a geometric approach to the penalty i.e., how close to the offsetting tract the well is actually located, yes.

COMMISSIONER HUMPHRIES: We are looking at two separate issues that happen to accidentally be associated with the same wellbore and the same lease.

MR. CARR: Yes.

MR. KELLAHIN: How we got to that point is the upper Penn discussion was a lengthy presentation where we talked about the geology. The material balance calculations performed on the subject well, and both parties in their own data base had substantial resources by which they had modeled the upper Penn, because that's the big deal in this area is the upper Penn. Both parties brought to you that kind of presentation. And it was the majority's conclusion that notwithstanding the level of sophistication you were still uncomfortable that you could accurately quantify recoverable gas per tract. And therefore went to the generic location penalty for the well.

What I am presenting to you today is the lower Morrow, which is obviously a separate and distinct reservoir on the same type of spacing. The presentation before Mr. Catanach on the lower Morrow was not as sophisticated as what you heard on the upper Penn. The Morrow penetration in this particular Basal A Morrow sand member is the is the only well, the subject well is the only well in the immediate area that produces from that sand. And so Examiner Catanach heard the position of both the geologist for each party and the engineers, and he concluded that he could not, with confidence, determine within the Morrow everyone's correlative share of actual gas recoveries. And so he, too, went to the generic solution for a penalty. And that's what's we're looking at.

CHAIRMAN LEMAY: Is that your understanding, too, Mr. Carr, of the way the Examiner came about his findings?

MR. CARR: Yes, it is.

CHAIRMAN LEMAY: Okay.

MR. KELLAHIN: So we're at the point now where we have had the Commission looking at another reservoir in the same wellbore saying I am not comfortable with the technical aspects and we'll apply the generic solution.

We're here to show you the Morrow, which is not as sophisticatedly developed from a technical concept, and asking you to say if you've reached the conclusion, as I suggest that you may, then we're back to a generic solution. And regardless

of whether you are in upper Penn or lower Morrow or wherever, the generic solution in my opinion ought to be consistent. And in this case they have not been.

CHAIRMAN LEMAY: Do you have anything to add, Mr. Carr?

MR. CARR: Well, I don't know if that's Mr. Kellahin's opening statement or summary of the evidence or what.

CHAIRMAN LEMAY: Well, I was in a little doubt there myself.

MR. CARR: I can, I guess, take a minute and tell you where we see the case is going and explain to you how we intend to proceed with the hearing this morning. Then Mr. Kellahin I understand wants to summarize the evidence. I would reserve the right to comment on that being that it's somewhat unusual. If he wants to go through that first I can comment afterwards.

Basically this is the fourth hearing that we've had before the Oil Conservation Division or Commission concerning this well and the offsetting Oryx property. Marathon drilled a replacement well, as the Commission is aware, and they have drilled it in a location which is unorthodox both in the upper Penn and the Morrow. And no matter whether it is part of a unit or not it is closer than it would be permitted to be to the offsetting Oryx tract. We submit to you because of the

unorthodox location they have gained an advantage on the Oryx property. They have moved toward us, they are closer than they are allowed to be.

Now, we are not going to, I guess, just talk about a generic mathematical way of imposing a penalty, because there is a factor in here concerning the quality of the Marathon well. And you are going to have people standing before you who disagree about the quality perhaps of that well because it's only produced for two and a half months. But we are going to state and show you how, even with the well early in its producing life like this well is, there is a way that this Division can impose a penalty that will be meaningful if it is a good well and drains a large area, and will not cause waste if in fact it is a poor well in a very small reservoir.

We're also going to show you, and we have to do this because the precedent we have is the upper Penn. We're going to show you that if you are imposing a penalty just on a mathematical calculation that you don't have to impose the penalty the same way you did in the upper Penn just because you did it there. Because we submit the way you impose the penalty on the upper Penn, i.e. reducing the penalty from 28 percent to 14 percent because we are a diagonal offset, we are going to show you that we believe that is wrong, that it is arbitrary, that it is inconsistent with your duty and other precedent in this area. And we are going to tell you if you have to go to a

mechanical approach to the imposition of a penalty there are ways to do it without arbitrary reduction.

We submit that a reduction of 50 percent because we are diagonal is just that, arbitrary. Because it makes one very fundamental -- there is one very fundamental slip in that. And that is that a penalty is imposed on advantage gained, i.e. can it drain more. It isn't a factor of how many acres we happen to own. It's a question of how much drainage there is from each of those acres. And just because we're diagonal and may have 50 percent as many acres as a direct offset, that is not the basis for a penalty reduction when that reduction permits the offset to drain more from each of the acres we actually own. We have exhibits that will show you why that was an error.

So at the end of the case we're going to show you how to impose a meaningful penalty regardless of the quality of the well. And we're also going to ask you when you consider how to impose a penalty not to make an arbitrary reduction in that just because we're a diagonal offset. We submit by doing that you are impairing our correlative rights. So that's how we intend to approach it.

And at this time I would move that we incorporate into the record of this case the record of the Examiner Hearing in Case 9954 and all exhibits offered at that time.

CHAIRMAN LEMAY: Without objection the exhibits and

the case will be entered into the record. At this point I would just like to take about one or two minutes to discuss with my fellow commissioners the approach that you have suggested to make sure that it's satisfactory.

(Off the record.)

CHAIRMAN LEMAY: Okay. We've agreed to certainly accept the procedures that you all -- both of you have recommended in this case. We have two questions, maybe you can answer very quickly. One is the Morrow unitized as the upper Penn was in the Indian Basin Unit?

MR. KELLAHIN: Yes, Mr. Chairman, it is.

CHAIRMAN LEMAY: And two, is it prorated?

MR. KELLAHIN: Yes, it is.

MR. CARR: Yes, it is.

CHAIRMAN LEMAY: Okay. So we will -- what we'd like to have is a five or ten minute summary of the geology possibly each of you -- not possible. We want to incorporate the record. We want to have a general drift of where you are coming from in the geology so we could go back in the record. But we don't want involved lengthy discussions as to a clean gamma ray versus maybe the cased hole neutron and how the maps were constructed. We just want a general overview. Is that possible without calling a witness?

MR. KELLAHIN: That was my plan is to share with you the displays and then afford you the opportunity at a time

convenient for you to call Mr. Rojas or Mr. Carlson and let them speak to their own conclusions and work and tell you as technical people what items they thought were important. But to engage the discussion by showing you the displays and then letting you call them when you feel it's appropriate.

CHAIRMAN LEMAY: This is really what we'd like is to have a general feel for it without going into the reasons. And then have those witnesses available for questions from the Commissioners.

MR. KELLAHIN: I don't presume to substitute for Mr. Carlson, and I certainly can't. All I want to do is show you some of the displays I thought were important, and then you can direct the inquiry to Mr. Carlson as you desire.

CHAIRMAN LEMAY: Is that agreeable, Mr. Carr?

MR. CARR: That's agreeable.

CHAIRMAN LEMAY: We shall proceed then under that format.

MR. KELLAHIN: To aid you I've made copies of the De Novo order that you entered for the upper Penn.

Mr. Carr, in his opening comments, was referring to page four, findings 19 and 20. These are copies of the Examiner transcript before Examiner Catanach when we did the lower Morrow presentation. This next package of displays is the complete Marathon exhibits that go with the transcript. The first displays on here are Mr. Carlson's geologic displays,

and they are followed by Mr. Kent's engineering displays. The next set of displays are Mr. Carr's client's exhibits, Oryx exhibits. They also are organized so that there are Mr. Rojas' geology first, and then Ms. Wilson's engineering work is followed by that. Mr. Carr has some colored copies of certain of the geologic displays which may be more helpful than the photocopies. And then finally I have copies for you of Examiner Catanach's order that dealt with the lower Morrow.

It might be helpful to give you a moment if you desire to at least scan through Examiner Catanach's order, because he outlines his analysis of the technical presentation.

CHAIRMAN LEMAY: Mr. Kellahin, I have a quick question for clarification.

MR. KELLAHIN: Yes, sir.

CHAIRMAN LEMAY: The dry hole that's located in the southeast/southeast of Section 8 I assume is dry in the Morrow as it was in the Pennsylvanian.

MR. KELLAHIN: That's the offsetting well in the west in Section 8, that's true, Mr. Chairman.

CHAIRMAN LEMAY: Thank you.

(Off the record.)

CHAIRMAN LEMAY: We're through, so you are welcome to continue, Mr. Kellahin.

MR. KELLAHIN: Thank you, Mr. Chairman.

To illustrate what Mr. Carlson did in analyzing the

Morrow reservoir I would like to turn to his Exhibit No. 5. It is a structural cross-section in which the center well in the display is the subject well.

In analyzing the Indian Basin No. 8 well, which is the subject well, Mr. Carlson confined his geologic examination specifically focusing on the Morrow Basal A sand because that was the productive sand in the wellbore. And if there is a concern about the extent or potential impact on correlative rights that is the producing sand for which there is any concern. He's identified it here and showed on the log a little red notation, and then he's hashered in on the structural cross-section that particular zone. And so that you might see it from where you sit I am going to shade it in yellow.

Having targeted that particular sand Mr. Carlson then begins to deal with all the various components of his geologic analysis. He examines the structure, you have the structure map before you. He is concerned about the extent of the porosity in the reservoir and he maps what he believes to be the limits of that porosity. There is a water concern in the reservoir and he's integrated that into his displays. And what he then does is he reduces to a net pay isopach, if you will, using what he is satisfied is an appropriate porosity cutoff. That's single sand. It is his judgment and conclusion that he is dealing with a beach-type deposit, and that this

particular sand is rather unique and unusual in this area, and that's what he focuses on. So when he gets down through his various analysis he goes then to Exhibit No. 2 and he develops his gross sand map and begins to give you a feel of the size and shape of the reservoir when you look at that Basal A sand.

In Exhibit No. 4 he's reduced this to an effective porosity map showing a six percent cutoff. And you can see how he has interpreted then the size and the shape of the reservoir. When you look at the Exhibit No. 4 then you see certain things, one of which is in Section 9. Mr. Carlson has placed a small green dot, and that's the closest standard location within Section 9. In 17 there should be another green dot. And that is the closest standard location should Oryx decide to drill a well in their section for a Morrow test.

There is a water component in the reservoir. You can see by some of the data he demonstrated that there is evidence of a portion of the zone being wet. And what he develops then is Exhibit No. 6, and he's got a map here. It further refines and defines the effective porosity, what he calls the proven and probable gas in the zone.

He has demonstrated this finally in another way by taking a composite of these various components and he presents that in a colored display which is labeled structure map and it's Exhibit No. 7. Again trying to give you a picture, if you will, of his analysis of the sand.

The well in 8 which Chairman Lemay referred to earlier is a critical control point for all the displays, you can see it, there is a significant absence of reservoir in Section 8.

There is also an important control point in Section 14. When you look at Section 14 for this sand Mr. Carlson, in mapping the sand, attributes zero thickness to this sand in that wellbore.

Mr. Carlson's geology then has been integrated into Mr. Craig Kent's engineering analysis on the well. Using Mr. Kent's expertise then in relying upon Mr. Carlson's proven and probable gas map, Mr. Kent then reaches the conclusion before the Examiner that some 85 percent of the recoverable gas is located within the unit area in Sections 9 and 16, and that perhaps something less than 15 percent will be included in that area of the reservoir in Section 17 and Section 8.

It is Mr. Kent's conclusion that based upon early information his material balance gives him a volume of recoverable gas slightly in excess of one BCF of which 85 percent belongs to the unit. He then concludes that there are probably only 200 million cubic feet of gas available for a well should Oryx elect to drill that well. And that it's simply not economic when you apply a minimum well cost of 400,000 to drill for 200 million cubic feet of gas. And therefore if there are any reserves to be drained from Section

17 they can't be economically recovered by Oryx and therefore there should be no penalty, and that was his conclusion.

Mr. Rojas for Oryx went about the analysis entirely in a different manner. He identified perhaps at least five different discrete sands in the Morrow, and his isopachs, his isopachs are sum maps. So you may very well want the geologist to explain why there is a fundamental difference in the sands they mapped. Because Mr. Rojas' map is based upon several significant differences. One of which is he's mapped in a composite way or summed multiple sands. You can see that in one of his displays because on his gross isopach, his Exhibit No. 2, when you look in Section 14 where Mr. Carlson has zero feet of sand attributed to that wellbore, Mr. Rojas has added up some 64 feet of gross sand. So you see how he's mapped it.

