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

12 June 1986

EXAMINER HEARING

IN THE MATTER OF:

Application of Amoco Production Company for NGPA Price Ceiling Category Determinations, Lea County, New Mexico.	CASE 8848

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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For Amoco Production:	Clyde A. Mote Attorney at Law Amoco Production Company Post Office Box 3092 Houston, Texas 77253
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I N D E X

E X H I B I T S

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MR. CATANACH: This hearing will come to order and we'll call Case 8848, application of Amoco Production Company for NGPA Wellhead Price Ceiling Category Determinations, Lea County, New Mexico.

Are there appearances in this case?

MR. MOTE: Mr. Examiner, I'm Clyde Mote, attorney, representing Amoco Production Company in association with Bill Carr of the firm of Campbell and Black.

We will have two witnesses.

MR. CARR: May it please the Examiner, my name is William F. Carr of the law firm Campbell and Black and I'd like to also enter an appearance in this case for Southland Royalty Company and Meridian Oil.

MR. CATANACH: Are there other appearances in this case?

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

(Witnesses sworn.)

MR. MOTE: Mr. Examiner, I'd like to make a short opening statement.

This is the application of Amoco for NGPA Wellhead Price Ceiling Determination for three wells described in the notice of the hearing.

It is our belief that such wells meet the NGPA Well Catergory criteria for new onshore reservoir classification under Section 102-C (1) (c) of the NGPA of 1978 and the applicable rules of the Federal Energy Regulatory Commission.

It should be noted that Elkan Wells No. 1 and 2 in Section 9 have already qualified for Section 102 new onshore reservoir classification, which determination was made by the NMOCD on the 14th day of November -- I mean October, 1982, as to the Amoco Elkan No.1 and on July 15th, 1983, as to the Elkan No. 2.

The subject of this application is for the Elkan No. 3, the Elkan No. 4, both of which are in the same section as the Elkan 1 and 2, and also for the State "MX" Well No. 1, which is in Section 15.

KAREN SULLIVAN GLASER,

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

DIRECT EXAMINATION

BY MR. MOTE:

Q Would you please state your name, by whom employed, in what capacity, and location?

A My name is Karen Sullivan Glaser, employed by Amoco Production Company as a Petroleum Geologist, Senior Grade, in Houston, Texas.

Q Would you please relate your educational experience?

A I have a Bachelor of Arts in geology from Colgate University in Hamilton, New York, and a Master of Science in geology from the University of Oklahoma in Norman, Oklahoma.

Q When did you get your Bachelor's degree?

A In 1980.

Q How about your Master's degree?

A In 1983.

Q And where did you go to work after graduation?

A With Amoco Production Company in Houston.

Q And have you been working for Amoco since that time?

A Yes, I have.

Q And what has been your job experience with Amoco since your employment?

A For most of the three and a half years I've been there I've worked on the Bone Spring formation in New Mexico.

Q Are you familiar with the subject application?

A Yes, I am.

Q And are you familiar with the wells which are the subject of this application?

A Yes, I am.

MR. MOTE: Are the witness' qualifications acceptable?

MR. CATANACH: The witness is considered qualified.

Q If you would, take out your first exhibit, Ms. Glaser, and explain to the Examiner -- wait a minute.

MR. CATANACH: I'm sorry, what is your last name?

A Glaser.

MR. CATANACH: Thank you.

Q Turn to your first exhibit, Ms. Glaser, as I previously requested, and explain to the Examiner what's shown by this exhibit.

A This is a map showing some fields producing in southeastern New Mexico with the Scharb Field

highlighted.

Q All right, go on to your next exhibit.

A Okay. The second exhibit is up on the wall.

Q What is this exhibit, Mr. Glaser?

A This exhibit shows the Scharb Bone Spring Pool. The pool outline is indicated by the dashed line here. Amoco's acreage in the area is indicated in yellow. This will be the case on all maps shown.

The three wells in question are indicated with red arrows.

On this particular map the dots indicate wells that are producing. The purple dots indicate production from the Bone Spring. The large purple dots are currently producing wells; the small purple dots have produced in the past from the Bone Spring but are not currently producing.

The wells indicated in other color dots are producing from some other formation, primarily Morrow, Wolfcamp, and Queen, and have not produced from the Bone Spring.

Q What does the dashed line show around those wells?

A That indicates the pool boundary.

Q All right, is this going to be further

discussed later on by Mr. Scheffler, another witness who will appear in this proceeding?

A Yes, it will.

Q All right, go on to your Exhibit Number Three, if you would. What is this exhibit, Ms. Glaser?

A Exhibit Number Three is a type log section of the Bone Spring formation in this field area.

It's a composite made from the log of the Pennzoil United No. 1 Atlantic State, Atlantic Refining Company Atlantic State -- or excuse me, State 8 No. 1.

Q Would you please explain what's shown by this exhibit?

A Okay. Indicated with -- there is a color code for the producing intervals within the Bone Spring and Scharb Field.

The first of these, the Ora Jackson zone, is indicated with red -- in red. It is encased within the first Bone Springs sand.

The second interval is the Second bone Spring carbonate in which our Elkan reservoir is located. This is located in the section between the First and Second Bone Spring sands.

The third interval that is productive in this pool is what we've called the Scharb Zone and this is indicated by blue and is encased within the Second Bone

Spring Sand.

The colors that I've used on this map will be -- excuse me, on this type log, will be used on all subsequent cross sections.

Q All right. All right, turn to your Exhibit Number Four and explain what's shown with this exhibit.

A Okay. Exhibit Number Four is a structure map on top of the Second Bone Spring Sand. This is a schematic indicating the approximate positions of the shelf edges here and the position of Scharb Field relative to these shelf margins (not clearly understood) is indicated.

As you can see, dip in this area is to the north and to the east.

The carbonates in the Bone Spring are debris flow carbonates. They were sourced from these two shelf margins and the dip that is represented here on this map indicates the shape of the basin and the surface that these debris flows were deposited on and this would -- excuse me, this would be what would affect the orientation of these particular flows.

Q So what is your purpose of this exhibit, Ms. Glaser?

A To show the general structural shape in the area and the fact that the debris flows would probably be oriented roughly perpendicular to dip -- to strike, ex-

cuse me, roughly north/south in this area. Some will be roughly east/west.

Q Now this is the base of the zone which you're making application for, is that correct?

A Yes, it is.

Q So this would be the base for what's going -- what you're going to show happened --

A Yes.

Q -- in geologic age.

A This is the surface at which the debris flows in the second carbonate would be (not clearly understood).

Q All right. Let's go to your Exhibit Number Five. I believe that's on the wall as well, is it not?

A Yes, it is.

Q If you would, explain what's shown by this schematic.

A This is a block diagram schematically depicting the configuration of the debris flows in the three productive intervals in the Bone Spring in the Scharb zone, or seen in the Scharb Pool.

First I'd like to discuss what's depicted in the lower part of the block and what I've labeled as Scharb or Ora Jackson type.

What we've determined to be present there

is -- excuse me, let me stop and tell you what the colors represent.

Blue represents limestone or primarily limestone debris flows.

The pink represents primarily dolomite in lithology.

The darkness of the color indicates the coarseness of the material in question in these debris flows, with the coarser material being for the most part in the center of the debris flows. The coarser material is also most likely to be porous and with the best porosity within the individual flows.

The lower part of the block I've shown where I believe to be the orientation of the Scharb or Ora Jackson time interval. They are packages of debris flows, for the most part stacked, and they appear as pods.

In the center of the pod we have a multiple stacked debris flows and they're clean. You have a nice thick, blocky carbonate, nice (not understood). As you to the flanks they become more continuous, interbedded with siltstones, and tend to be tighter.

Further laterally you end up just having siltstones in the (not clearly understood) interval. These are totally separated from any other carbonates in the zone.

Q Now you show Scharb and Ora Jackson down

at the bottom. That's not the way those sands are oriented, is it?

A Correct. The Scharb zone is within the second sand and the Ora Jackson is in the first sand, but they are genetically the same type of material.

Q And the Ora Jackson will be on top of what you'd call the Elkan Reservoir?

A Yes, it would be.

Q Okay.

A It would be above the Elkan.

Q And what is it you're going to get your production from? Is that the pink?

A The production will probably come from the pink material. It will have the best developed porosity, dolomitization; from my work what appears to be necessary for well developed porosity in the Bone Spring.

Q And the more the dolomite content, the better chance of hydrocarbon recovery --

A That's true.

Q -- is that correct?

All right, and the gray on that, what -- what is the gray? Did you tell me what the gray was in that area?

A The gray represents what have been called the Bone Springs Sands. They're really carbonaceous silt-

stones. They're very tight. They are very good fills, permeability barriers, if you will, within the formation.

Q Now go to your Exhibit Number Six.

A I'm not through --

Q Excuse me, go ahead and finish that.

A On the upper part of the block I've depicted the Second Bone Spring Carbonate. As you can see, I've shown it as being composed of a large number of debris flows mixed in with one another or overlaying one another; some of which are the dolomitized zones and which are not.

As you can see, if you have a pod with some dolomite isolated and surrounded by other pods with no dolomite in them, there's probably no porosity; in fact, there's definitiely no porosity.

You have a permeability barrier around this individual zone. In some areas you can get stacked or adjacent pods with porosity and no permeability barrier between them, and this would be a more -- a larger reservoir, and something like this. They would both be good reservoirs.

