STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
CASE 10115

EXAMINER HEARING

IN THE MATTER OF:

Application of Marathon Oil Company for the Assignment of a Special Depth Bracket Oil Allowable, Eddy County, New Mexico

TRANSCRIPT OF PROCEEDINGS

BEFORE: MICHAEL E. STOGNER, EXAMINER

STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO
October 31, 1990

ORIGINAL

A P P E A R A N C E S

FOR THE DIVISION:	ROBERT G. STOVALL, ESQ. JIM MORROW, EXAMINER/ENGINEER Post Office Box 2088 State Land Office Building Santa Fe, N.M. 87504-2088
FOR THE APPLICANT:	W. THOMAS KELLAHIN, ESQ. Kellahin, Kellahin & Aubrey Post Office Box 2265 Santa Fe, N. M. 87504-2265

I N D E X

E X H I B I T S

APPLICANT'S EXHIBITS:

EXAMINER STOGNER: This hearing will come to order. Call next case, No. 10115.

MR. STOVALL: Application of Marathon Oil Company for the assignment of a special depth bracket oil allowable, Eddy County, New Mexico.

EXAMINER STOGNER: Call for appearances.

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

Appearing with me is Mr. Larry Garcia, attorney with Marathon Oil Company. He and I represent Marathon Oil Company, the Applicant in this case. We have two witnesses to be sworn.

EXAMINER STOGNER: Are there any other appearances in this matter?

Will the witnesses please stand to be sworn.

ROBIN W. TRACY

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

EXAMINATION

BY MR. KELLAHIN:

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

A. My name is Robin Tracy. I'm currently the

District Operations Supervisor for Marathon Oil Company in our Midland, Texas, office.

Q. Have you, on prior occasions, testified before the Oil Conservation Division as a petroleum engineer?

A. No, I have not.

Q. Would you take a moment and describe your educational background?

A. I graduated from the University of Tulsa in 1979 with a Bachelor of Science degree in petroleum engineering.

Q. Subsequent to graduation, summarize for us your employment experience as a petroleum engineer.

A. Out of college I went to work for Amoco in Casper, Wyoming, and worked there a year as a production engineer. Since that time I've been in our northeastern region, which handles Illinois, Michigan, and the Northeastern part of the United States.

I served in various capacities there as a production engineer, reservoir engineer, drilling foreman and district reservoir engineer.

Q. What duties did you perform with regards to performing your profession for the Tomano-Bone Springs Pool in Eddy County, New Mexico?

A. I've supervised most of the engineering

work that has gone on in the Tomano field.

Q. Based upon that engineering work, what conclusions have you reached, Mr. Tracy?

A. We have concluded that there is a more efficient rate at which the oil can be produced from the Tomano field.

Q. And that's the purpose of you being present today?

A. Yes, it is.

MR. KELLAHIN: At this time, Mr. Examiner, we tender Mr. Tracy as an expert petroleum engineer.

EXAMINER STOGNER: Mr. Tracy is so qualified.

Q. Let me ask you to turn to Exhibit No. 1. Before we discuss the specific details of your request, let's take a minute and orient the Examiner as to how to read the display.

A. Okay. This display is a land plat that shows Marathon's acreage position in the Tomano field. The operators and working interest owners as we best know them are listed on each tract. The yellow acreage represents Marathon's acreage.

Q. When we look at the display, how do we know what the current boundaries are for the Tomano-Bone Springs Pool?

A. The dashed line is from the Byron's report.

Q. The specific area of interest for these producing oil wells is the area shown including Section 11 and adjacent to Section 11?

A. Yes, Section 10 and 11.

Q. The type of wells identified on the display are the Bone Springs completions within the area shown on the map?

A. Yes, they are.

Q. What's the significance of the red dots on some of these wells?

A. The four wells that are shown highlighted in red are the wells that have additional production capacity above the current depth bracket allowable.

Q. The rules for this pool require wells to be drilled on 40-acre spacing?

A. Yes, they do.

Q. And for wells at this depth, what is the maximum allowed producing rate on a daily basis for oil?

A. 230 barrels of oil per day or 460 Mcf per day.

Q. So the oil rate is 230 a day, and the gas rate is determined by a function of the gas/oil ratio limitation for the pool?