It was his conclusion that he was dealing with a channel environment in the Morrow. And yet you are looking at the map, and I'll leave it to you as to whether that in your opinion represents channel deposition, but there was a difference. He approached it differently. And so that's why the maps are in fact different. They were working with the different means of analyzing the reservoir. The cross-section that Mr. Rojas has different, it's a stratigraphic cross-section as well so there is a structural component to Mr. Carlson's display that you don't have before you.

The conclusion then that the Oryx engineer derives

from Mr. Rojas' map in which he maps significantly more Morrow sands in Section 17 is that she concludes that there is some three BCF of gas in Section 17. And therefore she wants a penalty. So there is a substantial difference between the two parties as to the technical case. And Mr. Catanach, as you can read in his order, says I can't figure this one out. I am not persuaded one way or another. And so he applies the generic penalty. That's how we got to be in here today.

CHAIRMAN LEMAY: Mr. Carr.

MR. CARR: May it please the Commission, I concur with Mr. Kellahin that the geologist employed different means of analyzing the reservoir. But we would suggest that our geological presentation is sound. If you have questions about it Mr. Rojas is here and can answer your questions. We believe he made proper correlations that he correctly mapped what is basically a channel sand deposit. We did, however, map net clean gamma ray, and to convert that into what could be produced you do have to multiply it by a porosity factor, and that's what we did. Mr. Carlson, on the other hand, was mapping porosity and gross sand. They are apples and oranges. If you want to spend time both witnesses are here and we can pursue that.

But I would submit to you that what is significant here is that there was substantial agreement on certain key points. Both parties agreed that there were reserves on

Section 17 and it's operated by Oryx. Both parties are in agreement that there is not a 640-acre tract that is going to be completely productive. You can look at Mr. Carlson's Exhibit No. 6. And when you see where he placed the gas water contact you see that there is just a small section in the southwest corner of Section 9 that is going to contribute reserves in the Morrow. And you can look at that exhibit which shows zero effective porosity. That is ten feet or more, according to his testimony, of porosity. That that line extends substantially into Section 17.

So we have basically those elements of agreement, i.e. one, that there is not a 640, that it's substantially underlaying with sands that can produce in the Morrow. And two, that there are reserves both in Section 9 and Section 17. Beyond that we will rely on certain geologic interpretations as we make our engineering presentation to you. And I would prefer to move on to that and review the geology in that context as to try and give you a secondhand rendition of what the testimony was at this time.

CHAIRMAN LEMAY: Thank you, Mr. Carr.

Let's continue, since those are summaries that are not subject to --

MR. KELLAHIN: I would like to call Mr. Kent Craig -- I am sorry, Craig Kent. There is a Kent Craig in my life. He works for McHugh. And I invariably get the two

gentlemen's names backwards. This is Craig Kent today.

CHAIRMAN LEMAY: It's Clark Kent that changes clothes in phonebooths, too.

MR. KELLAHIN: This one does, too.

CRAIG T. KENT,

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

EXAMINATION

BY MR. KELLAHIN:

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

A. My name is Craig Kent and I am a reservoir engineer for Marathon Oil Company.

Q. Mr. Kent, have you testified before the Commission and the various examiners not only in the cases heard with regards to the lower Morrow in the subject well but in addition the upper Pennsylvanian production?

A. Yes, I have.

MR. KELLAHIN: Without further ado, Mr. Chairman, we would tender Mr. Kent as an expert petroleum engineer.

CHAIRMAN LEMAY: His qualifications are acceptable.

Q. (BY MR. KELLAHIN) Let me have you take a moment in your own words, Mr. Kent, and describe for us the basic components with regards to the lower Morrow in the subject well and give us a few minutes first of all on the drilling of the

lower Morrow, what the initial information was, and what have been your conclusions with regards to the Morrow production.

A. Basically at first we decide to drill a replacement well into the upper Penn at this location. During part of the discussions of what our plans should be with this well there were various hearings held before this Commission. And subsequent to that our management had a little change of heart in their philosophy and decided that they were going to try to take some risks. And one of those risks was let's deepen this well to the Morrow to see what we can find. Basically we've done a statistical analysis of the Morrow in this area. We find you've got about a one in five chance of hitting a productive well.

Q. When you deepened this to the Morrow what results did you obtain?

A. We found about 18 feet of Morrow sand in what we've termed the Basal Morrow A. We've performed a drillstem test on that zone, and we recovered about at a rate of 4.2 million cubic feet a day. That was significant to us and made us comfortable enough to run pipe and decide to complete this formation.

Q. Upon completion what results did you achieve?

A. Basically we found that we had a very good well that was capable of producing significant quantities of gas for sales.

Q. Based upon that information what was your analysis at the time of the Examiner Hearing in May of 1990 in terms of the size of the reservoir from which this well produced?

A. Based on our geologic interpretation of the reservoir we determined there was about 1.3 BCF gas that could be recovered from this well.

Q. Based upon your analysis did you have a conclusion for the Examiner as to what your relative share of that gas was within the unit area?

A. Yes, I did. I concluded that there was approximately 85 percent of the reservoir that was included within what is the North Indian Basin Unit.

Q. Did you reach any conclusion with regards to the volume of gas available in Section 17 to be produced by the owners in Section 17?

A. Yes, I did. And based on the acre feet available there was about 200,000 -- or 200,000 cubic -- 200 million cubic feet, get that correct, of gas.

Q. And in your judgment as an engineer was that a sufficient amount of recoverable gas by which to drill a well in Section 17?

A. No, it was not.

Q. What was your ultimate recommendation with regards to whether or not this subject well in the Morrow should receive a penalty?

A. At that time I recommended that the well receive zero penalty.

Q. Subsequent to the May hearing is there any further available engineering information that you have utilized for this well?

A. Yes, there is. We have performed a couple of -- we've performed one build-up and one static bottomhole pressure survey on the well to determine what the size of the reservoir was.

Q. What have you now determined?

A. We determined that by creating a P over Z plot by plotting pressure divided by Z factor versus cumulative gas production that there is slightly less than one BCF in place and slightly more than 800 million cubic feet recoverable.

Q. Your earlier conclusions then about the relative share of gas available to Oryx, has that been increased or decreased with regards to the new information available?

A. The relative share is hard to predict. But I would say it's probably pretty close to the same. However, with the smaller reservoir volume their actual volume share is quite a bit less.

Q. You are producing out of what particular portion of the Morrow pool?

A. Producing out of what we have termed the Basal Morrow A, which is a sand member which is located in the Morrow

A or the bottom Morrow section which lies right above the Barnett shale.

Q. Are there any other currently producing Morrow wells in this immediate vicinity that produce from that lower Morrow Basal A sand?

A. No, there are not.

Q. Recognizing that it has consistently been your conclusion that there should be no penalty --

A. Yes.

Q. -- let's talk about penalty.

A. Okay.

Q. Let me go to some of the displays we presented and talk about the different types of geometric penalties that have been suggested and discussed and let me have you comment on those.

To aid the Commission we have reduced those displays to handouts and have larger copies for use by Mr. Kent, and I'll pass those out at this time.

(Thereupon, Exhibit No. 1 was marked for identification.)

Q. As a point of reference, Mr. Kent, let's simply go back to the beginning. Let me show you what is marked as Marathon Exhibit No. 1 and would you identify that for us.

A. Basically what you are looking at is a four-section area located in the North Indian Basin Field. You are seeing

Sections 9, 8, 16 and 17 on the map is indicated a gas well symbol notated by NIBU-8, which indicates the North Indian Basin Unit 8 well. There is a circle that is notated with nearest legal location, which would be the location 1,650 from the south line, 1,650 from the west line of Section 9, which would have been a legal location. There is a boundary line showed by a long dash and a dot which runs along the Section 9 and 8, and 16 and 17 and along the base of Section 16. This indicates the boundary of the North Indian Basin Unit which includes the Morrow formation. There are also some dimensions shown on the map which indicate the relative position of both the North Indian Basin Unit 8 well and the location.

Q. What is the identification for ratio of distance method, what does that mean?

A. Basically what this is, it's a standard penalty method that the Commission has used where you take the ratio of the distances between the actual well location and that of the legal location to determine a penalty.

Q. To your knowledge that has been applied in those instances where you would have the opposing operator in 16 objecting to the encroachment of the well?

A. That's correct.

Q. Was this the method used by Examiner Lyon in the upper Penn when he was the examiner in the earlier case?

A. Yes, it was.

Q. Do you accept this as a fair and reasonable penalty to apply in the lower Morrow for the diagonal situation we have today?

A. No. It's not a reasonable penalty, because it penalizes us for encroachment on to Section 16, which is within the North Indian Basin Unit. So there is no correlative rights that are being violated by encroaching on Section 16.

Q. All right. Let's turn to another analysis of a potential penalty formula, Mr. Kent, and have you identify and describe for me what is shown on Exhibit No. 2.

(Thereupon, Exhibit No. 2
was marked for identification.)

A. Again you have the same four-section area with the North Indian Basin Unit No. 8 location shown, as well as the standard legal location.

Q. You've identified this as the double variance method?

A. Yes, I have.

Q. Describe for us briefly how you calculate that method.

A. Basically what is done is you take the variance from the standard location in both the east/west direction and the north/south direction, add the two together, and divide by the two standard distances.

Q. In your opinion is this an appropriate penalty to

apply in the facts before the Commission today?

A. No. Because it really has no geometric significance to the diagonal offset. It's an arithmetic average of two possible penalties. It really has no bearing on the relationship between the well in Section 9 and Section 17.

(Thereupon, Exhibit No. 3 was marked for identification.)

Q. Let me have you turn your attention now, Mr. Kent, to Exhibit No. 3. This is identified as ratio of distance method.

A. Yes, sir.

Q. Identify and describe that for us.

A. Basically what this is is it's similar to the first exhibit you saw, except instead of taking the distance to the direct offset line you take the distance to the nearest point of ownership, which would be the northwest -- or northeast corner of Section 17. You have the distance from the standard location to the corner would be 2,333 feet. The distance from the present well location to the corner is 1,683 feet. You take again the difference between the 2,333 and the 1,683, divide that by the standard dimension, and arrive at a penalty.

Q. You are familiar with the Commission De Novo order for the application of a penalty in the upper Penn for the subject well?

A. Yes, I am.

Q. Let me show you findings 19 and 20 in that order, Mr. Kent. The basis for that penalty then as a beginning point is this ratio of distance method, is it not?

A. That's correct.

Q. Okay. The Commission in applying its penalty to the upper Penn then took this basic penalty and divided it by half.

A. That's correct.

Q. Have you as an engineer any comments, observations about doing that type of mathematical computation for arriving at a penalty?

A. It's one possible way to arrive at the penalty. I believe what the Commission was driving at was the direct offset suffers at the very least twice as much direct acreage being drained as a diagonal offset. So that would be one way of approaching this penalty.

Q. Mr. Carr, in his opening comments, found that dividing this penalty by 50 percent in his estimate was an arbitrary action by the Commission and should not be repeated for assessing a penalty if anyone is assessed against the lower Morrow. Do you agree with that?

A. No, I don't. I believe that the reduction of that penalty by 50 percent is appropriate, or could be an appropriate penalty method.

Q. To you as an engineer with mathematic expertise, does it offend you mathematically to divide the penalty by half

when we're dealing with the diagonal offsetting property owners?

A. Not really.

Q. If you were to construct a line then between the nearest standard location and the intersection of the sections this corner, am I correct in understanding that mathematically the arc of that circle as the distance comes closer continues to have Section 16 impacted at least 50 percent greater?

A. That's correct.

Q. Let's turn to another possible penalty construction. Let's find Exhibit No. 4.

(Thereupon, Exhibit No.4 was marked for identification.)

Q. Would you identify and describe that one for us.

A. Again what you are looking at is the same four-section area of the Indian Basin Field, with the North Indian Basin Unit No. 8 well location shown, the standard location of Section 9 shown, as well as the standard location in the northeast corner of Section 17 shown. On that are notated some distances which are the distance between the standard location in the southwest of Section 9, and to the standard location in 17, as well as the distance from the well location in the North Indian Basin 8. To that same well location, possible well location in Section 17.

Q. What's the basis for the penalty analysis of this

type of solution?

A. Again, we're looking at taking a ratio of the distances similar to what we've talked about in the previcus exhibits. Except this time we're talking about distances from the standard well location to the standard well location in the diagonal, and the distance from our well location to the same standard well location in 17. What you do, you find that there is a distance of 4,667 feet between the two standard locations, a distance of 3,848 feet between our well in Section 9, and standard location in the northeast of 17. You take the difference of those two distances, divide by the standard dimension, and arrive at your penalty of 17 and a half percent.