But you can have them appearing to be stratigraphically equivalent but actually be separated laterally. They are separate pods and they would have tight pods between them (not clearly understood.)

Q Does that conclude your testimony on this

exhibit?

A One final point, I've shown these yellow intervals on this block diagram, as well. These are small sand lenses. They're coarser grained materials than the siltstones and are occasionally productive.

Q All right. let's go on to your Exhibit Number Six. I believe that's an Isopach map on the Ora Jackson, is that correct?

A Yes, it is.

Q And that's the sand which is the highest up towards the surface, is that correct?

A It's the carbonate within the first sand, yes.

Q All right, go ahead and explain what's shown on this exhibit.

A Okay. My data points on this map are all circled, the numbers, the footage indicated next to the data point is the number in feet of clean carbonate within the Ora Jackson interval.

I used a 30 API gamma ray cutoff to determine clean carbonate for consistency.

I've also Isopached these data points and, as you can see, the Isopach reveals you have a very discontinuous carbonate here. You have isolated pods throughout the field, some of which are productive; some of

which have not been productive.

The wells with red dots on them indicate wells that have either tested or produced from the Elkan -- or excuse me, the Ora Jackson zone. The large dots are currently producing; the small dots have either produced in the past or attempted production.

As you can see, we've indicated the Amoco Elkan No. 1, which is on our Elkan Lease, does have perforations open in the -- excuse me, at the Ora Jackson interval, but again, as the map shows, the pod that this was in is entirely separated from other pods in the field.

Q You mentioned clean carbonate. Does the fact that you have clean carbonate necessarily mean that the hydrocarbonates will be present?

A No, it doesn't mean they'll be present. It just means they may be present.

Q All right, and does this indicate that in the Ora Jackson that you have separate pods of accumulation of hydrocarbons?

A Yes, it does.

Q Let's go on to Exhibit Number Seven. What do you show by your Exhibit Number Seven?

A Exhibit Number Seven shows a similar map the last one. It is of the Scharb zone. It's an Isopach map and it also uses a 30 API gamma cutoff.

The blue dots on the map indicate wells that have or are producing from the Scharb zone.

As you can see by the Isopach map, there is no Scharb zone present in the west -- eastern part of the field where Amoco's wells are located.

Q We don't have one of these on the wall, do we?

A No, we don't.

MR. CATANACH: Exhibit Number Seven, Ms. Gloser?

A Number Seven, yes, sir.

Q All right, continue.

A I think that's everything on that.

Q All right, what you're showing here is the Scharb zone, which is the lowest of the three producing horizons in what we call the Scharb Bone Spring Pool, is that correct?

A Yes, it is.

Q And it seems from looking at the exhibit that almost -- well, in fact all of the production from the Scharb zone is west of a line east of the east line of Section 5, running north and south, is that correct?

A Yes.

Q And what is your dashed line that's shown on this exhibit?

A The dashed line indicates the approximate limits of the Scharb clean carbonate.

Q And what was it you said you consider a clean carbonate? What's the cutoff?

A 30 API gamma ray cutoff.

Q All right, let's go on to your Exhibit Number Eight. I believe this is a porosity map, is it not, for the Second Bone Spring carbonate?

A It is a porosity type map for the Bone Spring, Second Bone Spring carbonate.

Q All right, explain the map then in better detail to the examiner.

A There were two types of porosity logs available in this field; the older wells have sonic logs and the newer wells have CNL/FDC or CNL/LDT logs.

I've indicated all the wells with sonic with circles, and those with CNL/FDC or CNL/LDT logs with hexagons.

Using the more modern logs we can make a determination between matrix porosity and indications of vuggy and possibly fractured porosity and I have designated those.

The wells that I've coded in green I've determined have some indications of the presence of vuggy porosity; those with brown have only matrix porosity.

I did this again for clean carbonate, using a 30 API gamma ray cutoff.

As you can see, in the area that we're calling our Elkan Reservoir, we have wells that indicate green, vuggy porosity that is surrounded on all four sides, north, east, south, and west, by wells that had only tight, matrix porosity in the clean carbonate. This sets up a significant permeability barrier around our (not clearly understood).

Q What do you show by the dashed lines on this exhibit, Ms. Glaser?

A What I've shown with the dashed lines is the limits of some of these reservoirs.

The first one is, as I mentioned, is the Elkan Reservoir. There's one up in this northern portion and we don't really see what's going on in the north side; however, there may be a separate reservoir there.

There's indications of a third reservoir to the south in Section 17, and the possibility of a fourth in the southwestern portion of Section 5.

Q Sort of summing up your testimony with regard to this exhibit, the green hexagons are the ones that you have good data on. They represent vuggy porosity in -- in that zone, is that correct?

A That's correct.

Q And the brown hexagons are the ones where you don't have too good information on but they do present matrix porosity, is that correct?

A That's not correct.

Q Okay, what is correct?

A We have good data on those. We have the same data available as we do for the green hexagons.

Q Okay.

A It's just that there's only matrix porosity on those.

Q Okay.

A The uncolored circles are the ones with the poor quality data.

Q Okay. And this then would show that you have tight wells, matrix porosity, to the north, east, west, and south of what you're calling the Elkan Reservoir.

A That is correct.

Q What about the Exxon "DD" State No. 1, do you consider that well to be anomalous?

A Yes, I do. I have to --

Q Would you point it out there on the map and then explain why you think it's anamolous?

A This well is located in the southwest portion of Section 4. I've indicated it with a brown hexagon.

I've only been able to see four feet of clean carbonate within that second carbonate interval using 30 API cutoff; however, examination of the rest of log, and it will be entered as a later exhibit, shows that there are indications of vuggy porosity in some of the somewhat dirtier carbonates. It may be that this well is on the fringe of a pod and therefore has the poorer quality reservoir rock, but nonetheless has it. It was the only well that I encountered in the field that had this difference.

Q Okay. You show three lines of cross section. You're going to show those to the examiner, is that correct?

A Yes, I am.

Q Go to your A-A' cross section, which I believe you've identified as Amoco Exhibit Number Nine.

A Yes.

Q And explain what you show by this cross section.

A I've correlated the horizons as we did on the type log, with the same color code. The Ora Jackson interval is indicated in your red. The top of the Second Carbonate is in green, and the Scharb Zone in blue.

And I've also indicated the top of the well -- excuse me -- above the wells I do have the modern log suite on the interpretation vuggy versus matrix poros-

ity as was shown on that map for the Second Carbonate.

Also shown on these logs, the perforation intervals, they're indicated in red. Any cores are indicated in yellow, and the DSTs are also indicated, where present, on the right side of the logs.

I also have highlighted the clean carbonate in blue and on the wells that had indications of vuggy porosity, they're highlighted in red.

The first four wells on the cross section, the Major MM State, the Exxon Charles Alvez No. 2 and No. 1, and the Big 6 Hooper B No. 1, all have older logs and I could not make a determination of matrix versus vuggy porosity on them. They do have clean carbonate indicated.

The HNG Hooper 8 No. 1 has a modern log. It has a very small amount of clean carbonate. The porosity curves over here track indicating limestone and there's no indication of any vuggy porosity development.

The next well on the cross section is the Big 6 Ora Jackson A No. 2. They have only a sonic log on this and all I have done is highlighted clean carbonate.

The following well, the Southland Scharb 8 No. 2, we have a modern log suite. There are minor amounts of clean carbonate present in the second carbonate. The porosity logs track indicating a limey carbonate there and there's no indication of vuggy porosity.

The Southland Scharb 8 No. 1, I've indicated the cleaner carbonate in blue and there's indications of some vuggy porosity here. This is the first well, the westernmost well on this line of cross section that is in our Elkan Reservoir.

The following three wells, the Scharb -- excuse me, Southland Scharb 9 No. 1, Southland Scharb 9 No. 4, and the Poe Properties Sprinkle Federal No. 2, all have indications of clean carbonate, vuggy porosity, and are all included in their own reservoir.

The final two wells, Mesa Vacuum State No. 2 and the Mesa Vacuum State No. 3, have very little clean carbonate and seconds carbonate; have no indication of any dolomite present and have no indication of vuggy porosity. They represent the eastern boundary of our reservoir on this cross section.

Q All right, and you might point out that this cross section verifies what you previously have shown, what the extent of the Scharb zone was, also, that it goes through the Ora Jackson A No. 2, Big 6 Well, and it does not show any further east than that across your cross section, does it?

A Right, that is correct. It's present only as far west as the -- excuse me, as far east as the Big Six Ora Jackson A No. 2.

Q And the Ora Jackson comes and goes out there.

A Yes, it does. It's not present in the first well on the cross section, the Major MM State.

It's present in the following wells until you get as far east as the Southland Scharb 8 No. 2, where there is no longer any clean carbonate present in the associated interval.

You then see some carbonate again in the Southland Scharb 8 No. 1.

There's a small amount of carbonate in the Southland Scharb 9 No. 1, which is not very clean.

You've lost the clean carbonate in the Southland Scharb 9 No. 4 and the Poe Properties Sprinkle Federal No. 2.

And also in the last two wells, the Mesa Vacuum State No. 2 and 3.

Q Do you have a partial log of Exxon's DD State No. 1, which you said was the anomalous well in the area?

A Yes, I do.

Q Will you get that out, which I believe we've identified as Amoco Exhibit Ten --

A Yes.

Q -- and discuss that with the examiner?

A I've highlighted on this well four feet of clean carbonate. It's hard to see the highlight; it's in the very uppermost piece of clean carbonate in the South -- second carbonate, excuse me.