A. Yes, it is.

Q. And you are operating on the 2000-to-1 gas/oil ratio?

A. Yes, we are.

Q. So if I'm using 230 barrels a day, my gas limit would be what?

A. 460 Mcf per day.

Q. Based upon your studies, what is your recommendation to the Examiner for the maximum producing rate for a 40-acre spacing unit for the pool?

A. We're recommending to double the current depth bracket allowable for 460 barrels of oil per day with the same GOR limitation.

Q. You're not seeking to change the gas/oil ratio, simply increasing the oil rate?

A. That's correct.

Q. In order to reach that conclusion, did you study the production history of the wells in the pool to form a basis of opinion?

A. Yes, we have.

Q. Let's turn to Exhibit No. 2 and have you identify and describe that display.

A. Exhibit No. 2 is a production graph of the Tomano-Bone Springs field, and there are a couple of

key items that should be noted there. First of all, you can see that production started in early 1988. It's a relatively new field.

The second thing that I would like to point out is that there is a very small producing amount of water, less than 200 barrels of oil per day.

Q. Your water is plotted in the blue line?

A. Yes, it is.

Q. Okay.

A. And the third thing is that the gas/oil ratio, although it does increase with time as all solution gas drive reservoirs, it has not broken through and shown a dramatic increase later in the life of the field.

Q. When we look at the plot of the oil production in relation to the other items plotted, what does that tell you about the reservoir?

A. We've drawn a conclusion from looking at this and looking at the individual well data, that the field's producing mechanism is a solution gas drive reservoir.

Q. You don't see any active water drive in the reservoir?

A. We do not see any active water drive in the reservoir and we do not see a gas cap in the

reservoir.

Q. If a gas cap was being formed in the reservoir, what would happen to the gas rate on the plot?

A. Well, on some of the wells during the later part of their life, we could see increased production in gas and less production in oil, and that would be signified on this graph as the GOR is showing a significant increase, and this graph does not show that.

Q. As a petroleum engineer, are you able to conclude from a review of the information that, in fact, the Tomano-Bone Springs is not a rate-sensitive pool?

A. Yes, I have.

Q. Let's turn now to Exhibit No. 3. Would you identify that for us?

A. Exhibit No. 3 is a tabulation of the well test data, and this was the data that was incorporated into Exhibit 2 that we just looked at.

Q. In addition to Marathon being the majority operator in the pool, Heyco also operates wells in the pool?

A. Yes, they do.

Q. Have you contacted Heyco to see if they

have any objection to increasing the oil rate for the pool?

A. Yes, we have.

Q. And what result?

A. They have no objection.

Q. Have you contacted the other operators in the pool to see if they have any objection?

A. We've contacted all the other operators and all working interest owners, and no one has any objections.

Q. Let's turn now to Exhibit No. 4. What is this?

A. Exhibit No. 4 is a plot showing rate versus the gas/oil ratio on the four wells that have increased production capacity within the field.

Q. Describe for us how you obtained this information.

A. The four wells that have additional production capacity, we tested those for 24-hour periods at different rates as signified by the red squares on that graph. What we found that was at the higher rates approaching the 460 barrels of oil per day that we are requesting, the gas/oil ratio did not increase.

And, as you can see by this exhibit, three

of the four wells, the gas/oil ratio from our measurement actually decreased.

Q. The plot of the curves on Exhibit No. 4 identifies the four wells shown in red circles on Exhibit No. 1?

A. Yes, they do.

Q. You've characterized these as the high capacity wells?

A. Yes, I have.

Q. High capacity means they would have the capacity to produce up to and in excess of the requested 460 a day?

A. That is correct.

Q. The critical part of this data is what, Mr. Tracy?

A. The critical part of this data is that we do not see any rate sensitivity in this oil pool. As you can draw conclusions from these graphs, if they were rate-sensitive as far as a gas cap being present, the gas/oil ratio would probably go up. And, in fact, we've shown it's decreased in three of the four instances and in the fourth instance it looks relatively flat.