Q. This then is a method that uses a ratio of well distance?

A. That's correct.

Q. Have you also analyzed the potential penalty solutions in terms of applying the double circle method?

A. Yes, I have.

(Thereupon, Exhibit No. 5 was marked for identification.)

Q. Let's turn to Exhibit No. 5 and have you describe that for us.

A. Again, we're looking at a four-section area of the Indian Basin Field. The North Indian Basin 8 well location is shown. Standard location in Section 9 is shown. You also have

two circles shown on the figure. One has -- or they both have a radius of slightly less than 3,000 feet giving them an area of 640 acres. One circle has a center which is located at the standard location. The other circle has a center which is located at the North Indian Basin Unit 8 location.

Q. This method then constructs a penalty based upon the area in which the second circle exceeds the first circle regardless of where the objecting parties are in relation to their interest in the circle?

A. That's correct.

Q. Have you also analyzed this in terms of what the percentage is when we confine the double circle method to just the Oryx-operated interest in Section 17?

A. Yes, I have

(Thereupon, Exhibit No. 6 was marked for identification.)

Q. Is that shown on Exhibit No. 6?

A. Yes, it is.

Q. Describe that for us.

A. Again you see the four-section area of the Indian Basin Field with the North Indian Basin 8 well location, the standard well location, with the 640-acre circles centered about the standard location and the North Indian Basin 8 location.

Q. Why have you used 640 acres as the basis for the

size of the circles?

A. The Morrow in the Indian Basin Field is spaced on 640 acres. Therefore it's assumed that a well should have a drainage area of 640 acres.

Q. When we look at that presumed drainage radius for the unorthodox location, substantially most of the second circle is involved in unit acreage in Section 16.

A. That's correct.

Q. At the Examiner Hearing Ms. Wilson, on behalf of her company, proposed a penalty formula to the Examiner, did she not?

A. Yes, she did.

Q. Have you had a chance to review what Oryx proposed as a penalty for the Morrow portion of this well before Examiner Catanach?

A. Yes, I have.

(Thereupon, Exhibit No. 7 was marked for identification.)

Q. And is that shown on Exhibit No. 7?

A. Yes.

Q. Identify and describe for us the method Ms. Wilson used to construct the penalty that she had recommended.

A. What she did was start out with the basic double circle method that we previously discussed, and then tried to reduce the area, the drainage area of the circle centered about

our well in Section 9, so that the area drained in Section 17 would be equal with either the 640-acre circle located at the standard location, or some reduced area circle located at the location of our North Indian Basin 8.

Q. Let me shade in the three different areas of those portions of the circle that overlie Section 17 so that we can have a reference point. That checkered area where in 17 both circles overlap, I am going to shade in red, Mr. Kent. The northern portion then of the circle that -- the original circle that exceeds the red area I am going to put in green, and then the third area I am going to shade in pink. Okay.

When Ms. Wilson is adjusting the radius of the second circle in which she ultimately chose to be 2,200 feet.

A. Yes.

Q. What is she attempting to do with regards to the green-shaded area versus the pink-shaded area?

A. What she's trying to do is make those two areas equal. So by trial and error she reduced the radius, reduced the area of the circle, until the green area and the pink area were equal.

Q. In your opinion is that an appropriate method by which to construct a penalty for the Morrow production in the subject well?

A. No, it's not.

Q. Describe for us why not.

A. What it basically does is severely penalize Marathon by not allowing us to drain reserves potentially in Section 9 while protecting a very small amount of reserves in Section 17.

Q. Does it also impede your ability to produce the gas reserves in Section 16?

A. Yes, it does.

Q. In support of this analysis Ms. Wilson also presented a volumetric calculation to show the volumetric relationship of this circle. Are you familiar with that discussion?

A. Yes, I am.

Q. Do you have any comments about her use of the volumetric calculation to support her penalty formula?

A. It is one method of choosing to determine a penalty by using the volumetric calculation.

Q. That volumetric calculation, though, is predicated on a parameter that continually is adjusted when you apply the assumed area of drainage for the calculation?

A. That's correct.

Q. So in each volumetric analysis this radius is going to be adjusted.

A. That's correct.

Q. And if you presume 640-acre drainage for a well at this location you will have a different volumetric number than Ms. Wilson used?

A. Yes.

(Thereupon, Exhibit No. 8 was marked for identification.)

Q. I believe the last display you had was simply a format by which to allow you to draw any other possible, for purposes of discussion further penalties Exhibit 8 is simply the base map by which all the others were prepared if anyone wants to utilize it.

Mr. Kent, you have dealt with this as an engineer as much as anyone. What are your recommendations to the Commission? What should we do?

A. Basically my recommendation is that no penalty be assessed on this well. Part of that is predicated on the evidence of our geology, that there is reserves under 17 which cannot be economically recovered. And the second is that until Oryx drills a well in Section 17, we'll recover all the gas and the penalty is meaningless.

MR. KELLAHIN: That concludes my examination of Mr. Kent. We move the introduction of his Exhibits 1 through 8, I believe it is.

CHAIRMAN LEMAY: Without objection Exhibits 1 through 8 will be admitted into the record.

Mr. Carr.

CROSS-EXAMINATION

BY MR. CARR:

Q. Mr. Craig, I understand that your recommendation is that no penalty should be imposed on the well. And then you've testified about a penalty. So I am going to pursue some of that with you if I could for a minute.

Would you agree with me that the only reason for imposing a penalty is to offset an advantage that would be gained on the offsetting tract?

A. I would agree to that.

Q. Now, when we talk about an advantage being gained on an offsetting tract, what are we talking about, the ability to drain reserves from the offsetting tract?

A. That would be true.

Q. So if we move the well from a standard location and we move it closer to the offsetting property, in this case in Section 17, the advantage would be an ability to drain additional reserves from 17 by virtue of being closer to Section 17; isn't that right?

A. You are talking strictly on 17?

Q. Yes, sir.

A. That would be true.

Q. Wouldn't that also apply to Section 8 if we had concern about Section 8. The reason for a penalty is just that you could get additional drainage from an offsetting property; isn't that right?

A. It would be to protect that offsetting property.

Q. Let's just say there is a 14 percent penalty imposed on your well, let's say a 28 percent penalty imposed on the well as was done at the examiner level, because of additional drainage that could be obtained from Section 17. Am I right?

A. That's what the Examiner chose to do, yes, sir.

Q. Now, if the interest owners in Section 16 had objected would there be less drainage from Section 17?

A. No. But what would have happened, we would have had the 80 percent penalty that Mr. Lyon had proposed, and the owners in 17 would be protected.

Q. And are they protected with the 28 percent penalty?

A. Yes, they are protected with the 28 percent penalty.

Q. Now let's ask, if there had been owners in Section 18 who had objected to the well location, would that in any way affect the drainage that would have occurred on Section 17?

A. You are talking Section 8?

Q. I am talking about the fact that nobody objected from Section 8. Does that have any impact on drainage in Section 17?

A. No, it doesn't.

Q. When we take and reduce the penalty that was imposed on the well by 50 percent, does that have any relationship to the actual drainage? Does the reduction of the penalty have any impact on the reserves that will be drained from 17?

A. No, it doesn't.

Q. So if you cut the penalty in half, and that means you let the well produce more at a higher rate; is that right?

A. Correct.

Q. It's your testimony that by producing the well at the higher rate that has no impact on what will be drained from Section 17?

A. That's correct. Because until Oryx drills a well in Section 17 our well will recover all the reserves anyway.

Q. All right. Let's just assume that there is a well going to be drilled in there, just for the purposes of this question. Does the rate at which this well produces have any impact on what will be drained from the offsetting tract?

A. When you include the time parameter, yes.

Q. When we talk about penalty, aren't we really talking about drainage from the offsetting property, not just who happens to be the party that is objecting?

A. That is generally the basis, yes.

Q. Isn't it fair to say that a well producing at a higher rate in Section 9 has the ability to more quickly produce and drain reserves from Section 17 than a well that produces at a lower rate?

A. That's correct.

Q. All right. Now, if we go back to your testimony at the Examiner level you indicated that there was about 1.3 BCF to be recovered. Was that your estimate based on the P over Z?

A. At that time, yes.

Q. That has been reduced to what number now?

A. Recoverable, slightly over 800 million.

Q. 800 million. Have you computed -- did you compute at the Examiner level how much of the 1.3 million could be recovered from Section 17? Not how much was there, but how much you would be able to recover.

A. Based on assuming you have a volumetric reservoir, there would be about 200 million cubic feet of the 1.3 recovered.

Q. That would be recovered in your well, is that what you were saying?

A. Assuming that Oryx does not drill a well.

Q. So you are talking about what would be recovered. Does the number that you say would be recovered, does that equate one-on-one to the number that you would find under Section 17?

A. Yes.

Q. Now, the well that you have drilled and completed in the Morrow has been producing for about how long?

A. We put it on production as I remember just around the first of August.

Q. What producing rates were you able to obtain early in August?

A. We've produced it anywhere from three and a half

million up to six to seven million a day.

Q. Is that because of something you have done to the well, or is that just reflective of the well's ability to produce?

A. That's surely on the well's ability to produce.

Q. Are you experiencing some kind of a decline at this time?

A. No, we're not. We've choked the well back to try to stay within the proration guidelines.

Q. What is your current producing rate?

A. Last I saw it was roughly around three and a half million a day.

Q. That's because you've choked it back?

A. That's correct.

Q. Do you have an estimate what that well would do if you opened it up?

A. At the current time our best estimate, we know it will do at least six to seven million a day. I haven't done analysis. There is other restrictions with the surface equipment. But I know it will do at least six to seven million a day.

Q. How much of a decline are you seeing actually?

A. I haven't seen any decline yet.

Q. This is actually one of the best wells, Morrow wells in the area, is it not?

A. It is the best Morrow well in the Indian Basin Pool.

Q. And what kind of initial pressure did you encounter in this well?

A. We saw initial pressure of around 3,650 pounds on our DST. And that has since dropped to somewhere around 3,150 pounds.

Q. Have you compared the initial pressures in this well to other Morrow wells in the area?

A. It's fairly comparable, yes.

Q. When you compared it to other Morrow wells in the area, the pressure is fairly comparable. The producing rate is the highest in the area; is it not?

A. That's correct.

Q. Have you looked at the cumulative production for other Morrow wells in the area?

A. Yes, I have.

Q. They are substantially in excess of the 800 million that you are projecting for this well; isn't that right?

A. There are -- the average, if you include all wells that have penetrated the Morrow in this area, about a four township area, the average is somewhere around 900 million cubic feet. That range goes from zero for dry holes up to somewhere over eight BCF for one of the Martha Creek wells, which is located to the east.

Q. Now, you took the average to get this 900 million

figure, correct?

A. That's correct.

Q. You included in that average even the dry holes; isn't that right?

A. That's right.

Q. If you look at wells that just had an initial pressure of something in the neighborhood of 3,500 pounds and wells that had the best producing rates in the area, did any of them come in anywhere near 900 million?

A. I am not sure I understand. Are you talking about coming in at 6,000,000 a day rate?

Q. Are there other wells that came in at say something in the neighborhood of 3,500 pounds as initial pressure?

A. Yes, there are.

Q. Are there wells that came in at that pressure that had high producing rates?

A. I am not aware of any particulars.

Q. And have you looked at any well that had high initial pressure and high producing rates to see what it in fact has cum'd to date?

A. No, I haven't. But what we're dealing with here is a very small reservoir with very high permeability, which means that although the reservoir is small and may not cum much, it will recover that gas very fast due to the rock quality.

Q. To follow upon that, are you anticipating a fairly

abrupt decline in the well? Is that what you are telling me?

A. Yes, I am.

Q. It is nonmarginal right now.

A. Correct.

Q. It's in a prorated pool. Do you know what the allowable rate is authorized for the pool?

A. The allowable right now is set on one of the Martha Creek wells. There is only one -- or up until August there had only been one nonmarginal well in the pool. So the pool allowable is based on that well's production, which is arcund 1.5 million cubic feet a day.

As the proration rules work, as our well accumulates some production history, that allowable will increase until there is such a time when our well becomes the only nonmarginal well in the pool.

Q. But you are anticipating that in a relatively short period of time you are going to have a marginal well here?

A. I don't know that you can say that. I would say that the well will decline. But I don't know to what point and at what time.