I've also highlighted in red the vuggy porosity I've been able to see in the lower portion of the second carbonate. The carbonate there does not meet the 40 -- excuse me, 30 API gamma ray cutoff but it would meet a 40 API cutoff had I used one, and I believe that is reservoir rock there.

Q Does that conclude your testimony on this type log?

A Yes.

Q All right, let's go to your Exhibit Number Eleven, which is your cross section B-B', which is the north/south cross section.

All right, would you please describe what you see on cross section B-B'?

A Again this cross section has the same items indicated as I've said on the previous cross section.

On this you can see the presence of the Scharb zone in the Superior Mescalero Ridge No. 1 and 2, Standard Hooper No. 1, Big 6 Ora Jackson A No. 2, the O'Neill Ora Jackson No. 2, and the ARCO Ora Jackson No. 1.

The O'Neill Ora Jackson No. 3 and ARCO

Jackson 5 No. 1 are indicated on this cross section. We had hoped to be able to the logs for you but we were unable to.

The final well on the cross section is the Big 6 Ora Jackson No. 2. The Scharb zone is not present here (not clearly understood).

As far as clean carbonate in the second carbonate, the southernmost well, the Gulf's Peoples Security D No. 1, has no clean carbonate indicated and no indication of vuggy porosity.

The Superior Mescalero Ridge No. 1 and 2 both have some clean carbonate indicated and some vuggy porosity highlighted in red.

The Standard Hooper No. 1 has a sonic log, as does the Big 6 Ora Jackson A No. 2.

The O'Neill Ora Jackson No. 2 has a modern log suite. I've highlighted the clean carbonate and the vuggy porosity.

The ARCO Ora Jackson No. 1 has a sonic log, as does the Big 6 Ora Jackson No. 2, so I was not able to make a determination on these wells.

Q Does that conclude your testimony with regard to this exhibit?

A Yes.

Q All right, let's go to your cross section C-C', which is believe is identified as Amoco Exhibit Number

Twelve.

All right, go ahead and explain what's shown by your C-C' cross section.

A This cross section runs roughly from west to east, beginning with the Big 6 Ora Jackson A No. 2 and ending with the Amoco State MX No. 1.

Again on this cross section you can see the discontinuous nature of the Ora Jackson interval. I have it highlighted in red.

The interval is present in the Southland Scharb A No. 2 but it's not clean, indicating there's a break between the Big 6 Ora Jackson A No. 2 and the Amoco Snyder Ranch A No. 1. Oh, excuse me, it's not present in the Snyder Ranch No. 1, either. The interval is correlated but there is no clean carbonate.

In the second carbonate, again, the Big 6 Ora Jackson A No. 2 has a sonic log so I wasn't able to determine porosity type.

The Southland Scharb 8 No. 2 has some clean carbonate; no indications of vuggy porosity.

The same is the case in the Amoco Snyder Ranch No. 1 and the Southland Scharb 9 No. 3.

In the Southland Scharb 9 No. 3 there is some clean carbonate with indications of vuggy porosity in the Ora Jackson interval and the perforations are open in

this interval.

Amoco Elkan No. 1 has some carbonate, vuggy porosity in the second carbonate, as does the 3, 4 -- excuse me, the 3, the 4, and the 2.

The Amoco No. 1 also has some clean carbonate in the Ora Jackson zone with perforations open; however, there's no indication of vuggy porosity in this well in that interval and I believe the oil recovered is most likely coming out of the second carbonate.

The final well on the cross section is the Amoco State MX No. 1. It has no clean carbonate in the second carbonate interval; no indication of either dolomite or vuggy porosity.

Perforations that are open in this well are in the Ora Jackson zone. There's really no clean carbonate in this zone, either.

The coring -- excuse me. The determination of the type of material that we're dealing with here is not that it is clean carbonate; it's not a dolomitic reflow. It's a sandy carbonate, similar to those lenses I described on Exhibit Number Five, and it has a different kind of porosity development than we have seen in the (not clearly understood.)

Q With regard to the application, you show here four Amoco Elkan wells. Two of those wells, I believe

it's 1 and 2, have already been approved, have they not, for 102 classification?

A Yes, they have.

Q And the 3 and the 4 are the subject of this application, is that correct?

A That's correct.

Q All right, and you think they're all completed in what you call the Elkan reservoir?

A That's correct.

Q And that, in your opinion, is a separate and distinct reservoir.

A Yes.

Q How about the Amoco State MX No. 1, the one that you called awhile ago as an anomalous well, is it completed also in a separate reservoir, in your opinion?

A Yes, it is. It's not in the second carbonate. It's in the Ora Jackson zone and it is separate from the other producers in the -- excuse me, in the Ora Jackson zone.

It's also in a different type of reservoir.

Q Okay. Go back over here to your Exhibit Number Eight.

Point out again for the examiner what you consider to be the Elkan reservoir.

A I consider it to be the area enclosed by the dashed red line, with the possible exception that I would probably include the Exxon State DD No. 1 in that reservoir, as well. It's on the fringe of the reservoir.

Q So that heart-shaped, big reservoir to the more or less right of that exhibit, is that correct?

A That's correct.

Q And I believe you already stated, but to make it clear for the record, do you consider this Elkan reservoir to be a separate and distinct reservoir --

A Yes, I --

Q -- with its own source of supply?

A Yes.

Q Now, you might come over here to Exhibit Number Five and explain why you believe that to be true.

A I believe it to be true because I believe the Elkan reservoir to be composed of a series of different pods of debris that have been dolomitized and are separated by undolomitized, effectively impermeable other debris flows for the rest -- for the producing wells in there.

Q And the pods that -- is it possible for a well to be completed in more than one of those pink dolomitized areas as shown in this schematic?

A Yes, it is. In fact it's most probable that they will be completed in more than one zone.

Q Do you think it's possible, maybe, that the anomalous well that we talked about may be completed in more than one pod?

A Yes, it may be. It may be completed in more than one or two zones.

Q Okay. Then to sum up your testimony, is it your testimony that the Elkan reservoir, which you show on Exhibit Number Eight enclosed in the red dashed line, is a separate reservoir and you determined this by your examination of logs surrounding that area from north to west, east, and south, and found clean carbonate with only matrix porosity, which constitutes a permeability barrier?

A Yes.

MR. MOTE: That concludes the testimony from this witness and we offer Exhibits One through Twelve into evidence.

MR. CATANACH: Exhibits One through Twelve will be admitted into evidence.

Q One other question, Ms. Glaser. These exhibits were prepared by you or under your supervision and direction, is that correct?

A That's correct.

CROSS EXAMINATION

BY MR. STOGNER:

Q Ms. Glaser, am I pronouncing that right?

A Close.

Q What is it?

A Glaser.

Q Glaser. Ms. Glaser, let's refer to Exhibit Number One.

The dashed lines are the pool boundaries?

A Yes.

Q And that is what pool?

A The Scharb Bone Spring Pool.

Q Do you know the history of the Scharb Bone Spring Pool, how it was extended and when?

A I'm not familiar with it but I believe the engineer is.

Q Do you understand how pool boundaries are formed?

A No, I don't.

Q You don't know if they're formed on geological reasons or engineering reasons?

A No, I had assumed that it was a combination of both, but I do not know.

Q If it was a combination of both, did you have anything to do with extending it into the Amoco ac-

reage?

A No, I did not.

Q So you don't know how pool boundaries are extended?

A I have not been involved in attempting to get a pool boundary extended so I do not know.

MR. MOTE: Who is?

A I do not know.

Q Do you know how the vertical boundary is determined in this pool?

A If it is like other Bone Spring fields that I've been acquainted with it is based on the formation itself. Anything between the completion of the Delaware Group and the Wolfcamp is considered Bone Spring.

Q What is the vertical boundaries of the Bone Spring?

A I have indicated them on the type log. That's Exhibit Number Three.

It would be between the purple line at the top, labeled Top of Bone Spring Formation, and the aqua line at the base, indicated Top Wolfcamp Formation.

Q While I have this Exhibit Number Three out, the perforations in which your three wells that are the subject of determination today, and the other two wells that already have 102 pricing on them, what zone are they per-

forated in?

A The four Elkan wells are in the interval between the green line and the yellow line. They're in the Bone Spring Carbonate.

The MX Well is in the Ora Jackson zone, indicated in red.

Excuse me, the Elkan No. 1 has perforations open in the Ora Jackson zone.

Q The MX Well is completed in the Ora Jackson?

A Uh-huh.

Q And the other Elkans wells, all of those, they're solely --

A They're in --

Q -- I'm sorry.

A They're in the second carbonate.

Q Extending between the red zone and the green zone?

A No, from the top, from the line indicated in green to the yellow line below it; between the top of the second carbonate and the top of the Second Bone Spring Sand.

Q We'll call that sand Elkan and the other one Ora Jackson, is that right?

A In our reservoir, yes.

Q But none of your perforations extend out-

side the green zone in your Elkans wells?

A Only in the Elkan No. 1.

Q How far does that extend?

A Well, they are separate perforations. They're also in the Ora Jackson zone. It's not a continuous patch, at least not to my knowledge.

Q I'm still somewhat confused. Can you show me the horizontal extent of this Elkan sand?

A It's a carbonate zone.

Q Okay, what is the horizontal extent across this area on one of these exhibits?

A Okay. On, actually I believe I'll use Exhibit Number Eight, what we are calling the Elkan reservoir is encased within the second carbonate and I've shown the limits by this dashed red line that's based on the permeability barrier.