Q. Let's turn to Exhibit 5 and have you identify and describe that.

A. Exhibit 5 is just a tabulation of the data that went into the graphs that were shown on Exhibit No. 4.

Q. Have you made a search to determine whether or not the performance you're seeing displayed to you in the Tomano-Bone Springs is representative or characteristic of other Bone Springs pools being produced in Southeastern New Mexico?

A. Yes, we have.

Q. What particular pools did you examine?

A. As can be shown on Marathon Exhibit No. 6 and Marathon Exhibit No. 7, the first being the Mescalero Escarp field and the second one being Young North field, both of these fields have additional production history as they're older fields than our Tomano field.

What can be seen from the two graphs that are presented is that the gas/oil ratio over the life of the field, although it increases over the life of the field as would be expected in a solution gas drive reservoir, it's only a slight increase, less than 10 percent per year. Therefore, we've drawn conclusions from both of these fields that there is no gas cap. The later producing life of the field you do not see a substantial increase in the gas/oil ratio.

Q. Have you had displays made to show the capacity of the four high-capacity wells to produce oil?

A. Yes, we have.

Q. And that's shown as Exhibits 8, 9 and 10?

A. That's right.

Q. I'm sorry, that's 8, 9, 10 and 11? Those are the four?

A. Yes, that's correct.

Q. Let's turn to Exhibit No. 8 and describe for us what you've done.

A. Exhibit No. 8 shows inflow performance, and this is based off of Vogel's work. What this is showing is that if there were no restrictions at all, and the first Exhibit No. 8 is Johnson B Federal #6, is that that well could produce in excess capacity of 3,000 barrels of oil per day. The significant thing to note about the well is that currently, if you'll look between liquid production rate of zero and 1,000, our current rate is about 230 barrels a day, top allowable, and the bottom-hole producing pressure is around 1800 psi.

If granted the additional rate where we could go up to 460 barrels of oil per day, as you can see from the graph, the bottom-hole producing pressure

would be somewhere around 1700 pounds, bottom-hole filling pressure, not a significant decrease in bottom-hole filling pressure.

Q. Do you have inflow performance curves on each of the four wells from which you conclude that each has substantially greater capacity to produce oil than the maximum allowable that you've asked for?

A. Yes, I do.

Q. Did you see any potential adverse consequences to increasing the oil rate in terms of comparing the high-capacity wells to the four producing wells in the pool?

A. No, I do not.

Q. What are the range of productivities of the other wells that are uncapable or incapable of producing the maximum oil allowable, in a general range?

A. In a general range, from 175 barrels of oil per day down to less than 10 barrels of oil per day.

Q. In terms of efficiency of producing rate for wells in the pool, will the high-capacity wells be more energy-efficient than the low-capacity wells?

A. Yes, they will.

Q. Why?

A. The low producing wells currently are

producing at a very low bottom-hole pressure, meaning that they are being drawn on as hard as they can because they're allowed to produce up to 230 barrels a day. If not, we can produce those at top allowable rates. And currently a 10-barrel-of-oil-per-day well or a 50-barrel-of-oil-per-day well is showing a lower producing bottom-hole pressure.

What this does, when you pull on the reservoir a little bit harder than the top allowable wells, you get a little bit more solution gas breaking out away from the wellbore. What that does, it increases the gas/oil ratio of the lower producing wells.

Q. Let's turn now to Exhibit No. 12. Would you identify that display for us?

A. Exhibit 12 is a picture showing how we think the reservoir will respond with the increased allowable rates. Currently, the field is producing nearly 1800 barrels of oil per day with about 3.2 million cubic feet of gas, or for a gas/oil ratio of a little over 1700 standard cubic feet per barrel.

If we're allowed to increase the withdrawal rates from the wells that have additional production capacity, it will increase the field production by 51 percent in the oil lake. The gas will increase only

38 percent. The reason that is, is because the high-flow capacity wells have a gas/oil ratio of less than the 1770 standard cubic feet per barrel that's currently being seen in the Tomano field as shown on one of my earlier exhibits, No. 4.

The gas/oil ratio for the high-capacity wells is around 1400 standard cubic feet per barrel in that the gas/oil ratio did not increase with the higher rates. It stayed around 1400 standard cubic feet per barrel.