Q. At it's current producing rate, what you can project for a producing rate, how long do you think it would take to produce 800 million?

A. With current rates, probably somewhere four months to a year, depending on how hard we pool.

Q. To produce what you believe is available to you?
A. That's correct.
Q. And then as it produces that it's going to progressively decline in its producing rate?
A. Correct.
Q. And at some point you are going to have a marginal well?
A. Depending on what other wells in the pool do.
Q. Now, the projected 800 million is based on your P over Z curve; is that correct?
A. That's correct.
Q. You have two pressure points that you are using to construct this curve.
A. Three.
Q. Three. What are they?
A. We have the initial pressure of 3,650 from the DST. We have the --
Q. Wait a minute. Go ahead.
A. We have a pressure of 3,578 which was recorded after 12 million cubic feet of production. And we have a pressure slightly over 3,100 pounds which was recorded after about 100 million cubic feet of production.
Q. Second pressure you gave me, 3,578, how much had been produced at that time?
A. 12 million cubic feet.

Q. When were they taken?

A. The pressure point of the 3,500 was taken in August, and the 3,100 pound point was taken in September.

Q. Do you have the initial gross run test, the August, was that a full build-up test?

A. Yes, it was.

Q. From that data were you able to determine whether or not there were any skim problems with the well?

A. The well showed by my calculations a skim of about 1.9.

Q. Tell me what does that mean, 1.9. Is that --

A. It's a term used in transient analysis to reflect the restrictions around the wellbore which cause additional pressure drop.

Q. Is that a percentage, is that --

A. It's not a percentage, but it's a factor that's used in the transient analysis.

Q. And when you have a drillstem test you don't have information available to you that would let you compute a skim factor, I gather.

A. No, that's not correct. You run a build-up during a drillstem test. At least most people do.

Q. Did you do that?

A. Yes, we did.

Q. Did you get skim factor at that time?

A. We had a skim factor of minus two.

Q. How does a minus two compared to 1.9? I guess we've got a zero in the middle and we're moving one direction, or am I wrong?

A. What you are looking at, zero would be optimal, no damage. Negative numbers show some improvement, some stimulation. A positive number shows some damage. What we've done by setting casings, cementing, perforating, we've done some damage to that reservoir.

Q. Does that occur when you shut the well in?

A. It could. The Morrow tends to be fairly fluid sensitive.

Q. When you did your build-up test in August you shut the well in for a period of time in August?

A. Yes, we did.

Q. How long was it shut in?

A. It was shut in for three days.

Q. And you had a bomb in the whole continuously during that three-day period?

A. Yes, we did. However, the quartz gauge that we were using stopped 24 hours into the test.

Q. So that means that 24 hours into the test that was the last data that you could have gotten to compute the skim factor; is that right?

A. That's correct.

Q. So it was shut in two days after that. When you did the test in September how long was the well shut in?

A. I believe the well had been shut in three to four days, give or take.

Q. Now, was that -- I think you said that was just a static pressure test.

A. That's correct. We'd produced about 100 million cubic feet in September, decided we needed to shut the well in to not get too far over on our proration. And at that time we chose to run a bomb to measure the static bottomhole pressure.

Q. From the information you got from that static bottomhole pressure were you able to compute a skim factor at that time?

A. No. All that was was one single pressure point.

Q. So at this point in time all we know is that we had a minus two skim factor when we did the DST?

A. Correct.

Q. Then we shut the well in, and after 24 hours of shut-in we had a plus .19?

A. 1.9.

Q. 1.9. Then the well was shut in two additional days because the equipment wasn't working.

A. Right.

Q. Then we have the well shut in for an additional three to four days with a static pressure test being taken in

September?

A. Right.

Q. While it was shut in there was a potential that the skim factor could develop; is that right?

A. I would really doubt it. What we've got in there is we've got produced fluids. Generally produced fluids from your formation are not going to damage your well that significantly. If we had pumped water from some other source into the well, yes, we have significant chance of increasing it.

Q. If in fact having the well shut in for four or five additional days had caused the skim factor to increase, that could in fact effect the ultimate recovery you are projecting for the well, could it not?

A. Probably not ultimate recovery, but the rate at which you can recover.

Q. When we talk about ultimate recovery from the well I think you told me a few minutes ago at current rates you had a chance of producing the production that you foresee in the reservoir through this well within a year?

A. That's correct.

Q. Have you computed what -- how long it would take you if you say had a 28 percent penalty on the well?

A. No, I haven't.

Q. With a 28 percent penalty on the well you still would be able to produce all those reserves unless there was

another well drilled in the pool; isn't that right?

A. That's correct.

Q. Now the information, the pressure information that we have and the data we have to construct the P over Z test is all very early in the life of the well; isn't that correct?

A. That's correct.

Q. The longer the well produced you would be able to further refine the numbers and get a much better estimate on actually what is in this reservoir?

A. That's correct.

Q. You've reviewed the order that resulted from the Examiner hearing, haven't you, Mr. Craig?

A. Yes.

Q. And when you look at that order there was a penalty of approximately 28 percent.

A. That's correct.

Q. What was that number applied to, do you know?

A. That was applied to the allowable.

Q. Was it applied to like the acreage factor in the allowable?

A. Well, that's correct.

Q. If the well became marginal at some point in time in effect there would be no penalty on it, would there?

A. That's correct.

Q. So the penalty would only apply while the well is in

a nonmarginal status; isn't that right?

A. That's also correct.

Q. And so as long as it stays the top Morrow well in the area there would be a penalty.

A. Right.

Q. When it becomes marginal like other wells, Morrow wells in the area, there would be no penalty?

A. That's correct.

Q. One last point. I think Mr. Carlson had testified that he could see -- I think you testified you saw 18 feet in the Morrow. Is that what you said?

A. The gross interval is 18 feet. The net is somewhere between 12 and 14 depending on what you use for cutoffs.

Q. Mr. Carlson's testimony earlier said 22 feet gross, 12-foot net. What is it, is it the 18-foot gross, is that what --

A. There is 18-foot interval perforated. There is some small amount of zone, probably two feet above, two feet below that are clean, that we chose not to perforate. There is some shale stringers in the middle that contribute to gross thickness but not to net thickness. So the 22-foot value is probably correct.

MR. CARR: All right. That's all I have. Thank you.

CHAIRMAN LEMAY: Thank you.

Mr. Kellahin.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Kent, I don't want to deal with average expectations for the Morrow wells. I want to talk specifically about your current expectations for the No. 8 well?

A. Yes.

Q. You've talked with Mr. Carr about the additional data. Have you plotted the P over Z curve using the new data?

A. Yes, I have.

Q. Do you have a copy of that?

A. Yes, I do.

Q. Do we have more than one copy?

A. No, all I have is one.

MR. KELLAHIN: Mr. Chairman, with Mr. Carr's indulgence I'd like to mark this and introduce it as Exhibit No. 9 and then we'll make copies at the break. I'll show it to Mr. Carr for his inspection at this point.

(Thereupon, Exhibit No. 9 was marked for identification.)

Q. (BY MR. KELLAHIN) The original plot of the P over Z gave you a gas volume for the reservoir in this well.

A. That's correct.

Q. In the Basal A. How well did that match to Mr. Carlson's net pay map, if you will, in terms of the volume

of gas that would fit within the container that he showed you he had?

A. The initial plot which is shown by the red line on that graph was built using Mr. Carlson's geology. Basically what I did was project a P over Z plot.

Q. So the top line, if you will, is the projection based on Mr. Carlson's net pay maps?

A. That's correct.

Q. Now using the data you have updated the plot and you now have determined ultimate gas reserves that are less than you originally plotted.

A. That's correct.

Q. In order to have that volume match with Mr. Carlson's geologic data we're going to have to shrink the size of the container that he plotted for you?

A. That's correct also.

Q. With the new data then we don't have enough gas to fill Mr. Carlson's container?

A. Right.

Q. Let me ask you about a couple of the displays Mr. Carr is talking to you about the relative potential drainage in 17. Let me ask you to look at your Exhibits 3 and compare them to No. 5.

If we examine the ratio of distance method which is the distance to the wells in 19 to the corner of the spacing

unit in 17 you calculated a 28 percent penalty using that method?

A. That's correct.

Q. When you look at the double circle penalty and you move from the closest standard location in 9 to the unorthodox location using 640-acre drainage circles, the entire area outside the first circle that includes Section 16 as well as 17 is only 28 percent, isn't it?

A. That's correct.

Q. So if you are attempting to apportion a penalty to affect the owners in 17, would you apply 28 percent to it?

A. No, I wouldn't.

Q. It's too high, isn't it?

A. Yes.

MR. KELLAHIN: No further questions.

CHAIRMAN LEMAY: If there is no questions of the witness -- Commissioner Weiss.

COMMISSIONER WEISS: I find it interesting that we have a great deal of geological support, drawings and figures, and no engineering data. How come you don't present the measurements?

THE WITNESS: I have measurements if you would like them.

COMMISSIONER WEISS: Maybe we could decide whether you in fact got static pressure, et cetera. We'll have to rely

on your judgment.

THE WITNESS: Okay. I have some of those measurements with me.

MR. KELLAHIN: Mr. Weiss, at the break we would be happy to make copies of all that information.

COMMISSIONER WEISS: I think that's an important feature, too. That if there is real data rather than "I thinks" it should be presented.

MR. KELLAHIN: We appreciate the suggestion and we'll have that made available.

COMMISSIONER WEISS: That's all.

Oh, yes. And along that same line, your P over Z data, how do you arrive at these numbers, this type of thing. Just like you would have to show your boss.

THE WITNESS: Correct.

COMMISSIONER WEISS: That's all I have. Thank you.

CHAIRMAN LEMAY: Is it Mr. Kent or Mr. Craig?

THE WITNESS: Mr. Kent.

CHAIRMAN LEMAY: Thank you. We'll get the name down.

MR. KELLAHIN: We've all done it.

MR. CARR: I haven't.

EXAMINATION

BY CHAIRMAN LEMAY:

Q. Given the fact that there was a geological exhibit

showing the container as kind of the end of a bullet, if you remember right.

A. Yes.

CHAIRMAN LEMAY: If you put that exhibit on the board there just for a minute because it was used in the engineering. I believe it's geological Exhibit 7, I think, or 6. Either one of those would work.

Q. (BY CHAIRMAN LEMAY) Based on that you were saying you were apportioning reserves 8,515 based on that exhibit?

A. That's correct.

Q. Percentagewise. Can I get up and ask you something by referring to the exhibit?

A. You bet.

Q. By honoring these points, if you were to draw the bullet, so to speak, something like this, you could still come up with the same amount of productive acreage in here, still meet your P over Z calculations, but would that not change the respective percentages of reservoir rock under each of the owners?

A. Yes, that would.

Q. So that the assumptions that we're using were based strictly on the volume of rock, not necessarily on the accuracy of the geologic interpretation. You had to assume that geologic interpretation was accurate to come up with the 8,515?

A. That's correct. But that's the only geologic

interpretation I had to deal with.

MR. STOVALL: Mr. Chairman, if I might to clarify the record, I believe you've made some marks on -- what is the exhibit number. Can you see that?

THE WITNESS: It's hearing Exhibit No. 7 from the Examiner Hearing.

MR. STOVALL: Exhibit No. 7 from the Examiner Hearing Marathon, and you've made some pencil marks on that exhibit to indicate the alternate shape for the reservoir that you were referring to; is that correct?

CHAIRMAN LEMAY: That's correct. I've taken the bullet and really made it a really slim bullet. Thinned it out, but extended it out into the fault. Based on the fact that I understand the geological arguments concern the amount of productive acreage under each of the sections, therefore utilizing Marathon's exhibit. What I tried to show that, and now I am not showing it, I am asking you, that if we can thin out the bullet you would have the same amount of reservoir, respective reservoir rock, productive reservoir rock, but the distribution of that reservoir rock would be under different parts of the sections.

A. If you chose to model your geology that way, that's correct. We would have to sit down, figure out how the isopach would look, and then go from there.

CHAIRMAN LEMAY: Well, at some point it might be

helpful if I could just ask Mr. Carlson that, I assume, because he would be the author of the map. I didn't mean for -- but since he used it you thought he could answer the question.

That's all I have. Thank you.

Let's take a 15-minute break and come back with some Xerox copies of some engineering data.

MR. KELLAHIN: Yes, sir.

(Thereupon, a recess was taken.)