The entire second carbonate is present from my work (not clearly understood) and is a regional interval.

Q Explain to me what you mean by porosity boundary.

A Okay, a difference in porosity type between what the reservoir rock is in the Elkan interval and the equivalent section around it, the matrix porosity in the clean carbonate and the wells surrounding our Elkan reser-

voir.

The matrix porosity has about 2 or 3 percent porosity that is essentially a permeability barrier in this formation.

Q And your cutoff is two percent around that dotted red line?

A It's matrix porosity. It's not a number value cutoff. It's matrix porosity.

Q So outside that red dashed area the porosity could continue.

A Which porosity are you talking about?

Q Okay, then I'm sitll confused. What does the red dashed line mean?

A The red dashed line is the limits of the vuggy porosity in our Elkan reservoir.

Q Can you show me a zero porosity line?

A No, I cannot show you zero porosity.

Q You cannot, so you don't know where that zero porosity line is?

A I don't believe there's a zero porosity line in this reservoir. I mean, not in the reservoir, excuse me, in the carbonate that I've been showing.

Q So on your cross section you do show that green line extending.

Are you familiar in your studies with a

Big 6 Drilling Ora Jackson Well No. 1 located in Section 5?

A Yes, I'm familiar with it.

Q Is that a part of your cross sections here?

A It's not on any of the cross sections here.

Q Okay. When your studies showed, did you have a log for that well?

A Yes, sir.

Q You chose not to put it on your cross section line?

A That's correct. I (Not clearly understood.)

Q Why did you not choose this one particular well?

A I didn't deliberately omit any wells. I chose the cross section lines to best represent what we were trying to show was Elkan reservoir.

I used the maps to show what was going on with the rest of the wells in the field.

Q Do you know which well in the pool was the discovery well?

A For the original Bone Spring Pool? I believe it's the Marathon State MTA No. 1, located in Section 4.

Q Did you use that well in any of your cross sections?

A No, I did not. The well has a sonic log on it, and I'm not even sure that the sonic log (not clearly understood).

Q Do you know where the perforations are in that well?

A Not off the top of my head, I don't. I know it was perforated in the Scharb interval, Scharb zone.

Q Does your Elkans well extend into those areas where the Big 6 Drilling well I just alluded to and your Marathon discovery well?

A Would you rephrase that question again?

Q Does your Elkan zone extend over to those two wells?

A The Elkan zone, not as we have defined, no, the second carbonate --

Q But you just got through telling me there was no zero porosity line anywhere.

A The reservoir we're discussing is made up of debris flows. It's a package of debris flows, the whole second carbonate is. Individual debris flows may not be in connection with each other. There may be permeable -- excuse me, permeability barriers between them.

The fact that the carbonate interval ex

tends that far does not mean there's permeability between individual flows laterally. I don't believe there is.

MR. STOGNER: I have no further questions.

MR. MOTE: If I may, I have one more question I want to ask her.

REIRECT EXAMINATION

BY MR. MOTE:

Q Ms. Glaser, you were asked questions concerning a zero porosity and you said, I believe you said, that you did not or could not draw a zero porosity line.

A That's correct.

Q Can you explain why that's -- you don't believe that's -- you don't believe that's necessary or why you cannot, by coming back to Section 5 and describing again the condition of what you consider to be the Elkan reservoir?

A As I said, I believe the Elkan reservoir is composed of a number of debris flows that have been dolomitizied.

The reservoir itself is encased within the second carbonate which is composed of more of these debris flows, the majority of which have not been dolomitized.

In order to have permeability between these flows, you need to have dolomite; you need to have some kind of communication. In these limestone flows that do not have their porosity, their original matrix porosity, enhanced, you do not get the kind of communication that you need to extend the reservoir any further than I have on my Exhibit Number Eight.

In drawing a porosity line, I wouldn't know where to start, or I mean how to draw a line. You can't map these individual flows. You can only map boundaries of -- excuse me, you can only map the second carbonate itself as an interval, unlike the Scharb and the Ora Jackson intervals, they are not encased and a lithology of a different type, you cannot map their lateral limits.

We know that they're the reflows. We can see the separation indicated by the different types of porosity. Drawing a zero porosity line, or trying to draw a porosity map based on the Scharb second carbonate would not really reflect what was really occuring in that package.

MR. MOTE: I believe that's all the questions I have.

RECROSS EXAMINATION

BY MR. STOGNER:

Q Let's stay with this exhibit here. Is

this drawn to scale with any of your other maps?

A No, it's a schematic.

Q Just a representation --

A Yes, it is.

Q -- of what's out there. Now you said that -- I believe that you said that you can't map the individual flows throughout this period, is that right?

A I don't believe that you can.

Q Okay, so that one particular flow could go off anywhere in this reservoir, is that right?

A It could go off anywhere but, if I may, the thickness of the flows that we've seen this far from the shelf edge, they generally range from a few inched to at most 30 feet.

The nature of debris flows are thick, 30 feet in the center. They're not going to extend all that far laterally. They probably will not extend over the entire field, the individual flows. Even if they did, the more porous part would be in the thicker, cleaner, center part, and even if the flow did extend across the field, the porosity within the individual flows would probably not.

Q How long are these flows usually?

A Well, I can't hardly say because we've never been able to map just one. The best we've been able to do is map something like a to do is map something like a

Scharb or Ora Jackson zone which, again, is composed of a number of different flows.

They're thin. They're not very widespread. The interval in the Scharb zone is a very coherent one in this area and it tends to be approximately four miles wide in this area. It runs about 12-13 miles from the shelf margin to the zone four miles wide, and that is not one pod. It's something unusual, in my experience.

But these flows are very thick; we could map them.

Q Do these flows tend to take place in one particular area or extend over the whole pool?

A In the case of the Scharb or Ora Jackson type, they are localized occurrences and they've occurred primarily in the area of what is now section or Township 19, 34; 19, 35; 18, 34 and 18, 35. They're not present regionally.

The interval in the second carbonate and also the third carbonate, which is indicated on the type log, this entire interval can be correlated regionally. There was a very long episode of multiple debris flows and ended up a veritable sheet of debris composed of many, many individual pods.

I'm not sure if I answered the question or not.

Q Are these pods interconnected in any way geologically?

A They're physically in place individually. It would take digenesis to connect them and I believe that is what has happened in our Elkan reservoir.

Q I'm sorry, what do you mean by digenesis?

A Chemical change in the rock after burial. In this case, dolomitization. It enhances porosity and allows for -- the dolomite will fracture more easily than the limestone. It allows more fracturing to occur and therefore some permeability to develop.

Q So generally there is not crossflow --

A That's correct.

Q -- between the two pods.

A And in fact, the last time I checked, out of 62 Bone Spring fields most of them were a 35 or one well field (sic) and most of these had been offset a number of times and you couldn't even offset one proration unit.

So your individual reservoirs are that small; they're probably just one pod.

Q In the three particular Elkans wells do you feel that there's three separate pods or do you feel you got lucky and had one pod or --

A In my opinion what happened is there are a number of pods, similar to what I've depicted here, that

are not stacked right on top of each other but close enough that when you drill the well through you would catch a number of pods.

Each well does not necessarily have a different pod or be in the same pod but they may each encounter similar pods or some -- one would encounter two pods, another would encounter one pod, the other one had a third pod; that sort of thing. That's what I meant by that.

Q Okay. Does the rock makeup in these pods, do they vary from pod to pod or are they basically similar in type?

A From the core that we've been able to look at they appear to be similar in type. As opposed to a large amount of material derived from the shelf, some of it was clasts from the shelf edge, reef-type material. Some of it is actually siltstone from further back on the shelf. They're all encased in siltstone. Even within these pods there's some siltstone matrix.

I could maybe show you an example, if you want.

Q Please do.

A This is from a well that's not within the pool. It's just an example of a debris flow. The dark material in that portion of the core, the siltstones, represent what have been called Bone Spring sands; it's that type

of material.

The other material in there are shelf-derived clasts, C-L-A-S-T-S.

The porosity development in this type of rock usually occurs in the clasts and then through fracturing these clasts may be connected within your common reservoir.

Q And this type of material is what's similar --

A Yes.

Q -- is what you're saying.

A It's debris flow.

Q In the area between your -- in your Elkan wells, what are some of the other wells that are penetrated within this Elkan zone, as we call it?

A You mean what wells can be included in the reservoir?

Q Is there any other perforations in the Elkan zone through any other wells besides your --

A Oh, yes.

Q -- your wells?

A All those that we've shown enclosed in that red, dashed line in the eastern portion of the area.

Q And you made a study of all those wells within that?

A I looked at the logs on all of them.

Q Are there any logs older than 1977?

A Where?

Q Within that red area?

A Yes, there is one.

Q Which one is that?

A The Big 6 Drilling Marathon State No. 1.

Q And could you give me the location on that well?

A It's located in Section 4 in the southwest quarter of the southeast quarter.

Q Okay. Did you include that well on your cross sections? It has a sonic log only and it was not (not clearly understood.)

A No, I did not.

Q Do you know what the perforations in that particular well is?

A To my knowledge it wasn't perforated. Mr. Scheffler can probably tell you more about that. All I know about the well is that they drilled it and they didn't test it.

Q But it did penetrate that Elkan zone.

A I believe it did.

Q The Ora Jackson zone, is it -- is that flow characteristic the same as what the Elkans is?