So what that does is now the field GOR, instead of being around 1770, it is reduced to around 1610, where the gas/oil ratio is decreased by about 9 to 10 percent. So what we're saying is that we're utilizing the existing energy in the field because it's a solution gas drive reservoir more efficiently. We're saving about 9 to 10 percent of that energy, producing the same amount of that oil over a snapshot in time, a period in time, so that that gas energy can be used to help produce additional oil.

Q. Can you give us a general range or perspective about the magnitude of increased oil recovery and producing at a higher rate?

A. An average well in the field right now produces at around cum recovery of 250 thousand

barrels of oil. So, if we could increase that by 10 percent per well, that would be another 25 thousand barrels of oil per well.

We have four wells that we're proposing to do this to, so that would be, in my estimation, a low side of 100 thousand barrels of oil that we should be able to increase this pool recovery by.

Q. Your ultimate conclusion and recommendation, then, Mr. Tracy, based upon your engineering studies, is what, sir?

A. Is that the field allowables should be increased from the current depth bracket allowable of 230 barrels of oil per day to a new allowable of 460 barrels of oil per day.

MR. KELLAHIN: That concludes my examination of Mr. Tracy. We move the admission of his Exhibits 1 through 12.

EXAMINER STOGNER: Exhibits 1 through 12 will be admitted into evidence.

EXAMINATION

BY EXAMINER STOGNER:

Q. Is the solution-gas drive the only mechanism in this pool?

A. We believe it is, as shown from Exhibit No. 2. There's very little water production and that's

basically coming from one well. We've monitored the pressure over the field over the last three years that it's been producing, and we don't see any additional energy support.

Q. Do you know when production first started from this pool?

A. Around the first part of 1988, I believe.

Q. And when did these four wells, do you know their individual beginning production dates?

A. Three of the four wells, the well that's shown in Section 10, the well that's listed as Well #9, if you look at Exhibit 1, the map, and the well that's listed as B-2, all of those wells were drilled in 1990. The Well #5, the other high-flow capacity well, it's been on production for over a year.

Q. Is that the #5 or #6?

A. #6, I'm sorry.

Q. Were some of your other wells that are now marginal production or producing under the allowable, did they begin as nonmarginal wells or able to meet their allowable in the beginning and then taper down, and how long did that usually take?

A. Yes, sir. Well #4--

Q. That's the one in the southwest of the northeast?

A. No, sir, that's the one in the northeast of the southwest, the Marathon Hudson & Hudson Well #4.

Q. Oh.

A. Northeast of the southwest.

Q. Okay. Yes.

A. That was one of the first wells in the field and it produced at top allowable rates for over two years. Currently it has ceased flowing and we've put a pumping unit on the well and it's still at top allowable rates of around 230 barrels a day, but it does not have much excess capacity. And the Marathon Well #7, the southeast of the northwest, that well was a top allowable well for over a year.

Q. How many wells are like that #4, if the allowable was raised, would be able to pump in excess of the 230-barrels-a-day limit?

A. #4 would be the only other one.

Q. What's usually the next step as far as development in a pool like this here in the Bone Springs and the solution gas drive? Will this be waterflood potential?

A. We're looking at that. We're looking at waterflood and we're also looking at gas reinjection. Probably waterflood has more of a chance than reinjecting gas, but we're still not completely sure

that the waterflooding will be economically feasible in this pool.

We're currently building a reservoir model and we're doing core flood work. We're hoping that we'll be able to do it, but we haven't come to that conclusion yet.

Q. Most of your wells in this pool seem to be congregated around Section 11. Were there some wells down in Section 14 and 24 at one time?

A. The two wells that are shown in Section 14, both #1's and both shown as dry-hole symbols, they were drilled to the Bone Springs but they were dry in those intervals and they have been since completed in shallower zones. The well shown within the Byron's outline, the #1 that is on the ARCO acreage and then the well that's shown in Section 24, it's also a #1 well. Those are Bone Springs sand wells and they are currently producing somewhere around 50 barrels of oil per day.