CHAIRMAN LEMAY: Okay. We shall resume. Before we go on, Mr. Stovall, you had --

MR. STOVALL: Mr. Chairman, just before the break you started getting into some questions with respect to the geologic shape of the reservoir and volume versus shape discussions. In this case we have incorporated the record from the Examiner Hearing. I believe a lot of the questions which you may have are in the Examiner transcript. My recommendation as to how to proceed procedurally at this point is allow Mr. Kellahin to finish with his engineering witness. At that point Mr. Carr would then put on his engineering witness and discuss that.

I was present at the Examiner Hearing. I've got the transcript. I've been going through and reading the geological testimony. If the Commission would like at that point we can have a discussion, I can summarize that testimony for you. Because it's already in the record there is no point in getting

the geologists on to restate that information. If after that summary you feel you need to have some geologic questions answered I think we can do that.

But I would recommend that procedure and I've discussed it with counsel for both parties as a way to maintain the efficiencies that have been attempted to be created by having the record incorporated to begin with.

CHAIRMAN LEMAY: Yes. If that's agreeable with both parties I think we'll --

MR. KELLAHIN: We're here to do as you desire. Mr. Carlson is here to answer questions at whatever appropriate time you want to ask him. And I believe we completed our questioning of Mr. Kent. And if there is nothing further from him I am prepared to turn this over to Mr. Carr.

CHAIRMAN LEMAY: Thank you.

MR. STOVALL: I will state also, in response to Commissioner Weiss, Mr. Kellahin has provided the data regarding P over Z and the calculations, it's upstairs hopefully being copied. At the time it's available we can get Mr. Kent back on to answer any of Mr. Weiss' questions with that just to keep moving if we can.

CHAIRMAN LEMAY: Fine, thank you. We'll adopt that format then because that was the agreed upon format initially.

So Mr. Carr, you may go forth here.

MR. CARR: May it please the Commission, at this

time I would call Bonnie Wilson.

BONNIE WILSON,

the witness herein, after having been previously sworn upon her oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. CARR:

Q. Will you state your full name and place of residence, please.

A. Bonnie Wilson, Midland, Texas.

Q. Ms. Wilson, by whom are you employed and in what capacity?

A. Oryx Energy as a reservoir engineer.

Q. Have you previously testified before the Oil Conservation Commission and had your credentials as a petroleum engineer accepted and made a matter of record?

A. Yes, I have.

Q. Are you familiar with the application filed in this case on behalf of Marathon?

A. Yes.

Q. Have you testified in all of the previous hearings concerning this well and the unorthodox location of the well?

A. Yes, I have.

Q. Are you familiar with the Morrow formation in this area?

A. Yes.

MR. CARR: Are the witness's qualifications acceptable?

CHAIRMAN LEMAY: Her qualifications are acceptable.

Q. (BY MR. CARR) Ms. Wilson, will you briefly state what Oryx seeks by appearing in this proceeding.

A. Basically Oryx wants to see a penalty assessed against Marathon's well to offset the advantage that it is gaining in drainage area due to its unorthodox location.

Q. You are objecting to the well being operated without a penalty?

A. Yes, we are.

Q. You are the only objecting party?

A. Yes. Oryx is the only objecting party. But when you look at the acreage which is a well which is encroaching on to the south. It's Marathon's acreage, and of course the interests there are the same. And then there is no productive well to the west. And so then the responsibility of opposing would fall to the diagonal offset. Where as normally it's a direct offset that opposes.

Q. Could you go to your packet of exhibits and some of the matters that we intended to cover as background information have already been covered. Would you just identify what is included in this material as Oryx Exhibit No. 1.

(Thereupon, Exhibit No. 1
was marked for identification.)

A. This is just a base map of the area around Section 9.

Q. And this shows the Oryx acreage in Section 17?

A. Yes. Oryx has 54 percent in Section 17, 58 percent in Section 18, 31 percent in Section 20, and 56 percent in Section 21.

Q. And Oryx is the operator of Section 17?

A. Yes.

Q. Who has developed on both the upper Penn and the Morrow on 640-acre spacing?

A. Yes, it is.

Q. 1,650 setbacks?

A. Yes.

(Thereupon, Exhibit No. 2 was marked for identification.)

Q. Let's go now to Exhibit No. 2. I would ask you to identify what this exhibit is.

A. This is just a tabulation of all the wells that are produced from the Morrow in the Indian Basin Field. I've divided it into two groups. The poor wells are the top group, and the good wells are the bottom group.

The top group the wells have made less than half a BCF. And then the good wells have all made greater than one BCF. I have the well name, its location, its cumulative gas production, the well's initial rate. And this is about a

six-month average for well's initial production. The well's initial pressure, and then the net pay in that well.

There are several items that I would like to point out. The average of the poor wells, wells who had very small cums, is 100 -- well, point -- 192 million cubic feet. But I would like to compare the initial rates in those wells. All those initial rates are very low. And then when you look at the good wells, the average cumulative production from the good wells, this isn't even ultimate, this is just cumulative, was over three BCF from the good wells in this field. And their initial rates, except for two wells that were 450 MCF, but most of those good wells were all very good initial rates.

And when I look at Marathon's North Indian Basin No. 8 and what it is producing from the Morrow, it's producing at a very good rate. And I would classify it as one of the good wells.

Q. Based on this information alone do you believe that it is possible that the Marathon Morrow well will be able to drain in excess of the 800 million that Mr. Craig was projecting today?

A. It is possible that it will drain much more than that, yes.

(Thereupon, Exhibit No. 3 was marked for identification.)

Q. Let's go to Exhibit No. 3 in this packet of

exhibits, and I would ask you to identify that and review it for the Commission.

A. Exhibit No. 3 is an isopach map on the second member of the lower Morrow. I have superimposed over that map the gas water contact, and then I have determined what the productive acres were and what the acre feet were in each tract. For example, in tract nine, the North Indian Basin 8 tract, it has 84 productive acres and it has 520 acre feet. And in Section 17 where Oryx's acreage is we have 527 productive acres and 2,121 acre feet.

Q. What are we actually mapping on this exhibit? What does the basin map show?

A. This map shows a clean gamma ray. But when I calculated productive acre feet I multiplied that by ratio of .625.

Q. What was that, what was the basis for that number?

A. That number nets a clean gamma ray down to a net porous sand.

Q. Are you ready to go to your Exhibit No. 4?

A. I just have one more statement I would like to make, and that is the proration unit for the North Indian Basin No. 8 covers all of Section 9 and only Section 9.

(Thereupon, Exhibit No. 4 was marked for identification.)

Q. All right. Let's go now to Exhibit No. 4.

Could you identify what this exhibit actually is.

A. Exhibit No. 4 is the proven and probable gas reserves map that was presented by Marathon.

Q. This was Marathon's Exhibit 6 at the Examiner Hearing?

A. Yes.

Q. What are you intending to show with this exhibit?

A. I have just shown the productive acres and the productive acre feet under each tract according to this map. Marathon's acreage has 59 productive acres, or 334 acre feet in Section 9. And Oryx's acreage in Section 17 has 88 productive acres and 299 acre feet.

I would also like to point out that even though Mr. Carlson contoured gross sand, and then he stated that ten feet of gross sand was needed to give a zero net porosity line, this zero net porosity indicates a contour interval of greater than ten feet. A little bit larger maybe, 11 or 12 feet. But there is a slight inconsistency between the gross and the net sand map due to that statement.

Q. But the zero effective porosity actually indicates ten feet or more of sand?

A. Yes.

(Thereupon, Exhibit No. 5 was marked for identification.)

Q. Let's move to Exhibit No. 5. Would you identify

that, please.

A. Exhibit No. 5 is just a four-section area showing the intersection of Sections 8, 9, and 16 and 17. And it shows the additional acreage in Section 17 in the crosshatched area that would be drained by moving from a standard location to the unorthodox location which the North Indian Basin No. 8 is drilled at.

Q. This is assuming 640-acre --

A. Yes.

(Thereupon, Exhibit No. 6 was marked for identification.)

Q. Let's move on now to your Exhibit No. 6.

A. What I've done with Exhibit No. 6 is I have left the two previous circles and the previous map shown, the 640-acre drainage around the standard location and around the unorthodox location. And then I have determined what a drainage radius for a well that had a five percent penalty would be. And that drainage radius is 2,902 feet. And that's the slightly smaller circle.

So you could look in Section 17 and see that very small thin slice that doesn't have the diamonds in that's only crosshatched with the slant lines, not the diamonds, that very thin section, represents the area in Section 17 that would not be drained by assessing a five percent penalty.

(Thereupon, Exhibit No. 7

was marked for identification.)

Q. Let's move now to Exhibit No. 7. I would ask you to review that for the Commission.

A. This is basically the same graph as the previous -- or picture as the previous exhibit, except that I have increased the penalty from five percent to 14 percent. And you can see the sliver or the small area in Section 17 that will not be drained due to assessing a 14 percent penalty. And you can still see shown with the diamond shaped area the area in Section 17 that will be drilled by an unorthodox well, even with a 14 percent penalty.

Q. Now, Ms. Wilson, are you familiar with Commission Order No. R-9050-A which was entered following the Commission hearing on the upper Penn?

A. Yes.

Q. That order in fact imposed a 14 percent penalty?

A. Yes.

Q. That's what is shown on Exhibit No. 7?

A. Yes.

Q. Could you explain to the Commission basically how that penalty was derived in that order.

A. Well, first it was based on the distance that the well was moved from the standard location. And then it concluded that 28 percent was appropriate for that movement. And then that penalty was cut in half to 14 percent because

Oryx's acreage was diagonal.

Q. And it looked at the mathematical number of acres that would be affected, and that therefore reduced the penalty?

A. Yes. It reduced the penalty mathematically. However, what's important here is not the fact that Oryx acreage is half the size of the direct offsetting acreage. What is important is the percentage of our acreage that they are draining.

(Thereupon, Exhibit No. 8 was marked for identification.)

Q. Let's move on now and let's go to Exhibit No. 8. I'd ask you to identify and review that with the Commission. This is an exhibit that I believe Mr. Kellahin colored during the Marathon presentation. I don't know if our colors match or not.

A. The red areas match and that's all. This is the exhibit that I proposed to Mr. Catanach for the Morrow. What I did was I tried to make the acreage in Section 17 that would be drilled -- that would be drained by a well in a standard location the same as what a well drilled in an unorthodox location would be. The way I did that was I made an exact calculation. This is not a trial and error solution, it is a geometric problem and it can be solved with geometry. I made an exact calculation of the area of Section 17 that a 640-acre drainage area would drain. And then I determined what the

drainage radius would be to give me that same area for a well at this specific unorthodox location. What that does is it makes the blue area and the green area equal, or the blue area plus the red equal, equal to the red area plus the green area.

Q. Based on this you derived a 45 percent penalty?

A. Yes, I did. I'll show them how I derived that in next two exhibits.

(Thereupon, Exhibit No. 9 was marked for identification.)

Q. Let's go to Exhibit No. 9 and review that.

A. There is a lot of formulas on this page, but basically what I am trying to show here that in a prorated field rate is proportional to the square of the drainage radius, not proportional to single radius. You are talking rates are proportional to areas, not to distances. And to obtain areas you have to square the radiuses.

I'll go through the formulas. The first formula is that area equals power squared and then I've included a factor 4,000 -- 4,300,000 -- four three five six zero to convert acres to feet. And then I stated the ultimate recovery equation in a prorated field. That means your rate times your life is equal to four three five six zero times your porosity times one minus the water saturation times your gas volume factor initially minus your abandonment gas volume factor multiplied by your feet of pay times your drainage area.

When I arrived at that ultimate recovery, Q1 for a well that is drilled, for a well that has a 640-acre drainage area, and I arrived at Q2 for a well that has a reduced drainage area, the 45 -- this would be the penalized area. And we're trying to determine that penalty. And then I divide those two, assuming that all those other factors are equal, porosities are equal, water saturations are equal, and it's assuming that net pay is equal, then all those other factors fall out and you find that Q1 over Q2 is equal to the radius squared of one over the radius two squared. And then when you substitute the radiuses in that I calculated geometrically 2,200 squared for the unorthodox location, and 2,978 squared for the standard location, then you find that the allowable or the acreage factor should be .55. And that results in a 45 percent penalty.

(Thereupon, Exhibit No. 10 was marked for identification.)

Q. Okay. Let's go to Exhibit No. 10 and just quickly state what that is.

A. This is just the recommended penalty showing the formula of 45 percent.

(Thereupon, Exhibit No. 11 was marked for identification.)