A No, it's more similar to the Scharb zone. It represents a time period where some debris flows came down; not enough to represent a sheet and it resulted in the isolated pod development that I've shown on the Ora Jackson, and that's Exhibit Number Six.

Q On Exhibit Number Six you have some pods up in the center of the map and then back to the east of there, and then toward the center and then down to the south.

A Yes.

Q Are these all Ora Jackson pods?

A They are part of the pods of clean carbonate in the Ora Jackson, yes.

Q What separates the pods?

A They are separated by either siltstones or tighter carbonates in the Ora Jackson interval.

Q So your outer line on each pod, what action does that represent?

A That represents a five foot Isopach line of clean carbonate; potential reservoir rock.

There are zeros on this map, as well. I did not draw a zero line.

Q Did you zero line encompass any two of the pods?

A It might encompass the pod in Section 6,

with a smaller pod in Section 8, but none of the others would be included with each other. They would be separate.

Q Did you feel you had enough control in the area not to extend that zero line to encompass --

A Yes.

Q -- any more than that?

Your MX Well No. 1, I believe, is that right?

A Yes.

Q Is that encompassed by one single pod or --

A No, it shows zero. There's no clean carbonate in that area. That's the one I believe was in a silty -- excuse me, sandy carbonate and it's a different type of reservoir.

Q Okay. Now this particular type of reservoir that's in the MX --

A Uh-huh.

Q -- is it laid down in a sheet across this area?

A From my experience these sandy intervals are very, very few and far between in the Bone Spring and for the most part have been encountered in one or two scattered wells.

In this case this is the only well in

this field that I've found to be --

Q There is a zero porosity line in that particular area encompassing that.

A Encompassing the MX Well?

Q Yes.

A I haven't drawn one but one could be drawn.

Q Does your Exhibit Number Five, does it shows that Ora Jackson deposit?

A The carbonate or the one we're discussing in the MX?

Q The one we're discussing in the MX.

A That's represented by these yellow lenses encased in siltstone.

Q And if one had enough control around those, those would be very easy to map out, would they not?

A Yes, they would with enough control and if they were marginal.

Q I notice in Exhibit Number Five, you've got the yellow lenses down in the carbonate, the gray area.

A In the siltstone.

Q In the siltstone, I'm sorry, in the siltstone in the gray area. What kind of porosity does that siltstone have?

A I can't quote you a (not clearly

stood).

MR. STOGNER: I have no further questions of this witness.

REDIRECT EXAMINATION

BY MR. MOTE:

Q Ms. Glaser.

A Yes.

Q Examiner Stogner asked you about the Big 6 Marathon Drilling State No. 1.

A Yes.

Q Are you familiar with that well?

A Yes.

Q Do you know when it was completed?

A I can't give you the exact date, no.

Q Can you give me about the time it was completed? If you can't we can --

A I can't.

Q Has it been plugged and abandoned?

A Yes, it has.

Q A long time ago?

A Yes.

Q How many logs, generally speaking, did you look at, just roughly, to get ready for your testimony in this case in this area?

A For this particular area?

Q Yes.

A Somewhere around seventy.

Q And how many wells did you look at in connection with your study?

A My study?

Q Yes.

A Not for this field; not for this hearing necessarily?

Q For this hearing, yes.

A For this hearing approximately seventy wells. Actually I looked at more logs because I looked at more than one log for each well.

Q You discussed with Mr. Stogner, also, a question of a sonic log as compared with the other logs.

A Yes.

Q Why did you not consider sonic logs to be -- to be of as much value as more logs?

A There are two types of porosity that we're dealing with here. I've called them matrix and vuggy.

The matrix is what is usually called primary porosity, occurs very early on.

The vuggy porosity is what we call secondary porosity.

The sonic logs because of their nature do

not normally see secondary porosity. Sometimes they do, sometimes they don't. It makes them unreliable.

Q You have shown some sonic logs in your cross sections.

A Yes, I have.

Q But you haven't given them much -- much verification from the standpoint of whether or not it's matrix or vuggy porosity.

A I looked to see if there were any indications of vuggy porosity. There were none in the sonic logs.

MR. MOTE: I believe I have no further questions.

MR. CATANACH: This witness may be excused.

MR. MOTE: I'll next call Mr. Scheffler.

STEPHEN P. SCHEFFLER,

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

DIRECT EXAMINATION

BY MR. MOTE:

Q If you would, please, state your name, by whom employed, in what capacity and location.

A Stephen Paul Scheffler. I'm employed by Amoco Production Company and I work in our Houston Regional Office in our Proration Group, and I am a staff petroleum engineer.

Q Have you previously testified before the Oil Conservation Division and have your credentials as an expert in the field of petroleum engineering been accepted?

A Yes, sir.

Q Are you familiar with the subject matter of this application?

A Yes, sir.

Q And are you familiar with the Scharb Bone Spring Pool?

A Yes, sir.

MR. MOTE: Is there any question concerning Mr. Scheffler's qualifications?

MR. CATANACH: Mr. Scheffler is considered qualified.

Q You'll be asked to testify concerning certain exhibits. Were these exhibits either prepared by you or under your supervision and direction?

A Yes, sir, they were.

Q All right, go to your -- go back first to Exhibit Number Two that's already been placed in evidence by Ms. Glaser.

Is there anything else with regard to this exhibit that you'd like to add?

A Yes, sir, in answer to some of the Examiner's earlier questions.

To help answer some of those earlier questions, the discovery well in this pool which has earlier been described as outlined by the dark, dashed line, was the Marathon State MTA No. 1 Well, and this well was drilled in approximately 1960, actually 1959, as I recall. It was completed in the Scharb zone and that well was drilled to a TD of 14,647 feet and tested quite a few intervals up and down the hole.

Subsequent to that test development of the field took place towards the west. The majority of that production that occurred towards the west occurred from this lower interval which we've been referring to as the Scharb.

Some of the other information that I'd like to point out at this point in time on this exhibit, I've shown for each of the wells that subsequently were developed following the completion of the initial well, and those are all shown as Scharb Bone Spring Pool wells by the purple dots, those purple dots that are the larger ones are the active wells currently, and this was as of December, 1985.

I've shown above each of those large dots

the production, steady production, as averaged for the month of December, as barrels of oil per day; MCFD is barrels of water per day, in the parentheses.

Below each of these, all of the wells, I've shown a completion date. That's month, date, and year, as well was the well's TD.

As the development of this field took place towards the west, with the main portion of the Scharb Bone Springs Pool being developed in the Scharb, there was a successful step-out to the east -- I'm sorry, developed towards the east, there was a successful step-out to the east, the Southland Scharb 4 No. 1 Well was drilled in the southwest quarter southwest quarter of Section 4, as shown by the orange underlined area.

That particular well encountered what we're describing to you today, the Elkan resevoir, the second carbonate.

That particular well was completed in July of 1980 and its initial rates were realized in September of 1980.

So this is one of the first wells that was drilled, the first well, described to you today as the Elkan Reservoir, the second carbonate.

With regard to the well that she mentioned earlier, the Big 6 Drilling Marathon State No. 1 Well

located in the southeast quarter of Section 4, that well as drilled and abandoned in May of 1964.

And I think that concludes my testimony on this exhibit.

Q While you're over there, do you show production records by each of those wells?

A Yes, I do. I show a daily rate, an average daily rate for the month of December, the last information that we -- this is where we made your cutoff beginning this study for information that we'd be showing the Commission here today.

Q All right, let's come back and have a seat and we'll go into your next exhibit.

Get out your Exhibit Number Thirteen.

What is your Exhibit Number Thirteen, Mr. Scheffler?

A Exhibit Number Thirteen is a partial performance history of the Scharb Bone Springs Pool. This is all the wells in the pool that were producing as of January 1st of 1970 through December of 1985.

As I mentioned earlier, this -- I didn't mention it but I should now -- this pool was actually set up in 1963, so there's some -- some production that existed in this pool prior to 1970, from 1963 to 19 -- through 1969. We didn't have the availability of that date readily at hand

so what we did is use a more current performance curve here, but the purpose, really, of this curve is to show you that again production continued along a relatively consistent decline from all the wells that were in the pool through about the third quarter of 1980, where I have that orange dot.

That orange dot represents the approximately point in time where that Southland Scharb 4 No. 1 Well was drilled. It was at that point in time that there began, because of the successful completion realized in that well in the Elkan reservoir, there began a step-out to the east that resulted in significant wells being drilled, as are indicated on the map that I just reviewed, and as you can see, the resulting production which came primarily from that area was quite significant. This production can be considered to be primarily from the Elkan reservoir area; not all of it but most of it.

So the purpose really for this is to point out just how much production we actually have realized and the type of the performance trend increase that we've seen relative to that easternmost development in this Scharb Bone Springs Pool area.

Q Mr. Scheffler, have you made a study as to the ultimate recovery that you believe will be obtained from the Scharb zone?

A Yes, sir.

Q All right, is that the subject of Exhibit Number Fourteen?

A Yes, sir. I've shown on Exhibit Fourteen an ultimate recovery contour map and this map is with regard to only the Scharb interval that we spoke of earlier, that is the deepest interval in the Scharb Bone Springs Pool.

As you can see on here, what I've done is contour with a 50 MBL contour interval, anticipated ultimate recovery from each of the completions that were realized in the Scharb interval.

The light blue are the -- the light blue dots identify various wells that were either completed in or a completion was attempted in the Scharb interval.