Our wells that have additional capacity are a little bit shallower than that. They're in the Bone Springs second carbonate.

Q. Also those wells in Section 2, are they producing from the sand interval?

A. Yes, sir, that's correct.

Q. Do you know what their capabilities are?
A. I think they're around the same, 75 barrels a day or less.
Q. Do you know what a typical sand producer in the Bone Springs is in the initial phase, its initial pressure and its initial production? Is it capable of making the 230 or are any of them in the deeper horizon?
A. Not in Tomano. The sands are very poorly developed and they're usually used as a back-up zone or a salvage zone for the well. A 50-barrel-a-day sand well, 75-barrel-a-day sand well is considered good in this area, and they do not have any excess production capabilities.
Q. Do you know what their reservoir mechanism is?
A. It's solution gas drive, also.
Q. Are any of the wells in Section 11 completed in both the sand and the carbonate?
A. Some of the Heyco wells are. In fact, I think most of the Heyco wells are.
Q. Would that serve to draw some of the oil or do you see any mechanism problems with--I don't want to call it down-hole commingling, since it's all in the Bone Spring, but in this particular instance let's

use that term.

A. Okay. No, there shouldn't be any interference between a well producing from a commingled second carbonate and a Bone Springs sand.

EXAMINER STOGNER: Mr. Kellahin, what's your next witness going to be testifying on?

MR. KELLAHIN: She's the geologic witness.

EXAMINER STOGNER: Okay.

Q. This well is spaced on 40 acres, is it not?

A. Yes, that's correct.

Q. Is there any evidence of communication between these wells spaced on 40?

A. When we drilled the new wells, the reservoir pressure in the new wells was lower than discovery pressure, so there's some pressure communication. We do not feel that a well will drain over 40 acres, though.

Q. Even with the higher allowable?

A. Even with the higher allowable.

Q. In looking at Exhibit No. 3, Mr. Tracy, it looks like some of the Heyco wells have a higher GOR than some of your wells, and you just got through saying that you believe the Heyco wells are perforated through the sand and the carbonate interval. Do you see any correlation there or problems that could

surface?

A. Well, when we look back at some of our wells, like the Marathon Oil Company Shugart B #1, and that's just a carbonate well only. It has a higher GOR also. And, in most cases, the Marathon Johnson B Federal #4, which is less than top allowable well, it's GOR is also in excess of 2000. Johnson B Federal #5, 17 barrels a day, GOR of 2600.

In my opinion, when you get down to those low of rates, the influx rate it takes more gas energy to get the oil to the wellbore to produce it, and therefore you see the higher GOR. The Heyco wells have substantially higher GOR. Some of that could be from the sand, but even if they weren't producing from the sand, it's my opinion that their GOR would be in excess of the field average that we're showing of 1700.

Your previous question you asked about, can one well drain more than 40 acres, I don't think it can. And would a well with additional flow capacity drain more than 40 acres, in my opinion, no. But what could be going on is that you see these wells with lower rates, higher gas/oil ratios. They're using more gas energy to produce a barrel of oil, sometimes as much as twice as much as what the high-flow

capacity wells are doing. If there's any detrimental effect, it would be caused by these lower producing wells that could be stealing gas energy from the high producing wells. So, what our proposal is, is to take better use of the existing reservoir energy.

EXAMINER STOGNER: Mr. Morrow?

EXAMINATION

BY MR. MORROW:

Q. Did you indicate what the solution gas/oil ratio is and what the bubble point pressure is? Did you testify to that?

A. I didn't testify to the bubble point pressure, no, I have not.

Q. Do you know the answer to that?

A. The bubble point pressure is somewhere around 2000 pounds, and the current reservoir pressure is less than that. We're around 1800 pounds, so we're below the bubble point pressure of the reservoir.

Q. And the solution GOR, do you know what that is?

A. Solution GOR currently is around 1700. Discovery was less than a thousand.

EXAMINER STOGNER: Any other questions of this witness? You may be excused at this time.

Mr. Kellahin?

MR. KELLAHIN: Thank you.