Q. Ms. Wilson, would you now refer to what has been marked as Oryx Exhibit No. 11 and initially explain to the

Commission what you're attempting to show.

A. I am just taking Marathon's map and I've superimposed over Marathon's isopach two drainage radiuses, one that would represent a 28 percent penalty and one that would represent a 14 percent penalty.

Q. Which is the smaller circle? That's the 28 percent penalty?

A. Yes, it is.

Q. And that is what was found by the Examiner from the Examiner Hearing in this case?

A. Yes.

Q. And then the 14 percent penalty line is what would result if that is reduced by 50 percent?

A. Yes.

Q. This is actually the geological map, Exhibit No. 6, that was presented by Marathon at the Examiner Hearing; is that correct?

A. Yes, it is.

Q. And this shows a gas water contact as it goes across the reservoir?

A. Yes, it does.

Q. That is the north/south line that has LKG on it that goes through the center of the double circle?

A. Yes. LKG stands for lowest known gas.

Q. The larger circle shows the 14 percent penalty?

A. Yes.

Q. Could you just explain what impact on -- what is the impact on Oryx of a 50 percent reduction in penalty as was adopted by the Division in the upper Penn case?

A. Well, it just allows Marathon's well to drain additional acreage from our lease.

Q. That's because it is able to produce at a higher rate?

A. Yes. It produces at a higher rate. And by producing acreage from our lease it does not protect our correlative rights.

Q. Should there be 50 percent, and a 50 percent adjustment in the permitted penalty rate simply because Oryx is an offsetting owner as opposed to a direct owner?

A. Whether you are an offset or a direct you are drained what you are drained. There is no reason to cut in half your drainage.

Q. Now, when we talk about mathematical or engineering basis for reducing the penalty by 50 percent can you see any justification from an engineering basis for making that reduction?

A. No, I can't.

Q. Now, if a direct offset had come in and also objected to this well and it hadn't been reduced by 50 percent would that have any bearing on the drainage which would

actually occur from the Oryx tract? Does it make any difference who objects --

A. No.

Q. -- as to how much drainage there is?

A. No, it doesn't.

Q. Does it make any difference as to where their interest is located as to how much is drained from each acre?

A. No.

Q. When the production rate is increased does that mean more can be drained from each of your acres?

A. Yes.

Q. Does that apply whether they are directly offsetting the tract or diagonally offsetting the tract?

A. Yes, it does.

Q. What is the impact of a 50 percent reduction on the correlative rights of Oryx, in your opinion?

A. It inviolates our correlative rights.

Q. Are you aware of any similar cases where penalties have been sought for unorthodox locations in this area?

A. Yes, I am.

Q. And which wells are those? You might want to identify them on the orientation plat.

A. Go back to Exhibit No. 1, the Santa Fe well in Section 8.

Q. That's the well in the extreme southeast/southeast

of 8?

A. Yes.

Q. Are there any other wells for which penalties have been imposed due to unorthodox location?

A. The Bunnel Federal No. 2 in Section 18 which Oryx operates.

Q. That is the well on the extreme eastern boundary of Section 18?

A. Yes, it is.

Q. Let's go to that well initially. And I would ask you to just provide the Commission with a summary of the general facts surrounding the drilling of that well.

A. Looking at Exhibit 1, the parties that were opposing the hearing where the penalty was assessed on the Bunnel No. 2 was Marathon. Marathon owns a 48 percent interest in the diagonal offset, which is Section 20, and then the own a lesser interest, they own 37 percent in the direct offset, which is Section 19. So Marathon was a direct offset in Sections 19 and in Sections 20.

Q. And their largest ownership was in the diagonal tract?

A. Yes.

Q. And they were objecting to the unorthodox location?

A. Yes, they were.

Q. Was this the first well drilled in Section 18?

A. No. The Bunnel Federal No. 1 was drilled. That well was depleted. And so at the time Enron was the operator. Oryx did not operate the lease at the time this penalty was negotiated. We have since purchased it from Enron.

Q. Was the well that was being drilled, the well on the extreme eastern portion of 18, also a replacement well like the well that we're talking about here today?

A. Yes, it was a replacement well.

Q. Is all of Section 18 productive in the Morrow?

A. This penalty was assessed in the Penn, not in the Morrow.

Q. All right. And was all of the Penn productive in Section 18?

A. No. There was a fault that cut the Penn through Section 18. And therefore in assessing the penalty, the penalty was based on three different factors. I'll refer you to Exhibit No. 12 now that shows those factors that the penalty was based on.

Q. Before we go to that, just so we know where we're going, Marathon requested the penalty?

A. Yes.

Q. What penalty did they receive in that proceeding?

A. They received a 40 percent penalty.

Q. Was there any adjustment made because the majority of their interest ownership was in a diagonal tract?

A. No.

(Thereupon, Exhibit No. 12 was marked for identification.)

Q. Let's go now to your next exhibit, which is Exhibit No. 12, and I'd ask you to explain to the Commission what you did with Exhibit No. 12.

A. I took the formula that was applied to the Bunnel well and applied it to Marathon's North Indian Basin No. 8. Now that penalty was based on three factors. It was based on the variation from a standard location, it was based on the remaining reserves under the tract, and it was based on the productive acres on that tract due to the fault.

The variation from a standard location in the Bunnel well was taken to the direct offset. It was not taken to a diagonal. And the remaining reserves factor came into play here because there had been initial production from the lease and they felt that there may be some depletion on this acreage already. Since this is the initial Morrow well on this tract the remaining reserve factors should not come into play here. So I have given them the remaining reserve factor of 1.0.

I've used both interpretations to calculate it, Marathon's interpretation and Oryx's interpretation.

Q. Those are set out on Exhibits 3 and 4 in this packet of exhibits?

A. Yes, they are.

Q. All right.

A. I took the productive acreage on Marathon's exhibit and divided that by 640 acres, and that's where I came up with my .09. And then the location variation, the .72, that simply -- 2,333 feet is the distance from the corner of the four sections to an orthodox location.

Q. By doing that you are measuring the diagonal direction and taking that into account?

A. Yes, I am taking a diagonal instead of a direct here. That's the only difference between this and the other penalty. I am measuring diagonally here, whereas they measured directly to Marathon's direct acreage.

Q. Then the allowable factor?

A. You just take the three factors and you average them, .09 plus 1 plus .72, you divide it by three, and that gives you an allowable factor of .6. Oryx was .13 and 1 and .72. You divide that by three. You get an allowable factor of .62. So both geologic interpretations, though they are very different, give you the same allowable factor. The average there is 61 percent allowable factor or a 39 percent penalty.

(Thereupon, Exhibit No. 13 was marked for identification.)

Q. Ms. Wilson, let's now go to Exhibit No. 13, and I'd ask you to identify that and then review that information for the Commission.

A. This is just a summary of the penalties that are proposed, comments about them, a reference to which orders that they are based on. And the first one -- I've numbered them. The first one, number one, is what was used on the Santa Fe well.

Q. That's the unorthodox location in Section 8 offsetting this to the west?

A. Yes. Applying that penalty to the Marathon well would have resulted in an 80 percent penalty.

The second formula is the formula that Oryx proposed at the Penn hearing. And that was to modify the variance from the standard setbacks to use both setbacks rather than just a single setback to account for the fact that it was a diagonal rather than a direct offset, and that resulted in a 40 percent penalty.

The third penalty is a penalty that Marathon proposed during hearings but was never accepted by any of the Commission rulings. That involved the well-to-well distance from one unorthodox location to another. Though what was pointed out is it has invalid boundary conditions. You can drill wells right at the intersection of four leases and only have a 50 percent penalty assessed against those wells. And I think everyone realizes those were invalid boundary conditions. And we have not had one of those penalties assessed, but Marathon did propose it.

The fourth penalty, that's the one that the Commission adopted for the upper Penn, and it's based on lease-to-well distance. You've seen five pictures of this already today. It includes the adjustment factor for the diagonal offset.

And then the next formula is the exact same formula, except that no adjustment factor was made. And that's the order that was adopted for the Morrow.

Q. In the Examiner Hearing?

A. In the Examiner Hearing, yes.

Q. All right. Number six.

A. Number six is the penalty that Oryx has proposed for the two Morrow zones. It results in a 45 percent penalty. It's based on equal drainage of our offsetting lease. It totally protects Oryx's correlative rights.

I'd like to point out that a penalty of this sort would be based on -- a 45 percent penalty in a prorated oil field on a nonmarginal well, which is what Marathon has at this point, would be an effective penalty. But at that point when Marathon's well, if and when it's ten years down the road or two months down the road, becomes nonmarginal, then no penalty is assessed against the Marathon well. Because of the fact that it is now marginal. And no acreage factor penalty is assessed against it. And this is a very good way to protect correlative rights in both situations by basing the penalty on

the acreage factor or the allowable. So that when it's a very good well, and it's obviously draining acreage outside of Marathon's lease, then the offsetting parties are protected. And if it is a poor well then it falls into a nonmarginal category and the penalty basically becomes ineffective. Even if it's set high it becomes in effective. And the well is able to produce what it can produce. And it still protects Oryx's correlative rights.

Q. Ms. Wilson, at this point in time with two and a half months production information on the well, do you believe it is fair at this time to make a judgment as to whether or not this is ultimately going to be a very good well or a poor well?

A. I still think it's too early in the life of the well. If the reservoir is large, it's going to be there for a long time. And Oryx is looking at the well, watching the well, deciding whether or not we want to drill an offset. And if production stays in the range that it's at now we will drill an offset. And if production falls off to nothing, then we won't drill one.

Q. In the meantime the penalty would be effective if it appears to be a good well?

A. If it appears to be a good well then a penalty is needed to protect our correlative rights and it would be effective.

Q. If the well then becomes marginal and it's a poor

well or a well life is being projected by Marathon's most recent calculation it basically would be ineffective under any circumstances?

A. That's correct.

Q. I would like to depart from the presentation in the book at this time, if it please the Commission.

Ms. Wilson, did you request that certain information be provided to you on this Morrow well by Marathon earlier this week?

A. Yes. I requested the pressure data and their flow rates.

Q. And was that information provided to you?

A. Yes, it was.

Q. Per your request?

A. Yes.

(Thereupon, Exhibit No. 15 was marked for identification.)

Q. I would like you to identify what has been marked as Oryx Exhibit No. 15. And just simply explain to the Commission -- is this exhibit prepared based on some of the information provided by Marathon?

A. No.

Q. But this is the information you have been able to accumulate on the wells in the Indian pool?

A. Yes, yes.

Q. Would you review this for the Commission and basically just show -- explain to them what this exhibit shows.

A. This area shows basically my drainage area calculations. And you can look at either the drainage radius column or the drainage volume column.

I grouped this into three wells, the wells that have very small drainage radiuses, wells that had a medium radius, and then wells that had very large radiuses in excess of 640 acres.

Q. Ms. Wilson, this information actually cuts both ways, does it not? If we've got a poor well it's going to show a small drainage area, is it not?

A. Yes.

Q. And when you review the initial information that you have on the Marathon well can you tell for sure exactly what category it will fall in?

A. It has a good rate, a very high rate, like the good wells. So I have the tendency to think it's going to have a larger drainage area at this point still.

Q. But at this point still it's too earlier to make a final call?

A. Yes, it's still too early.

(Thereupon, Exhibit No. 14 was marked for identification.)

Q. Let's take a look now at what is in the booklet that

you have prepared as Exhibit 14 and I would like you to review that.

A. I just want to make one more comment about a well in the last group of wells.

Q. Yes.

A. The Hilliard BF. In the net pay column that well shows six feet of net pay.

Q. Where are you at this time?

A. The Hilliard BF, it's in the third grouping of wells, the middle well in the third grouping of the wells. If you move over to the net pay column it shows six feet, which is half of what Marathon's well has. And yet its drainage radius is 1,000 feet. I mean its drainage radius is 3,776 feet, which is much greater than the 640-acre drainage in this reservoir. So it is possible for Morrow wells with small feet of pay to drain very large areas.

Q. Again the point of all of this is just simply to show that with the data we have you cannot make a final call on the well at this time; is that right?

A. That's correct.

Q. Are you ready now to go to Exhibit No. 14?

A. Yes.

Q. Okay. Would you identify that for the Commission.

A. I've just done some simple economic analysis on the Morrow zones. So I'll try and describe these simple economics

to you.