The large blue dots show wells that are currently still active. The small blue dots show wells that are previously produced or there was an attempt to complete in those wells but it was unsuccessful.

I should point out that below each of those dots is identified, or off the left or right or above in some cases, is identified -- the number that's on top of the two numbers shown is the anticipate ultimate cumulative recovery. Below that number is a date, that's month and year, which addresses the initial production date from that particular well or the date of the attempted completion if there was no cumulative recorded.

The example of that might be, if we go to Section 8 in the northwest quarter of the northwest quarter, the HNG No. Hooper 8 No. 1, there was a test attempted in the Scharb there in 4 of 84 but nothing was recovered.

Q As of what date is the well status shown on this exhibit?

A This would be as of, again, December, 1985.

Q All right, does this conform to the geologic interpretation presented by Ms. Glaser?

A It conforms very well. I don't see that map on the wall but I don't recall the exhibit, but if we were to look at the exhibit in which she Isopached the Scharb clean carbonate, you can see that this conforms well with the shape. You would see also that, as we have spoken about here, the production has -- from the Scharb has remained to the west of the easternmost section lines of Section 8.

Q All right, go to your Exhibit Number Fifteen.

I believe this is a contour map of the ultimate recovery in the Second Bone Springs as a whole, is that correct?

A Yes, sir, that's correct.

Q All right, explain what you show on this exhibit.

A This is a similar map as the one that I just previously discussed. On this map I have shown again an ultimate recovery contour that is again contoured on 50 MBO recovery.

I've shown with the light green dots on this exhibit the area I have defined as the Elkan reservoir within the second carbonate.

The dark green dots that are surrounding this Elkan reservoir area represent inactive -- represent active and inactive wells as of December of 1985 that may be completed or completion attemtps were made, in the Second Bone Springs Carb Area.

What I've also shown is the estimated ultimate recovery by each one of these wells in terms of MBO and the date of first production or the date of the production test.

The other thing I'd like to point out here is that if you recall, and I think if we refer to the Exhibit Number 8 that's hanging over there on the wall with the cross section, the reservoir area that I've defined here through performance, ultimate cumulative recoveries, conforms fairly well, very well, as a matter of fact, with the approximate, or the boundaries that we've set up for our Elkan reserovir area.

What I've shown here is two pods of

development, remembering, of course, we're talking about the outermost contour here being in MBO interval, but I've shown two pods that can be shown to overlay very well in terms of a review of performance on top of the Elkan reservoir area based upon the geological interpretation, geological model that the geological witness has reviewed earlier.

The last bit of information I guess I should point out on this well -- on this particular exhibit, is that I have what I've called -- identified, rather, what I will call line of performance that I'm going to review here next for wells that lie within the Elkan reservoir area, and then I will compare the type of performance that we've seen for wells from the Elkan reservoir area that lie in the outlying second carbonate area.

I will show you that there is a significant difference in performance when we're talking about wells within the Elkan reservoir, because those wells exhibit performance characteristics for a reservoir that has a fractured, vugular type of porosity development, significantly different from the type fo performance you would see and will see in those wells in the outlying second carbonate area where you have just the very tight matrix porosity development.

Q On this exhibit, Mr. Scheffler, the green, the light green dots that you show on here are the

wells which are contained within the red outline, the sort of heart-shaped Elkan reservoir shown on Exhibit Number Eight?

A Yes, sir, that is correct.

Q And so if you drew a dashed line around all of those light green wells, it would conform to the geologic interpretation, is that what you're saying?

A Yes, sir, it would. I might point out that the anomalous well that the geological witness referred to, the Exxon New Mexico State DD No. 1 has a light green dot on it. If you look at that well, it's located in the southwest quarter of Section 4, just to the east of the Southland Scharb 4 No. 1 Well, which has the tight area around it, but that well, yes, I would include in the Elkan reservoir.

Q Let's go on to your performance curves. I believe you've listed these Exhibits Sixteen through Twenty-Eight.

If you would, just go ahead and describe the exhibit and tell us what the exhibit purports to show and which well is shows and what you interpret from that exhibit.

A To orient the examiners, I'd like to start with the first well in my line of performance and that well is the Amoco Elkan No. 4 Well. It's the well that lies

in the southeast quarter of the southwest quarter of Section 9. It's the first well down near the -- in the yellow colored acreage with the red dot on it.

What I've shown as a performance curve for that well, as you can see, that well initially potentialed at a very high -- at a high rate of 120 barrels of oil per day. It was completed in April of 1985. It shows a steady production rate that was realized at initial potential. This again is through December of 1985 and as of that time it had cumed some 43,000 barrels of oil. I've shown the projected ultimate on the contour map.

Moving up the line of performance to the next well, the Elkan No. 3 Well, which is the second well which is the subject of this application, the previous well being the first well.

Q And you're on Exhibit Number Seventeen.

A And I'm on Exhibit Seventeen. You can see again this well initially potentialed at a high rate of 293 barrels of oil per day and has maintained a consistently high producing rate as of 12 of '85 since its initial completion. The well has cumed as of that date over 88,000 barrels of oil.

Moving along to Exhibit Number Eighteen, and after the next well's in the Elkan reservoir, the Southland Scharb 9 No. 2 Well, that well was completed in June of

'83. It initially potentialed some 257 barrels of oil per day pumping. The well is still producing, as were the previous wells.

It has cumed some 201,000 barrels of oil; a very good well, which in my opinion would indicate that it is into an extensive fractured, vugular system that is allowing the well to recover that type of reserves.

The performance is indicative as well of the type of performance I would expect from a well that is encountering vugular and fractured type of porosity.

The next well, the Southland Scharb 9 No. 4 Well has recovered some 51,000 barrels of oil. That well IP'ed flowing 406 barrels of oil per day, consistent with the high rates; as a matter of fact, higher than the previous wells. It maintained a rate over 100 barrels a day for some time. The well is still producing and as of 12 of '85, as I had mentioned, it had cumed some 51,000 barrels of oil.

Q That was on Exhibit Nineteen.

A That was Exhibit Nineteen, yes, sir.

Moving to Exhibit Number Twenty, we move to the Scharb 4 No. 1 Well, the well that I indicated to you earlier was the first successful step-out to the east that we feel was the first well that encountered the Elkan reservoir area.

This well was completed in 9 of 80 and IP'ed flowing 400 barrels of oil per day. Again as you can see, the well maintained a relatively -- a very good rate for a long time. It's still producing and as I mentioned, or as I will mention now, it cumed some 213,000 barrels of oil as of December, 1985.

I would like to point out to you, as you can see on this particular curve, that there was a significant increase in production that was realized in June of 1984. This resulted in the opening of some additional pay in the Elkan interval itself. There was an increase in production from approximately 40 barrels of oil per day up to 577 barrels of oil per day. This is -- this is indicative and consistent with the type of model that the geological witness was describing to you earlier in that here we have a situation where very likely there are two separate pods that are lying on top of one another that don't -- might not necessarily be in pressure communication, and as a result of that there is some seal, perhaps, between the two. When you pop the upper interval you are able to encounter production that was not being realized out of the lower interval; thus the increase in production that we see.

The next exhibit is the Exxon New Mexico State DD No. 1. Again this has a similar performance to those wells we've looked at in the past. This well IP'd at

223 barrels of oil per day. Currently that well is shut in. It's cumed some 95 MBO.

Q That was Exhibit Twenty-one --

A Yes.

Q -- you just talked about.

A Yes, sir.

The next well, Exhibit Number Twenty-two is the last well that I will review in the Elkan reservoir before I compare the similar performance in the offsetting second carbonate matrix porosity.

This is the Vacuum State No. 1 Well. It's cumed some 102 MBO; again very similar performance. It potentialed high, flowing 190 barrels of oil per day and the well is still producing.

As we move out of the Elkan reservoir into the second Bone Springs carbonate, matrix porosity, you can see a significant difference in the type of performance that we realize in this particular portion of the second carbonate.

Here we have a well that was recompleted from the Wolfcamp to the Elkan in May of 1984. It IP'ed at 17 barrels of oil per day.

The status is it is currently shut-in, as you would expect from a tight matrix; it recovered 1000 barrels of oil; insignificant recovery.

Q That was Exhibit Twenty-three you just talked about.

A Yes, sir.

Q All right.

A Exhibit Twenty-four shows the next well in my line of performance, the Smith 5 No. 4 Well.

The well was completed in October of '84; IP'ed at 4 barrels of oil per day. The well is still producing at about 2 barrels of oil per day and this was as of December of 1985.

It's cumed all of a little over 1 MBO; again, typical matrix performance.

The Smith 5 No. 1 Well on Exhibit Twenty-five, the next exhibit, shows the, again, performance that is typical of a very poor matrix porosity area. This well was recompleted from the Wolfcamp to the Elkan in October of '81; IP'ed 35 barrels of oil per day. It is currently producing at about 6 barrels of oil per day and it's cumed, oh, just at 11 MBO. Projected recovery may be as high as 13 MBO.

The next well, the Scharb 8 No. 1 -- No. 2 Well was completed in December of '84. It IP'ed at 13 barrels of oil per day and it's currently shut-in. It recovered all of 322 barrels of oil.

Q That was shown on Exhibit Twenty-six.

A Yes, sir.

Exhibit Twenty-seven shows the Scharb 9 No. 3, the last well that I'll be reviewing in the outlying second carbonate matrix porosity area.

This well was completed in November of '83 in the Elkan and the Ora Jackson; both intervals are open.