PATTI JEAN PHILLIPS

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

EXAMINATION

BY MR. KELLAHIN:

Q. Ms. Phillips, would you please state your name and occupation?

A. My name is Patty Jean Phillips and I'm a petroleum geologist with Marathon Oil Company in Midland, Texas.

Q. Mrs. Phillips, have you testified before the Division on prior occasions?

A. No, I haven't.

Q. Summarize for us your geologic education.

A. I received a Master's in geology at Louisiana State University in 1983, and I've worked for Marathon eight years, three years offshore in Houston, and almost five years in Midland, Texas, in the Permian Basin.

Q. As part of your duties as a geologist for Marathon, have you made a geologic study of the Tomano-Bone Springs?

A. Yes, I have.

Q. Describe for us in a general way the extent

of your study of that pool?

A. For two years I've done the reservoir geology in the Tomano-Bone Springs second carbonate reservoir. I've made several maps and described the four existing cores in the field in the second carbonate.

Q. You've done that geologic work for purposes other than this particular hearing today, have you not?

A. Yes, I have.

Q. Have you assisted Mr. Tracy in trying to understand the geology so that you can see if there's a geologic explanation to some of the performance characteristics he's seeing for the producing wells in the pool?

A. Yes, I have.

Q. Let me direct your attention to Exhibit No. 13 and ask you to identify and describe for us your structure map?

A. This is a subsurface structure map on top of the second sand which is the regional marker just below the main pay reservoir. Regional dip is to the southeast, and the purpose of this exhibit is to illustrate that the reservoir is not a structural trap but is stratigraphic in nature.

Q. In looking at the geologies, do you see any evidence that there is a water component to the makeup of the reservoir?

A. There is some water production in the #8, but it is not an active water drive.

Q. You concur geologically, then, that you don't see evidence that this reservoir has an active water drive to it?

A. That's correct.

Q. In the absence of a structural explanation to the reservoir, I presume, then, it's a stratigraphic trap of some type?

A. That's correct.

Q. Have you attempted to map the limits of the reservoir?

A. I have.

Q. Is that shown on Exhibit No. 14?

A. Yes, I have.

Q. Describe it for us.

A. This is a porosity thickness map with no porosity cutoff, of the wells in the Bone Springs second carbonate reservoir. As shown, the four high-capacity wells are located in that area of higher porosity thickness, showing that those wells contain greater thicknesses of porosity.

Q. When Mr. Tracy sees in the performance of his high capacity wells the ability of those wells to produce significantly in excess of his requested adjustment in the top allowable and that he looks at the field and sees there's other wells producing out of this second carbonate that don't produce as well, is there a geologic explanation to what he sees in terms of production?

A. Yes, there is. I've looked at the cores from the Johnson B Federal #5, the Johnson B Federal #4, the Shugart B-2 and the Stedco 10 #1, and they make a good cross-section through the reservoir and illustrate that the higher capacity wells have a vuggian fractured porosity network to them.

As you go away from this area, as illustrated by the core and the Shugart B #1 and the #5, those wells have less vuggy porosity and are not as well connected to the main part of the reservoir.

Q. Do you have a sample of a cross-section that you could share with us that demonstrates vertically what we see in the reservoir?

A. I do. I have only one copy with me.

Q. Exhibit No. 15?

A. Yes.

Q. Let me have you describe it from where you

sit.

A. This is a stratigraphic cross-section hung on the top of the main pay marker. It's an east/west cross-section that extends from the Stedco 10 #1 in the west through the B-2, the #4, the #5 and the Heyco #2 AJ well. The inset shows the location of the cross-section.

On the cross-section, the purple zones are high-flow units and they are high porosity correlatable zones. The purpose of the zonation was for our ongoing reservoir model. These higher porosity zones as identified on the neutron density logs, do correlate to the cored wells which have high vuggy and fracture porosity.

So, as you can see going from east to west, the amount of porosity increases and gets thicker towards the east into the B #2 well and the Stedco 10 #1 wells, which are two of the wells that we are proposing to increase the allowable in.

MR. KELLAHIN: That concludes my examination of Mrs. Phillips. We move the introduction of her Exhibits 13, 14 and 15.

EXAMINER STOGNER: Exhibits 13, 14 and 15 will be admitted into evidence.