It costs $646,000 to drill a Morrow well. It costs $549,000 to drill an upper Penn well. And it cost $747,000 to drill in dual a combination Morrow/upper Penn well. I used operating expenses of $1,500 per month and maintenance capital of $183 per month, a working interest of 1.0, an income interest of .875. I used a gas price of $1.50 per MCF, which is what had Marathon stated they were -- would be a good price to use in the previous hearing.

I did three analyses on three type of wells. I analyzed what the economics for Oryx to drill a new well in Section 17 would be. And then I analyzed an incremental analysis for Marathon's wells of what the incremental cost would pay out with the production from the Morrow.

I'll just go over the first one, the Oryx new well. It's a full analysis. There was no penalty assessed against the well. I am assuming we'll drill in an orthodox location. I used gross reserves of only 1.5 BCF because it's probably about as low in reserves as we could go and still meet our economic cutoff. So this is marginal economics for us, but it is economic. Net reserves would be 1.3 BCF net. The development costs $646,000. That's the cost to drill to the Morrow only. Development costs per MCF is 50 cents per MCF to drill for the well. The payout for the well would occur in 1.9 years, and that would yield a 37 percent rate of return.

Now, if you look at Marathon's well, in the incremental analysis I used no penalty assessed against their well. They've stated in their best case the gross reserves were 1.3 BCF. That would give them net reserves of 1.1 BCF. The development cost of $198,000 came from subtracting the cost to drill an upper Penn well from the cost to dual the Morrow and the upper Penn together. So 749 minus 549 is $198,000. The development cost per MCF in that case is 17 cents. The payout is .4 years, and the rate of return is 241 percent.

If you assess a 45 percent penalty against Marathon's well then they produce .7 BCF of gas. This is assuming that that's all they produce. Whereas in fact they may produce all of the 1.3 BCF. But assuming they only produce 45 percent of the reserves based on that 45 percent penalty, the rate of return is still 113 percent. Development costs per MCF is still 32 cents per MCF. It's still very good economics, payout in less than a year. What I am trying to show here is that there is no financial hardship or economic hardship imposed on Marathon by them being assessed a penalty.

Q. In your opinion, Ms. Wilson, will the imposition of a meaningful penalty on this well result in the waste of any reserves?

A. No.

Q. Will a penalty cause any reserves to ultimately be left in the ground?

A. No.

Q. Will the imposition of a meaningful penalty enable Oryx as an offsetting operator to evaluate the well and be able to make an informed decision on whether or not an offsetting well should be drilled?

A. Yes.

Q. Does Marathon -- we've talked about Marathon's plans to drill in Section 17. Those are contingent on how this well continues to perform. Is that what I understood your testimony?

A. Yes.

Q. In your opinion will granting this application without the meaningful -- imposition of a meaningful penalty in the nature of what you've recommended, 45 percent, create a situation where your correlative rights could be impaired?

A. Yes.

Q. Were Exhibits 1 through 15 prepared by you?

A. Yes, they were.

MR. CARR: At this time may it please the Commission I would move the admission of Oryx Exhibits 1 through 15.

CHAIRMAN LEMAY: Without objection the Exhibits 1 through 14 --

MR. CARR: 15.

CHAIRMAN LEMAY -- 15 will be admitted into the record.

MR. CARR: Thank you. That concludes my direct examination.

CHAIRMAN LEMAY: Thank you, Mr. Carr.

Mr. Kellahin.

MR. KELLAHIN: I am not sure what the pleasure of the Commission is. Do you want to take a lunch break?

CHAIRMAN LEMAY: We have a little bit of a problem. Commissioner Humphries has another engagement and we'd prefer to have the cross-examination of this witness while he was present, if that's possible.

MR. KELLAHIN: Certainly.

CHAIRMAN LEMAY: If you would hold up just a second while Commissioner Humphries makes a phone call. He would like to hear the cross-examination. At least that part of the -- I think he can stay around untill 12:30 if that's the case.

(Off the record.)

CHAIRMAN LEMAY: You may proceed, Mr. Kellahin.

CROSS-EXAMINATION

BY MR. KELLAHIN:

Q. Ms. Wilson, let me turn with you to the topic of the two examples you have given us in the pool where there were unorthodox wells for which a penalty was established by the Division.

When we look at the Section 8 instance, am I correct in remembering that at that time Oryx was the offsetting

operator in 17 to the Santa Fe well in Section 8?

A. Yes.

Q. Am I also correct in remembering that neither you nor anyone else for your company appeared and presented technical evidence in opposition to that case?

A. We did not appear in person. We called Marathon, asked them if they would be opposing the penalty. They said yes, they would, and we said okay.

Q. Am I correct in understanding that it was Marathon that opposed because they were the direct offsetting operator in Section 9 towards whom this well moved?

A. Yes.

Q. And that the penalty established by the Commission or the Division in that case for that well was the generic one they established for encroaching on the side boundaries and did not specifically deal with the diagonal problem that we're dealing with today.

A. No, it did not.

Q. And that's true with this other case down there in 18. That was not specifically tailored to meet the fact situation of what we're discussing this morning. There was no presentation made exclusively with regards to the diagonal party.

A. I did not find anything in the findings that listed a reference to a diagonal offset, no.

Q. Am I also correct in understanding that regardless of whether or not the penalty opposed by the Commission is 99 percent or one percent, unless Oryx drills the well Marathon is going to get all the gas out of this particular zone?

A. If Marathon's is the only well drilled in this particular zone then Marathon will recover all the gas from this zone, yes.

Q. Adjusting a penalty or selecting a penalty percentage is not going to call attention to those gas molecules in Section 17 and have them stay in place, is it? They are going to get produced by the existing well.

A. That is correct.

Q. When we discussed this case back in May of this year with regards to what Oryx's plans were for the drilling of a Morrow test in Section 17 you could not tell me then that you had immediate plans to drill a well to protect and in fact produce your correlative share of the gas in this particular zone?

A. I stated at that time that we would watch the production on this well and determine whether or not we wanted to drill an offset to it.

Q. Am I correct in understanding that you are still waiting and watching?

A. Yes. I only received data on this well three days ago. And while we've been watching the well it hasn't shown up

on our data reports as having produced at all from the Morrow. So we had like four days of production the week before this hearing. So I am still at the point where I don't have that data.

Q. If you'll turn to Exhibit No. 2 with me. This was your analysis of Morrow completions in the Indian Basin Field in which you showed rate information?

A. Yes.

Q. This rate information is going to be dependent upon permeability and porosity. But how is rate going to tell me reservoir volume?

A. If you have a good productive reservoir you will have a good rate. If you have a poor productive reservoir or if you are pressure-depleted, then you will have a low rate.

Q. In addressing a drainage calculation then to construct a penalty, rate is not going to tell us the size or the shape of the reservoir to be protected by the penalty?

A. Rate can give you an indication of the size. It will not tell you the size.

Q. If I've got a well that's got tremendous permeability and good rate I could also have a very small reservoir.

A. Yes, that is true.

Q. Have you examined the information that Mr. Kent supplied to you with regards to having you construct your own

P over Z curve for the subject well?

A. I constructed a P over -- well, I didn't construct a P over Z curve. I did the material balance calculation mathematically and I came up with a number very similar to what he came up with about 700 MCF. But I do not believe that pressure measurements that are taken a month apart give you a good extrapolation. And you have to base your extrapolation on your data. Data a month apart is not a good P over Z curve, and I still think it's too early to believe that data.

Q. But you can use the data and come up with a number that's in close agreement with your reservations that shows what Mr. Kent shows.

A. Yes.

Q. If you take that volume and look at Mr. Rojas' geologic display on Exhibit No. 3 you've got too big a container, don't you?

A. If you assume that's the correct volume then the container is too big.

Q. Am I correct in understanding or remembering that you did some type of volumetric analysis based upon Mr. Rojas' mapping of the Morrow reservoir?

A. Yes.

Q. Did you come up with a gas in place number for his reservoir within 17?

A. Yes.

Q. What was the number?
A. My calculation of the gas in place on Section 17 is 1.5 BCF.
Q. We're looking at Exhibit 14 now?
A. Yes, I am looking at Exhibit 14.
Q. All right. Under the Oryx new well entry on that column gross reserves we get 1.5 BCF and a net of 1.3?
A. Yes.
Q. And you have derived that based upon Mr. Rojas' exhibit which is shown as Exhibit No. 3?
A. Yes.
Q. Does your analysis of the gross reserves for the area shown by Mr. Rojas, that shows more sands than Mr. Carlson has shown on his displays, doesn't it?
A. No, it does not. What it shows is a different correlative interval. Mr. Rojas and Mr. Carlson have differences in their correlations. They only agree in three wells on the same interval that they are correlating.
Q. So if we use your engineering work based upon Mr. Rojas' correlation we're going to get one set of values. And if we use Mr. Kent's engineering work on Mr. Carlson's geologic analysis we're going to get another set of numbers, aren't we?
A. Which numbers are we talking about?
Q. Well, any numbers you want to. We use -- both

engineers can take the different geology and get different numbers. And that's what's happened here, isn't it?

A. Yes.

Q. Share with me some of your thoughts about the geometric penalties.

A. Okay.

Q. Let's go to Exhibit 7. Well, I am sorry, I am ahead of myself. Let's go to Exhibit 6. I think that's perhaps the one to start with.

I believe it was your conclusion from Exhibit 6 that there was a small area in 17, and that that area was so small a five percent penalty was virtually meaningless.

A. Yes.

Q. When we look at that same area in which you have a slightly smaller circle inside the slightly larger circle, there is an area within Section 9 and 16 that I have shaded in pink that represents some reservoir share, at least mathematically, that Marathon is giving up with the five percent penalty. Is that not true?

A. That shows the acreage that's given up in Section 9 and Section 17, yes. However, the proration unit established for Marathon's well is only in Section 9.

Q. When we look also at Exhibit No. 7 we have the same issue, don't we, within the unit operated by Marathon which has a community of interests between 16, Section 16 and 9, there is

an area I've shaded in pink between your two circles. And that is that area that is given up by the 14 percent penalty?

A. Yes.

Q. When we look at Exhibit No. 8, the area in blue in Section 17 is the area that would be included under the presumption of a 640-acre area circle?

A. Yes.

Q. And you mathematically then took the radius of a circle, the center point of which is at the unorthodox location, adjusted the radius until you could have a portion of the circle in green that matched arithmetically the portion of the circle in blue.

A. Yes.

Q. And so what you've done then is you have fixed on a radius of 2,200 feet.

A. That is the radius that gives the drainage areas equal.

Q. And that is the penalty, the basis for the penalty that you are recommending today?

A. Yes.

Q. Okay. When I look at the smaller circle with the radius of 220 feet, how many acres are in that circle?

A. 349 acres.

Q. 349 for the total of the smaller circle with the radius of 2,200 feet?

A. Yes.

Q. When I look at the area that would include the acreage in Section 17, that would include the blue and the red only, how many acres is that?

A. I could guess, but I can't calculate it at this point.

Q. Approximate for me so I have a point of reference.

A. Five acres.

Q. The area in red and the area in blue total about five acres?

A. No, just the area in blue. Yeah. Sorry.

Q. Okay. Five acres. And if we added the area in red then how many total acres would have been impacted in Section 17 by a well at a standard location?

A. 20 acres.

Q. All right. Approximately 20 acres then in 17 under this analysis are going to be impacted with the standard location. And the notion then is to adjust it so that while we have different acres we still have the same of approximately 20 impacted?

A. Yes.

Q. Is that the idea?

A. Yes.

Q. When we look at the 14 percent penalty on Exhibit No. 7 --

A. Yes.
Q. -- how many acres in 17 are impacted with that penalty?
A. I don't have that number calculated.
Q. It would appear to be more than 20 acres, wouldn't it?
A. Yes.
Q. When we go back to Exhibit No. 5 and we're dealing with then two circles of the same size, each of which contain 640 acres; is that correct?
A. Yes.
Q. In 17, what is the amount of area in 17 in which the second circle exceeds the first?
A. I believe that's roughly 30 acres.
Q. And within the area of Section 16 approximately how many acres are contained within 16 in which the second circle exceeds the first?
A. I don't know.
Q. I am interested in a few more questions on Exhibit No. 14, Ms. Wilson, if you'll bear with me.
When we look at the Oryx well under this economic analysis that would be drilled in 17 I now understand your reserve, how you got that number. What was the assumption on rate for the well in order to get a payout of 1.9 years?
A. I assumed that that well would initially produce at

1.5 million a day, at a 20 percent decline. The reason I used 1.5 million a day was at that time that was the only production I had from Marathon's well. I had four work days of production from their well that was their average rate.

Q. The assumption is 20 percent decline then.

A. Yes.

Q. How many total productive years did you estimate for the well?

A. It wasn't very long. Five years, to get to an economical limit.

Q. When we go over and look at the Marathon Basin 8 well, the gross reserves are Mr. Kent's gross reserves. The costs are simply the incremental costs that are apportioned to the Morrow?

A. Right.

Q. For this well. It's a dual well, and you have simply isolated out the 200,000 that's attributable to the Morrow?

A. Yes.

Q. What did you use for a rate for the Morrow production?

A. Again I used 1.5 million a day because that's what their well was producing.

Q. And the 20 percent decline?

A. And the 20 percent decline.

Q. When we get over to the risk penalty incremental calculation, the last portion.

A. Yes.

Q. What have you done, simply taken 45 percent of each of the numbers?

A. 55 percent. If it's a 45 percent penalty then you take 55 percent --

Q. 55 percent and that will get me the rest of that number.

A. So that well had an initial rate of 825 MCF.

Q. Can you tell me the net present value in that economic case with the penalty?

A. No.

Q. The net present value would be of the economic consequences to Marathon with this penalty, wouldn't it?

A. Yes, it would.

Q. But you don't know that number?

A. No, I don't have it with me.

Q. Your assessment also assumes that the well is successful 100 percent. There is no dry hole risk component to this analysis?

A. No, Ive used no dry hole risk.

Q. It doesn't take into consideration past failed attempts and expenditures made in trying to find production in the Morrow?

A. No, it does not.

Q. In looking at Exhibit No. 11, the generic penalty formulas represented on this display, in each instance both of them have a radius that extends through the dry hole in Section 8, doesn't it?

A. Yes.

Q. Help me understand Exhibit No. 12. This is your analysis of the case today using the basis -- the penalty utilized by the Commission in the Bunnel Federal well?

A. Yes.

Q. As a point of reference?

A. Yes.

Q. When I look at the productive acreage factor that you have chosen for Marathon, the .09, is that the productive acre factor applied only for Section 9, or did you also include 16?

A. I only included Section 9 because Section 9 was the only well, or the only -- was the area included in the proration unit. If I should have used the area in Section 16 then the proration unit should have been established as the south half of Section 9 and the north half of Section 16.

Q. For the Oryx, the .13, that represents your analysis of the productive acreage share for 17?

A. Yes.

Q. For Section 17?

A. No, no, no, I am sorry. Marathon and Oryx refer to Marathon's geologic interpretation and Oryx's geologic interpretation. But all of these calculations here are based only on tract nine, or a penalty that would be assessed against tract nine.

MR. KELLAHIN: I did not understand. Thank you.

No further questions, Mr. Commissioner.

CHAIRMAN LEMAY: Thank you, Mr. Kellahin.

Additional questions of the witness?

MR. CARR: No, I have none.

CHAIRMAN LEMAY: Commissioner Humphries.

EXAMINATION

BY COMMISSIONER HUMPHRIES:

Q. Ms. Wilson, I think I understood your question or your statement correctly, but you correct me if my understanding is wrong. I believe you have said upon questioning that even if the 45 percent penalty were imposed, and for some reason Oryx decided not to drill a well, because as I understand after you watch this well some period of time if you are not satisfied with its ability to perform then your company won't drill a well.

A. Right.

Q. Even that penalty then would allow whatever reserves there are in 17 in that drainage capacity of the well in question to be drained away; is that correct?

A. That's correct.

COMMISSIONER HUMPHRIES: I want to make a statement to my fellow commissioners. This is not to you. It's for everybody.

It seems to me like one of the things that I observed over four years almost on this Commission is that from time to time these arguments easily and directly overlook the royalty owners' rights. And it's obvious in that statement that the royalty owners' rights have been completely overlooked. I believe royalty owners have correlative rights the same as working interest owners do. And that may be a part of this question.

It seems to me that penalties that are assigned by mathematical calculations without high levels of confidence in their accuracy are very difficult at best and are no more than production penalties and may not protect everbody's correlative rights or conservation of the resource effected. And although I don't have a solution exactly in mind, I certainly believe that if we shift from production penalties to cash penalties, based on the same types of calculations, that may not be directly paid to the offsetting intervenor or intervenors or those who question an unorthodox location or production, that that money can be held until a future time. The State can receive its severance taxes. In some cases it can clearly receive its royalties as well. And at the end of the time when

all of these questions get answered that money can be in escrow available, plus the interest it would have earned, to compensate in reality as opposed to in the abstract. No simple solution, I understand.

I wish I could have watched Carr and Kellahin while I was saying that.

MR. KELLAHIN: I think my heart has begun to beat again. I am not sure, Mr. Commissioner.

MR. CARR: I think my heart just stopped.

COMMISSIONER HUMPHRIES: But it does strike me that there is always going to be this question. I think Ms. Wilson defined it correctly when she said at some point they have to make a decision whether their company wants to drill a well or not. Meanwhile the penalties are there and correlative rights of the royalty owners are not protected.

MR. STOVALL: Commissioner Humphries, if I might add that you have given me another opportunity if this line of reasoning prevails to score highly on my personal development plan, because Mr. Lemay has directed that I address a unique and precedence setting questions of law. I think that will be one of those definitely.

CHAIRMAN LEMAY: Very complex issue. Thank you for your comments, Commissioner. Anything additional?

EXAMINATION

BY COMMISSIONER WEISS:

Q. On the hearing awhile back where we were talking about the upper Penn and there was a penalty imposed, and as I remember I think the well in the southern part of Section 17 produces from the Penn; is that right?

A. Yes, yes.

Q. Have you done anything to stimulate that well or to try and increase your production there ot to offset the drainage that you are suffering?

A. In the Penn?

Q. Yes.

A. Well, that well is top allowable, I believe.

Q. I don't know. It is top allowable?

A. Yes, it's a top allowable well. And nothing we could do would increase our production because of the fact that we're top allowable. We could stimulate, but we wouldn't be allowed to produce anymore.

Q. Well, then if you drill another well to the Morrow up in the northeast part of this section, would it be a dual completion?

A. If we would drill a well we would have to look at the log and look at the Penn on the log. And if we thought our chance from producing from the Penn was better on this well than from the well to the south then we would have to TA or plug the well to the south or TA it, at least, and attempt a completion up there and see what it would produce. But by the

fact that they are top allowable spending that money would gain us nothing. I mean it limits our rates. So really until the well falls below top allowable we probably would not spend the money. Once that well would fall below top allowable then we would attempt a recompletion to see if we could make a top allowable well up there.

Q. I didn't realize that was top allowable. Is there an AFE circulating to drill in the Morrow?

A. I have started on what we call a PR, which is a project recommendation. And I have started the paperwork they are filling out now. I do not have a written AFE yet at this point. I have requested drilling costs.

Q. I would suspect you are going to drill or support or recommend drilling a well if there is an offset.

A. If this stays at 6,000,000 a day my managers are going to be ecstatic, yes.

Q. How long do you think it will take you to get that done?

A. Normally it takes us three months to get the paperwork through. So from the day I propose it until about three months later is about when we would drill it.

COMMISSIONER WEISS: Okay. Thank you.

EXAMINATION

BY CHAIRMAN LEMAY:

Q. Ms. Wilson, you mentioned I think in your testimony

you didn't have a lot of confidence in P over Z plot because of the short duration of the span between pressures.

A. Yes.

Q. What time span would give you confidence in the P over Z plot?

A. I would like to see three months in the Morrow. I would like to see a difference of three, four months.

Q. So by the time you had your plans to drill the well, if in fact the P over Z plot stood up with the given pressures we have, and there is 800, roughly 800 million in the reservoir, would you still drill the well?

A. If the P over Z indicated that it was small then I wouldn't. If it indicated that there may be something larger, then we would use that to run economics and see whether or not it would be economic for us to, yes. Does that answer your question.

Q. Not completely. I was just wondering maybe it's your economics that I am getting into. You had some preliminary figures showing -- your geology and the geometry of this reservoir, I think you said 1.5 BCF in place under sections

A. Yes.

Q. But the majority of that would be recovered, I assume.

A. And 1.5 meets our economics cutoffs.

Q. It does.

A. It's just we have a certain amount of money and we choose our best opportunities. So we're going to choose our best Morrow opportunity in Indian Basin. We're still not sure exactly which location that is.

Q. And was it your testimony under cross-examination that producing rates are not proportional to reserves, or did you say that there was a correlation there?

A. I think that your producing rates tell you whether or not you have a good reservoir. They are not going to tell you how big your reservoir is. If you've got crummy producing rates and your initial pressure is high you've probably got a crummy reservoir and it's not going to be very big. If you've got a really good productive rate, you know, qualitatively, you've probably got a decent reservoir. But when you sit down and try to do a direct analysis from rate, because so many other factors come into play, permeabilities, those type of things, you can't draw a direct analysis between rate and drainage area.

Q. Time also is a function?

A. Yes, time, yes.

Q. Which is how long that rate holds up and pressures?

A. Right, time and pressures.

Q. They all together equate to gas in place under tracts and reserves?

A. Yes, yes.

CHAIRMAN LEMAY: Thank you. Any additional questions of the witness? If not she may be excused.

MR. STOVALL: Mr. Chairman, I don't know what the parties feel, but at this point based upon what I've heard in this case, and Mr. Humphries, I understand you have an afternoon appointment; is that correct, won't be available? If you have concerns with respect to the geologic interpretation my recommendation would be that you take a lunch break and review the testimony from the Examiner Hearing. And if you wish to go further into that --

CHAIRMAN LEMAY: Can we go off the record just for a minute.

(Off the record)

CHAIRMAN LEMAY: Let the record show that we're back on the record.

Mr. Carr.

MR. CARR: May it please the Commission, at this point in time it is my understanding that there are certain engineering information, raw data, that is being still copied. We have been advised -- Oryx has been advised by Marathon that this is the same data that was provided to us earlier in the week with the exception of one PVT analysis. We are prepared to stipulate that that information can be incorporated into and made part of the record of this proceeding. And so with that I

believe counsel have also agreed that we will both waive closing, as much as it kills me to do that. And so with the admission of that evidence I believe the case is ready to be taken under advisement.

CHAIRMAN LEMAY: Thank you, Mr. Carr.

Mr. Kellahin.

MR. KELLAHIN: For clarity in the record, Mr. Chairman, we will mark that package of engineering documents, including Mr. Kent's plot of the PVT, P over Z plot, as Exhibit No. 9. And we'll submit it once it's copied.

CHAIRMAN LEMAY: Thank you. Without objection those exhibits will be entered into the record, become part of the record.

Are there any further statements in this case?

MR. KELLAHIN: I waive closing. But I do want to thank Commissioner Humphries for participating in the Commission process with us over the years. I think this will probably be his last one.

CHAIRMAN LEMAY: We have one more, actually two weeks.

COMMISSIONER HUMPHRIES: He knows something I don't.

MR. KELLAHIN: I am not participating in that. I want to thank you for participating. In years past we have not had a commissioner who took an active role. And I know all of us join with me in thanking him for being involved. I

appreciate it.

COMMISSIONER HUMPHRIES: I've enjoyed it.

MR. CARR: You know, in that regard, I hate to just stand up and say me to. But when we look back I've been around here for 20 years and so has Tom, and you are the only commissioner who has become actively involved in these cases. And when I think back to the things that we did concerning the Gavilan and some extremely difficult complicated cases, I think no matter whether any of us agreed or not with what you were doing, I think all of us recognize the important input you had in those and you utilized your staff and I thought it was important, and I hope that the next commissioner will be the same.

COMMISSIONER HUMPHRIES: I think it's been beneficial to the land office. I hope the commissioners continue to participate.

MR. CARR: And I have also heard that you may not seek further political office and I hope Mr. Kellahin and I have not been major factors in this.

CHAIRMAN LEMAY: Is there anything else in the case?

Case 9954 will then be taken under advisement. Thank you very much.

CERTIFICATE OF REPORTER

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

I, Diane M. Winter, Certified Shorthand Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Commission was reported by me; that I caused my notes to be transcribed under my personal supervision; and that the foregoing is a true and accurate record of the proceedings.

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

WITNESS MY HAND AND SEAL October 29, 1990.

Diane M. Winter

DIANE M. WINTER
CSR No. 414

My commission expires: December 21, 1993

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