The well potentialed at 5 barrels of oil per day. It is currently shut-in and it's cumed about 1.7 MBO.

For comparison purposes, as we move back into the Elkan reservoir, I've attached a performance curve for the Elkan No. 1 Well. This well was completed in May of '82. It cumed or it potentialed flowing 325 barrels of oil per day. It has a consistently long history of very high performance.

It has cumed as of December of '85 some 467 MBO. The well is still producing and again the well is very, very indicative to me of a reservoir that's completely separate and apart from the type of reservoir that I've described to you in these outlying Second Bone Springs carbonate wells.

This well had a -- I might point out to you that this well was completed in both the Elkan and Ora Jackson. This is the well that the geological witness was

referring to you earlier had both sets of perforations open.

We ran a production log in this well in June of 1982, very soon after it was initially completed, and found that there was no fluid influx from the Ora Jackson in that interval. This production is coming from the Elkan reservoir.

As I mentioned, the well is still producing.

Q That's Exhibit Eight you've been -- Exhibit Twenty-eight that you've just been discussing, is that --

A That's correct.

Q -- correct?

A And that completes my comparison of wells along what I've called the line of performance.

Q Mr. Scheffler, does the performance history of these wells indicate a permeability barrier in the second carbonate which would separate the Elkan reservoir from the remainder of the second carbonate consistent with the geologic model?

A Yes, sir, I believe it does.

Q Do you have any comparison of reservoir pressures in this reservoir?

A I have analyzed reservoir pressures in an attempt to show that there is vertical separation between

the Ora Jackson, the Second Bone Springs carbonate interval, and the Upper -- excuse me, the Ora Jackson, starting from the top down, the Second Bone Springs carbonate interval, which is the middle interval, and the Scharb interval which is the deepest interval.

Q And that's the subject of your Exhibit Number Twenty-nine, is that correct?

A That is correct.

Q If you would, discuss what you show on this exhibit with the examiner.

A This exhibit is a comparison of initial reservoir pressures for the Scharb Second Bone Spring carb and the Ora Jackson intervals. It's based upon available DST data, that is, the earliest DST data I could find within this area of interest.

What I have shown here is a DST starting -- let me go through the columns first.

What I've shown here is the date, month and year of the DST; the operator and well name of the well in which the DST was taken; location of the well; the data of the well; the interval over which the DST was taken; the indicated pressure, and that pressure, by the way, is the nigher pressure of the two periods, shut-in periods that it was taken.

I've also shown the depth that I have

used as my pressure point, which is the midpoint of the DST; corrected bottom hole pressure to a subsea datum of -5800 feet; and the shut-in time.

On the first well, the Marathon State NPA No. 1, I've identified that the corrected bottom hole pressure for the Scharb zone, there was a DST taken over the Scharb interval, was some 4216 psi.

Compared to the Second Bone Springs Carbonate DST that was taken separately, you see a pressure of some 3920 psi. There's a significant difference in pressures right there at the same time, which would indicate to me separation between the two reservoirs.

In the Southland Royalty Company Scharb 4 No. 1, the step-out well I've been referring to, there was DST tests, DST's taken in August of 1980. The corrected pressure over the Elkan reservoir, because this well is within our Elkan reservoir area, was some 3855 psi. As you can see, that pressure is very close to the pressure that was read in the original discovery well, some 65 pounds within the range of the State NPA No. 1.

The Southland Royalty Company Smith 5 No. 1 had a pressure -- or DST taken over the Second Bone Springs carbonate Ora Jackson in January, 1981.

Again you can see, looking at the corrected pressures, that there is a significant difference in

pressures between those two intervals, 3790 for the Second Bone Springs Carb versus 3576 for the Ora Jackson, over 200 pounds difference.

In March of '81, the last well that I've shown here is the Southland Royalty Company Scharb 8 No. 1. It had a test during that time over the Scharb and Elkan intervals.

The Scharb interval had a DST pressure of 4005 as compared to an Elkan pressure of some 3800 pounds.

Again, the Scharb 8 No. 1, we believe is within the Elkan reservoir.

My conclusion here is there is definitely reservoir separation vertically between the reservoirs we have described to you, the intervals, and is the Ora Jackson, Elkan, and Scharb.

The second page of this exhibit is simply the base data that I used to derive the numbers that I've shown on the first page of the exhibit.

Q Okay, Mr. Scheffler, have you made a diligent search of all records which are reasonably available and contain information relative to the determination of a proper NGPA determination of eligibility?

A Yes, sir.

Q Would you please describe the search that you made, the records which you reviewed, where the records

were located, and the description of those records?

A I started with data, production information what we have in house. That information was taken from NMOCD records. It's updated quarterly.

We had a historical record back to, in this case 1970, of production, and that was the source for most of my production information, for all of it.

I had our Hobbs District Office search the Hobbs NMOCD's District Office for C-103 information and C-105 data pertaining to workovers, completions, initial potentials, et cetera, and we felt we did a pretty thorough job of reviewing all the data on every well that had information in the file on it.

With regard to additional information, where we didn't have information on the wells from the NMOCD, we went to scout tickets, to petroleum information sources, PI summaries of initial completion information which was available in our Exploration Department and through the PI Service people.

Well information was derived through commercial logging companies where we didn't have the logs available. We have quite a complete set of well logs in our office in the Exploration as well as in the Production Department, and we used that source, as well.

For getting information regarding pres-

sure data, I contacted operators in the area that I thought would have pertinent wells that would help me in my evaluation.

I spoke to Southland in particular. They seem to have done quite a bit of research in terms of trying to derive some pressure information in the area from other operators, so they were -- they were one of my main sources for data in the Second Bone Springs Carbonate area.

And that pretty much concludes my description of the sources I used to put together this request, our application.

Q Were there any records which would contain information relevant to this determination which were not reasonably available to you?

A No, sir.

Q Have you reached a conclusion on your review of available records and information as to whether or not the Elkan reservoir, as shown on Amoco Exhibit Number Eight, is a new onshore reservoir as defined by NGPA Section 102-C-1-C?

A I believe it is.

Q What is your conclusion?

A I believe that this is a separate reservoir, the Elkan reservoir is separate from the Second Bone Springs Carbonate that I've set out for you and that we've

talked about here today.

Q Do you have any knowledge or information which is inconsistent with this conclusion?

A No, sir.

Q Based on your search and examination, was natural gas produced in commercial quantities from the Elkan reservoir, as shown on Amoco Exhibit Number Eight, prior to April 20th, 1977?

A No, sir, it was not.

Q Was the Elkan reservoir penetrated before April 20th, 1977, by an old well from which natural gas or crude oil was produced in commercial quantities from any reservoir?

A No, sir, it was not.

Q From your review and examination, do you conclude that the reservoir in which State MX No. 1 was completed is a new onshore reservoir as defined by NGPA Section 102-C-1-C?

A Yes, sir, I believe it is.

Q Do you have any knowledge or information inconsistent with that conclusion?

A No, sir, I do not.

Q Based on your search and examination was natural gas produced in commercial quantities from the State MX No. 1 reservoir prior to April 20th, 1977?

A No, sir, it was not.

Q Was the State MX No. 1 reservoir penetrated before April 20th, 1977, by an old well from which natural gas or crude oil was produced in commercial quantities from any reservoir?

A No, sir.

MR. MOTE: That concludes the testimony from this witness and we offer exhibits through Twenty-nine into evidence.

MR. CATANACH: Exhibits One through Twenty-nine?

MR. MOTE: Thirteen through Twenty-nine.

MR. CATANACH: Exhibits Thirteen through Twenty-nine will be admitted into evidence.

Mr. Stogner?

MR. STOGNER: For the record, and I'm sorry, I'm Michael Stogner. I'm NGPA Coordinator here in Santa Fe with the Oil Conservation Division.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Scheffler, I have a few generalized questions.

A Yes, sir.

Q Can it be construed that if I have any well that's completed in the Ora Jackson zone reservoir, we might add, can I consider that as being a 102 well within the Scharb Bone Springs Pool?

A It would depend upon within that reservoir pod, if it met the criteria of the NGPA regulations; that is, if there was a well that was drilled prior to 1977, encountered commercial production.

Q In that particular pod?

A In that particular pod.

Q So it's a case by case basis.

A Yes, sir.

Q Same questions with the Elkans reservoir.

A I believe that's the case, yes, sir.

Q Again explain to me how many reservoirs you feel that we have out there in the Scharb Bone Springs Pool.

A Let me -- let me explain it this way: We have three intervals that comprise the Scharb Bone Spring.

The first interval we described as the Ora Jackson interval. That's the shallowest within the Scharb Bone Springs Pool.

The next, we're describing for you as the Second Bone Springs Carbonate. Within that Second Bone Springs Carbonate we have set up for you a reservoir

description called the Elkan reservoir, which we describe as the new onshore reservoir area. That's the middle area.

The deepest interval is called the Scharb interval and that is the interval that doesn't exist to the east, as we've described to you, the eastmost portion of Section 5, generally speaking, in Section 8. It lies back to the west of that general boundary.

Those are the three -- three intervals that we're discussing.

Q If I can refer to Exhibit Number Three as a reference, that is the type log within this area, is there any production within that, what you call or what's considered on here to be top third Bone Spring Carbonate, to date?

MR. MOTE: We don't have that exhibit in front of us.

MR. STOGNER: I'm sorry.

MR. MOTE: Wait just a minute, if you would.

A Okay, Mr. Examiner, if you could restate that question.