EXAMINATION

BY EXAMINER STOGNER:

Q. Now, you show the high-flow zones in purple. What is the makeup of the remainder of that, between your main pay and your second sand?

A. Well, the entire Bone Springs second carbonate is predominantly composed of debris flows. The purple zones correlate with the debris flows and in between those, or zones of what we call wacky stone, which have some matrix porosity but do not have the abundant vuggy porosity network that is found in the debris flow intervals.

Q. Most of your wells are perforated through that wacky stone interval, is it not?

A. Yes, they are. We feel that they are connected by fractures.

Q. On your isopach map, Exhibit No. 14, you mention the outer limit. Would you go over this exhibit for me again? I was a little confused.

A. Yes, this is a porosity thickness map. It has no porosity cutoff because we feel that perhaps a porosity type might be a better cutoff. And, as shown, the wells in the north half of Section 14 had shows; however, they had shows of oil in the Bone Springs second carbonate and are included within the

limit of the reservoir, however, they're not economic wells.

Q. So this zone pinches out at the zero line?

A. That's correct.

Q. You don't show control back to the west. Is there plenty of control in this area?

A. No. The fill is delineated on the north, the east and the south sides, but Marathon is pursuing a development program in Section 10 currently. There are no Bone Spring wells in Section 10 other than the two that are shown.

EXAMINER STOGNER: Are there any other questions of this witness? If not, she may be excused.

Mr. Kellahin?

MR. KELLAHIN: That concludes the presentation of our evidence, Mr. Examiner. This is the first case that I'm aware of since the Commission's informal discussion in early October about encouraging an increase in the oil production of the various oil pools in New Mexico. It is specifically brought before you what we think is a well-documented example of a nonsensitive, nonrate-sensitive pool that can support an increased oil rate and meet the requirements that the Commission

was talking about in early October. There is a total absence of objection from any of the parties that produce oil in the pool.

We believe Mr. Tracy has shown you sufficient engineering information by which you can approve the increase in the oil rate. I think it's important to recognize that we are not asking for an adjustment in the gas rate. The gas/oil ratio can be used as a control mechanism to save reservoir energy. Mr. Tracy has demonstrated to you that in fact the four producing wells are wasting reservoir gas and the high-capacity wells will more effectively and efficiently produce the pool.

It's also conclusive that there is no advantage gained over the other operators. The appearance of the reservoir, as Mrs. Phillips shows us, is that there's a geologic explanation as to why the high-capacity wells are high-capacity wells. They, in fact, have more of the reservoir and have greater porosity thickness and a greater development and therefore are entitled to more oil and they can capture that oil without waste and without violating the correlative rights of any of the interest owners in the pool, and therefore we would request that the application be approved.

EXAMINER STOGNER: Thank you, Mr. Kellahin. Do you have an Affidavit of Notification?

MR. KELLAHIN: Yes, sir, we do. We would like to introduce that as Exhibit No. 16, if we may.

MR. MORROW: Mr. Kellahin said something there that I would like to ask him a question about.

EXAMINER STOGNER: Mr. Morrow, please proceed.

MR. MORROW: If I heard you correctly, you said you didn't request an increase in gas rate?

MR. KELLAHIN: Well, not an increase in the statewide 2000-to-1 gas/oil ratio. And that is what I meant.

MR. MORROW: You would expect to double the gas limit?

MR. KELLAHIN: Certainly. But the controlling mechanism, I think, for the engineers, is that ratio, the 2000-to-1, and we're not asking to change that.

MR. STOVALL: You have to watch yourself around those engineers, Mr. Kellahin.

MR. KELLAHIN: Making sure you're paying attention.

EXAMINER STOGNER: Does anybody else have anything further in Case No. 10115?

If not, this case will be taken under advisement.

(Thereupon, the proceedings concluded.)

CERTIFICATE OF REPORTER

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

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

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

WITNESS MY HAND AND SEAL November 14, 1990.

Carla Diane Rodriguez
CARLA DIANE RODRIGUEZ
CSR No. 91

My commission expires: May 25, 1991

heard by me on 31 October 1990

Oil Conservation