Q Has there been any production from that portion called the Top Third Bone Springs Carbonate?

A Oh, Top Third, I'm sorry.

I would -- let me see what the depth is on that, that, I believe, has been considered to be Wolfcamp

production in the past.

I'm sorry, I tell you what. I'd best refer that question to the geologist.

In my search of information, I'm just recalling from scout tickets, I limited to only the Scharb zone, the Second Carbonate, and the Ora Jackson, so I really can't, I guess, answer your question completely, Mr. Examiner.

MR. MOTE: Would you like to address that to Ms. Glaser?

MR. STOGNER: Yeah, I'll address that question, if the examiner will let me.

MR. CATANACH: Proceed.

MS. GLASER: Are you asking if there's any production from the Third Bone Spring Carbonate?

MR. STOGNER: Right.

MS. GLASER: Okay, not in the Scharb Bone Spring Pool.

MR. STOGNER: Is there any in that particular carbonate that's considered the Wolfcamp?

MS. GLASER: In the Scharb Bone -- in the area of the Scharb Bone Spring Pool, yes, it's in the Scharb Wolfcamp reservoir. That would be below the indicated Wolfcamp marker; below the blue line.

MR. STOGNER: Okay, so what's

on here, the top Third Bone Springs Carbonate, I don't really -- we don't really need to consider that reservoir.

MR. GLASER: Not in this field.

MR. STOGNER: Thank you.

May I continue to question Mr. Scheffler, Mr. Catanach?

MR. CATANACH: You may proceed.

Q Let's look at the Scharb zone. If there are any penetrations through here?

A On the exhibit, the type log?

Q Yes, can that be considered as 102?

A Through the Scharb Zone?

Q Yes.

A Let me -- let me set this up for you, Mr. Examiner.

Most of the production in the Scharb interval, if we refer back to the exhibit on the wall, to the Isopach map that was derived by the geologic witness, there is a significant amount of wells in that Isopached area that are wells that were completed prior to 1977 and penetrated the subject reservoir but were producing out of another reservoir commercially prior to that date, so that generally speaking, the -- like I say, there were several old wells that way, that penetrated the Scharb, that is they -- they were drilled and produced commercial quantities of gas from

some reservoir. They penetrated the Second Carbonate and produced commercial quantities out of some reservoir prior to 1977, which I believe, of course, would exclude the possibility of, in general terms, that Scharb zone from being possibly considered a new onshore reservoir.

Q In your studies of this area have you encountered any other wells that have produced prior to 1970 -- or before 1977, has there been any Ora Jackson production?

A Prior ot 1977?

Q Yes.

A The -- in the area to the east of Section --

Q Let's --

A Just all encompassing?

Q Yes.

A I can answer your question, I believe, if I look on this exhibit right here.

Q While you're up there I'm going to ask you the same question about the Elkan.

A Okay, I really, all I can say is with regard tc the pods that we're addressing right here, in which our Ora Jackson completion is in, I know, I don't see the dates up here but I know that there was nothing completed in this pod prior to 1977.

MR. MOTE: What exhibit are you looking at?

A This is Exhibit Six. There -- I'd have to review again the completion dates on the wells in the other pods before I set out to answer your question completely. I can do that. I just don't have it right here in front of me.

Q Do you know how many wells produced before 1977?

A Overall?

Q Yes.

A In the Ora Jackson zone?

Q No, in the Scharb Bone Spring Pool.

A Again the number, I can certainly come up with, I know how to get at it but I don't have it just on top of the my head. There was -- there was -- the majority of those wells that produced prior to 1977 were wells that were completed in the western part of the field in the Scharb interval.

A rough gauge would be to look at the completion or the spud dates on those wells, our Exhibit Number Two, I believe it is.

Q In the future, Mr. Scheffler, do you have any ideas or thoughts on how to best proceed on getting a 102 application approved through this area? Would you share

those with me?

A I think each well has to be taken basically on an individual basis and again, like I said, I think that if you set up with proper geological model, based upon experience and good control, that you can easily identify, in this case we'll talk about pods, within each of these intervals that would classify as new onshore reservoirs and those that would not.

This is a complicated area, very complicated geologically. It might be a little bit different animal than others that we've looked at, but for that reason I would -- I would feel that each well would have to be looked at on an individual basis.

The geological interpretation, the model is here, should not change, really, in that we feel like we have enough experience and data to support, as you've seen today, what we've set out, so all I can offer is that the review should be done on a well by well basis taking into consideration detailed geology and associated production data.

Q I suppose you feel we have enough information to formulate this model after today?

A Put it on a computer. I'll tell you this much, Mr. Examiner, that we spent a significant amount of time on this project, more than I've ever been involved with

in preparing a case, really, of any type. This was a very long and involved project geologically, and even though the engineering data that was presented here today seems somewhat short, I feel like it was conclusive, that we looked at a vast amount of engineering data out here and tried to show you the end result, but to get that end result required us to review a significant amount of information, so we feel very good about the data we've presented today.

And I would say, I would give it to you that way, and say that there's not much more we can give you. This is it.

Q Mr. Scheffler, if, as we look at these on a case by case basis and your Elkans wells, for instance, receive the 102, --

A Yes, sir.

Q -- and as we approve more 102's and find that more geological information is looked at, and it can be established that some of these older wells are in communication with these 102 wells, what should my particular division with the OCD here, how should I proceed with that?

MR. MOTE: I think that's a legal question, Mr. Stogner, and if you would, I'd like to try to answer it.

There's a recent FERC ruling, Federal Energy Regulatory Commission ruling in Docket Number

GP-84-44-000, combined with GP-84-45-000, and GP-85-06-000, which was issued February 18th, 1986.

This was a controversy before the Federal Regulatory Commission in which Mobil, Exxon, and Gulf were involved, and the subject under consideration in that proceeding was the very things which you have now brought to your attention and asked for guidance on.

The decision was made in that case, and I'm sorry, I can't tell you whether it's been appealed. I do not believe it has, but the very distinct determination was made that any well determination has to be made as of the time that determination is made and any subsequent evidence which might bring contrary evidence to light would not be of any value to disturb a previous finding; that once the finding is made on evidence in the record at that time, that is more or less conclusive as to the future, regardless of any evidence which may come to light in future drilling or future production history.

MR. CATANACH: Mr. Mote, can we get a copy of that, please?

MR. MOTE: Yes, sir.

MR. STOGNER: I have no further questions.

MR. CATANACH: Are there any other questions of the witness?

MR. MOTE: No, sir.

MR. CATANACH: If not, he may be excused.

MR. MOTE: That concludes our presentation.

MR. CATANACH: There being nothing further in Case Number 8848 --

MR. CARR: I have a brief statement.

MR. CATANACH: I'm sorry, Mr. Carr.

MR. CARR: May it please the Examiner, Southland Royalty Company and Meridian Oil, Inc., operate the Scharb 4 No. 1 Well and the Scharb 9 Wells Nos. 1, 2, and 4 within the boundary of the proposed Elkan reservoir.

We submit that the geologic evidence presented in the case clearly shows that the proposed Elkan reservoir is a separate and distinct source of supply; that the wells therein should qualify for the NGPA 102 classification.

We support the application of Amoco Production Company.

MR. CATANACH: Thank you, Mr. Carr.

Is there anything further in Case 8848?

If not, it will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 8848, heard by me on June 12, 1986.

David R. Catanach, Examiner
Oil Conservation Division

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

14 May 1986

EXAMINER HEARING

IN THE MATTER OF:

The disposition of cases called on Docket 15-86 for which no testimony was presented. CASE 8848, 8849, 8818.

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division: Jeff Taylor
Attorney at Law
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

I N D E X

MR. CATANACH: Let's call next Case Case 8848.

MR. TAYLOR: The application of Amoco Production Company for NGPA Wellhead Price Ceiling Category Determination, Lea County, New Mexico.

The applicant has requested that this case be continued.

MR. CATANACH: Case 8848 will be continued to the June 12th, 1986, hearing docket.

MR. CATANACH: Call next Case 8849.

MR. TAYLOR: The application of Southland Royalty Company for NGPA Wellhead Price Ceiling Category Determinations, Lea County, New Mexico.

The applicant has requested that this case be continued.

MR. CATANACH: Case 8849 will be continued to the June 12th, 1986, docket.

MR. CATANACH: Call next Case 8818.

MR. TAYLOR: Application of Yates Petroleum Corporation for salt water disposal, Eddy County, New Mexico.

The applicant has requested that this case be continued.

MR. CATANACH: Case 8818 will be continued to the May 28th, 1986, docket.

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. ____, heard by me on May 14 1986.

David R. Catanach, Examiner
Oil Conservation Division

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

16 April 1986

Case No. 8872, Continued
EXAMINER HEARING
Case No. 8873, Continued
Case No. 8874, Continued
IN THE MATTER OF:
Case No. 8848, Continued
The disposition of all cases called on this docket for which no testimony was presented.
Case No. 8870, Continued
Case No. 8030, Continued

CASE 8872, 8873, 8874, 8848, 8875, 8870, 8030.

Transcript in case 8872

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Jeff Taylor
Legal Counsel to the Division
Oil Conservation Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

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

5 March 1986

DIVISION HEARING

IN THE MATTER OF:

Disposition of cases called on Docket No. 8-86 for which no testimony was presented.

CASE 8836, 8837, 8838, 8839, 8842, 8845, 8846, 8847, 8849, 8526.

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division: Jeff Taylor
Attorney at Law
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant: