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

19 December 1984

EXAMINER HEARING

IN THE MATTER OF:

Application of Marbob Energy Corporation for an exception to General Rule 104-F and for infill well findings, Eddy County, New Mexico.	CASE 8433
Application of Marbob Energy Corporation for three unorthodox oil well locations, Eddy County, New Mexico.	CASE 8432

BEFORE: Gilbert P. Quintana, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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I N D E X

E X H I B I T S

MR. QUINTANA: We'll call Case 8432 and Case 8433.

MR. TAYLOR: The application of Marbob, Energy Corporation for three unorthodox oil well locations, Eddy County, New Mexico, and the application of Marbob Energy Corporation for an exception to General Rule 104-F and for infill well findings, Eddy County, New Mexico.

MR. BLISS: May it please the Examiner, my name is Kevin Bliss, in-house attorney for the applicant, and I'm appearing on behalf of applicant.

I would request at this time that Cases 8432 and 8433 be consolidated for the purposes of this hearing.

MR. QUINTANA: Cases 8432 and Case 8433 may be consolidated for purposes of testimony and you may proceed.

MR. BLISS: I have three witnesses who need to be sworn in.

MR. QUINTANA: If there are no further appearances in this case would the three witnesses please stand up and be sworn in at this time?

(Witnesses sworn.)

JACK AHLEN,

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

DIRECT EXAMINATION

BY MR. BLISS:

Q Please state your full name and place of residence.

A My name is Jack Ahlen. I live in Roswell, New Mexico.

Q Mr. Ahlen, what is your occupation and in what capacity do you appear today?

A I am a consulting geologist. I appear in the capacity of giving consultation to Marbob Energy Corporation.

Q Have you ever testified before the Oil Commission and had your credentials accepted and made a matter of record?

A Yes, sir, I have.

Q And are you familiar with the application of Marbob Energy Corporation in these cases?

A Yes, I am.

MR. BLISS: Mr. Examiner, are the witness' qualifications acceptable?

MR. QUINTANA: They are acceptable.

Q Mr. Ahlen, what does Marbob Energy Cor-

poration seek with its application in these cases?

A Marbob seeks three different things.

First, an approval of three unorthodox well locations.

Secondly, an administrative approval procedure for future unorthodox locations.

And thirdly, a finding that infill wells in the area are necessary to effectively and efficiently drain the reservoir.

Q One furthe question on this. Is there a limit from lease boundaries that Marbob proposes to drill these wells?

A Yes, sir. In the administrative procedure, as advertised, we propose that the administrative procedure include a limitation that wells be drilled no closer than 330 feet from the leaselines or the unit area, and that wells be drilled no closer than 10 feet to quarter quarter section lines.

Q Okay, Mr. Ahlen, will you now please refer to what has been marked as Marbob's Exhibits One and Two and identify these for the Examiner?

A Marbob Exhibit One is a list of leases, a tabulation showing the lease name and the portions of each section which are part thereof, as well as a depth limitation on some of those leases.

I think that reading that will be redundant. Let the exhibit speak for itself.

Exhibit Number Two is a map which I have prepared. It shows the outer limits of Marbob Energy Corporation leases with a bold line. It also shows the limits of each lease and/or unit, which are more completely described in Exhibit Number One.

The map also shows -- is of an area in Township 17 South, Range 29 East.

The large squares are one mile in dimension on each side, normal section lines.

I show a multitude of circles, squares, and hexagons on this map, and they are colored. The intent is to show the producing zone from each of the wells that are producing in the area that we're going to discuss this afternoon.

Those wells with production from the Grayburg and uppermost San Andres are circles and they are colored red.

Those wells that are producing from the lowermost San Andres in this area, commonly called the Keely Zone, are -- have a square around them and are colored blue.

Thirdly, the hexagons show wells that Marbob has drilled recently, or since 1982. They are colored purple.

Now, most of the Marbob wells are completed in both of the zones that I have previously discussed, the Keely, Upper San Andres, and the Grayburg section, with a few exceptions, and they will be brought out in later

testimony.

You will see some numbers in the immediate vicinity of each well.

On the most part, to the upper right is the well numbere as assigned by the operating company.

To the lower right most of the time is the total depth of each well and to the lower left is the subsurface datum on the top of the San Andres formation. It is in the more bold type.

Any questions?

MR. BLISS: I might add at this point, if there are any questionns, since we do have a large number of exhibits, if you could interrupt or make those cross examining questions while we have the exhibits out that we could quote from.

MR. QUINTANA: No questions.

MR. BLISS: Thank you.

Q Mr. Ahlen, will you please refer to what has been collectively marked as Marbob Exhibits Number Three and identify them?

A Marbob Exhibit Three is -- is an exhibit of three C-102 forms, which show the specific location for Marbob Energy Corporation M Dodd B Well No. 46, Well No. 47, and Well No. 48, and they are all on the Marbob Dodd B Lease.

Q And what is the footage description for each well?

A The footage description for the Marbob 46 is 2,310 feet from the north line and 25 feet from the west line of Section 14, Township 17 South, Range 29 East.

Detailed location for the Marbob M Dodd B 47 is 1,425 feet from the north line and 330 feet from the east line of Section 14, Township 17 South, Range 29 East.

And the detailed location for the Marbob Energy M Dodd B Well No. 48 is 1,425 feet from the north line and 1,345 feet from the east line of Section 14, Township 17 South, Range 29 East.

You will note that each of the three wells are in the same section.

MR. QUINTANA: Just a moment, please.

You were at the point that you mentioned they were all in the same section, unorthodox locations.

A Yes, sir, all unorthodox locations in the same section.

Q Okay, will you please refer now to what has been collectively marked as Marbob Exhibits Number Four and identify them?

A Marbob Exhibit Number Four is an application for a permit to drill, United States Deparptment of Interior, Geological Survey, a Federal form for permits to drill, for the Marbob 46, 47, and 48.

Q And in what pool does Marbob propose to

drill the proposed unorthodox locations, the future unorthodox locations which would be applied for under the administrative approval procedure requested and the infill wells?

A The pool is the Grayburg Jackson-Seven Rivers-Queen-Grayburg San Andres.

Q Will you please refer to Marbob Exhibit Number Five and identify this for the Examiner?

A Exhibit Number Five is a structure contour map on the top of the San Andres formation.

Contour interval is 50 feet. Every fifth contour is extra heavy on this contour map. You will note that the structure descends from a maximum elevation of 1350 feet which is approximately 1000 feet across the map, approximately 350 feet.

The rate of dip across the map is less than one degree in a generally easterly direction in the northern three-quarters of the map. There are very slight deviations from that normal eastward gradient.

In the southern one-quarter of the map the dip changes abruptly to a more southerly direction. The rate of dip increases significantly to approximately 300 to 400 feet per mile. This dip to the south is the result of deep seated structural and stratigraphic relationships which we might refer to here as the fore reef dip slope of the Abo Reef.

You will note the slight undulations in the structure here. There is one small closure at the com-

mon corner of Sections 14, 15, 22 and 23. It is of very slight consequence.

You will note that all the contour lines fit the datums that I mentioned on the previous map.

You might also note on this map that I show the line of three different cross sections. There is a north/south cross section and two east/west cross sections, known as cross section A-B, C-D and E-F.

Along the line of each cross section there are index numbers that index the wells that are located on the cross section. On the cross section the same number is located immediately above the wellbore or the electric log for that particular well.

So the cross sections are indexed to this structure contour map, and I will be referring back and forth between these two maps in a few moments.

Q Will you now please refer to -- for the Examiner, or identify for the Examiner, what has been marked as Marbob Exhibit Number Six, which we have placed on the wall behind us?

A Exhibit Number Six is a structure cross section across the prospect in a north/south direction. The scale, the vertical scale is two inches equal 100 feet. The scale between the wells is marked individually between each of the wells, such as it's 5/10ths of a mile between these two wells, a quarter of a mile between these two, a quarter of a mile, so forth, across the line of the section.

The wells were chosen to be the most complete detailed examination of -- of the area in interest, and I chose a well that was very close to a straight line north/south and the two lines east/west.

We have various -- note also the index numbers at the top of the cross section. It is indexed to the structure contour map. Also at the top of each well there is a well symbol as to whether the well has been completed as an oil well. On another cross section there are gas well symbols. There might be a dry hole symbol on one of them. So you can tell immediately whether this is an oil well, gas well, or a dry hole.

The normal heading on the top of each log placed there by the logging company, showing operator, fee, well number, elevation, and so forth, all the various administrative data, as well as a detailed location of each particular well.

I have marked on the cross section structural and stratigraphic marker zones. Notably the very heavy line that we see here is the top of the San Andres formation, which is commonly used for mapping in the area.

I have also mapped the top of the Premier Sand member of the Grayburg formation, although I do not show the top of the Grayburg formation, since it was not pertinent to the examination.

I also show the top of the Lovington Sand marker, which carries across the map.

I also show the top of the Keeley porosity zone. The Keeley porosity zone is discontinuous in this area and another geologist in the same area might mark it a slightly different place on the logs, since this is really a porosity top rather than a stratigraphic top. Most geologists would mark the same place for the Lovington Sand, the top of the San Andres, and the Premier Sand.

Not the similarity across the cross section from north to south in that the thickness of most of the members are very close to the same, as well as the unique characteristics of each of the beds, such as porosity, radioactivity, and so forth.

Over most of this area these same unique characteristics are present.

In the northern area you will note that most of the wells, or three of the wells that I have shown here on the cross section, are relatively short. They stop in the uppermost San Andres. They are perforated in the Premier Sand.

This well was drilled down and explored to the Keely zone and it was perforated in the Keely zone, as well as that section between the Keely and the top of the San Andres.

Other wells along this section are perforated throughout the geologic section.

Now, these logs were logged at different times from the early 1950's through today, or through Octo-

ber, and most of these wells were drilled through October of this year, so there are varying types of logging techniques that were used, but essentially they are all porosity logs and attempt to show the same thing.

We have different companies, also, and each of them have different characteristics and reliability, but the main thing I want to show is that there is porosity across this whole area and that it is similar from one end of the cross section to the other side.

Q Mr. Ahlen, are the perforations marked for each well and is there completion information on the -- indicated on the cross section?

A Yes, sir. I have marked the perforated zones either with an arrow showing a specific location for a spot perforation, or with a bracket showing a zone of perforations.

Also, at the bottom of each well I have given a brief synopsis of the completion history of the well and what the well initially potentialed for.

MR. QUINTANA: And I take it this cross section indicates, or possibly indicates, that as you go north the Keely zone becomes almost nonexistent.

A Essentially, yes, sir. That is part of the discontinuous nature of the Keely zone.

MR. QUINTANA: I have no further questions.

Q Will you please now identify for the Exa-

miner what has been marked as Marbob Exhibit Number Seven?

A Yes, sir. Next this is cross section C-D. It runs east/west and the index map at the lower left here shows that line of section. It is the most southerly of the two east/west cross sections.

It also is indexed across the top with the well numbers that are located on Exhibits Number Five, the structure cross section, and specifically correlate between the cross section and the structure contour map.

You will note that most of these wells have been completed as oil wells. There is one gas well on the extreme left. We have similar administrative data for the hearing of each well, the same scale vertically, two inches to 100 feet. I have marked the distance between wells at each particular location. It is datumized on the plus 100 -- plus 1000 foot datum, similar to the previous cross section.

I have shown the same stratigraphic and structural markers on this as the previous cross section, with a heavy line being the top of the San Andres, lighter one above it being the top of the Premier Sand, the lighter one below the San Andres being the Lovington Sand, and the lowermost one here being the Keeley porosity zone.

You'll note on this cross section the Keeley zone seems to be predominantly much better. It is much more continuous on this cross section than on the previous section because we're going along with the strati-

graphic strike of this particular unit.

Again perforations are marked on the margin of the log in the customary manner. You will note that again, even though we have dissimilar logs on the cross section, they all show approximately the same thing. They have similar nature across the line of the section but they're not specifically the same. They show that this is indeed a continuous reservoir from one end of the cross section to the other.

I did not note before that that odd jump in the structural discontinuity on the far left is a matter of distance in scale rather than regional dip or terracing out here, but the last interval there is a mile and a half; just the consequence of the wells that I chose for the cross section.

Q Does this cross section also indicate the east to west or the west to east dip that you spoke of earlier?

A Yes. This cross section does indeed indicate this gentle eastward monoclinal dip of less than one degree that I noted on the structure cross section.

Q Okay. Mr. Ahlen, will you now identify for the Examiner what has been marked as Marbob Exhibit Number Eight?

A Yes, sir. As a re-summary of nomenclature in the Maljamar country and Loco Hills, there are a multitude of local names, in the literature and out of the

literature and commonly used by drillers and operators in the area, such as Loco Hills, Loco Hills 1, 2, 3, 4, Keeley, and they're not generally accepted geological terms and not usually published in the literature, but sometimes they're very handy to use.

So that's why I chose Keeley, because this is a locally known, easily recognized member in this specific area, but it really doesn't carry out of the area.

Exhibit Number, what is this now, Eight, Exhibit Number Eight almost duplicates the previous cross section except that it's approximately one mile north of that. It is the most northerly of the two cross sections that I did. I call it cross section E-F.

It again has the well symbol at the top denoting whether it is a gas well or an oil well. Some of these gas wells are producing from deeper horizons, such as the Morrow, but it was uniquely located at a spot that was good to use with this particular cross section and you will not note any perforations in the wellbore on this particular well because it is completed from the deeper horizon and that is so noted on the -- at the base of each of the wells.

It shows almost identically the same things as the previous cross section in that we see the regional east dip. We see the uniformity of -- or thickness of formations across the cross section. We see the redundancy in the porosity zones within the San Andres, indicating again that we are in the same geologic pool or reser-

voir that is producing in many of the wells over the section.

MR. QUINTANA: I take it then, that to clarify your testimony here, these three cross sections presented evidence to show that throughout this area that you have applied to -- for these two cases, it's pretty continuous. The formations are very continuous and exemplify the same type of porosity and permeability in one area as the other area.

A Similar. I'd rather say similar porosity and permeability relationship, because each well is unique --

MR. QUINTANA: Unique.

A -- as we all know. So they are very similar porosity and permeability relationships across the area, and this is the thing that I'm trying to emphasize.

Q And this is true, Mr. Ahlen, from north to south and east to west within the entire subject area?

A Yes.

Q One further question. Is this part -- would you describe this as part of a larger continuous field?

A I would indeed.

Q Okay. Do you expect that Marbob will encounter similar geologic circumstances in its M Dodd D 46, 47, and 48 Wells?

A I do expect that, yes, sir.

Q And do you expect that Marbob will encounter similar geologic circumstances in these wells as it encountered in previous wells drilled at orthodox and unorthodox locations on the Dodd A and Dodd B leases?

A Yes, sir.

Q And do you expect that Marbob will encounter similar geologic circumstances drilled anywhere in the subject area at orthodox as well as unorthodox locations?

A Yes, sir.

Q In your opinion is the drilling of additional wells on all or some of these 40-acre tracts necessary in order to efficiently and economically drain these 40-acre tracts?

A Yes.

Q And in your opinion will granting this application allowing Marbob to drill the M Dodd B 46, 47, and 48, as well as future unorthodox locations under an administrative approval procedure, result in the recovery of additional oil and gas which would not otherwise have been recovred?

A Yes.

Q In your opinion will it be necessary for Marbob to drill wells at unorthodox locations as close as 330 feet from the leaseline or in the case of a unit, unitized area, in order for Marbob to adequately drain the reservoir, produce its equitable share of the reservoir, and

thereby protect its correlative rights?

A Yes.

Q And, in your opinion, will granting this application in all respects be in the interest of conservation, the prevention of waste, and the protecton of correlative rights?

A Yes.

Q Were Exhibits One through Eight either prepared by you or prepared by others for you under your direct supervision and can you testify as to their accuracy?

A Yes, they were and yes, I can.

MR. BLISS: Marbob would move the admission of Exhibits One to Eight at this time.

MR. QUINTANA: Exhibits One through Eight will be admitted into evidence.

MR. BLISS: And that is all the questions I have of this witness.

CROSS EXAMINATION

BY MR. QUINTANA:

Q Mr. Ahlen.

A Yes, sir.

Q You testified just a few minutes ago that you felt, it was your professional opinion that drilling these wells on unorthodox locations would efficiently drain the reservoir in a much better manner than it was being drained at this time.

Would you tell me what you base that professional opinion on?

A Well, there is already a pattern set out by previously existing wells by offsetting operators as well as previous Marbob wells, and this is a continuing pattern radiating from already existing wells.

Now, Marbob will drill some orthodox locations as well, obviously, especially in those areas where orthodox locations are available.

For the most part, though, as you well know, this is a well developed area, high intensity drilling, and there are many, many obstacles in this particular area to free access to the surface location, and so -- so there will be variation because of that, as well.

MR. BLISS: I would like to now call Jack England as my next witness.

JACK ENGLAND,

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

DIRECT EXAMINATION

BY MR. BLISS:

Q Will you please state your name, your occupation, and where you reside, please?

A My name is Jack England. I'm employed by Ryder Scott Company as a consulting petroleum engineer, and

my residence is in Golden, Colorado.

Q Mr. England, have you previously testified before this Division?

A No, sir, I have not.

Q Will you please state for the Examiner your educational and professional background?

A I'm a 1953 graduate of the University of Oklahoma with a Bachelor of Science in petroleum engineering.

I was employed for a period of about 28 years with Marathon Oil Company and predecessor companies in both the Rocky Mountain Region and the Permian Basin.

I spent my last five years with Marathon in the Midland Office.

Subsequent to leaving Marathon I joined another consulting firm, Sipes, Williamson and Associates; stationed in Midland for about one year and then moved to Denver and opened an office for them in Denver. I was with Sipes, Williamson approximately two and a half years and joined Ryder Scott. Been with Ryder Scott since November of last year.

I am registered in the States of Colorado and Wyoming and that's about the size of it.

Q And how long have you done work for Marbob Energy Corporation and been familiar with its operations?

A I've been employed in a consulting capa-

city with Marbob since October of 1982.

Q And are you familiar with the application of Marbob Energy Corporation in these cases?

A Yes, sir, I am.

MR. BLISS: Is the witness qualified as an expert as a petroleum engineer?

MR. QUINTANA: The witness is qualified as an expert petroleum engineer.

Q Mr. England, would you please identify for the Examiner what has been marked as Marbob Exhibit Number Nine?

A Yes, sir. Exhibit Number Nine is a listing of wells that were drilled and completed by Marbob Energy Corporation during the period October, 1982, to October, 1984.

What is shown are the individual well numbers on the M Dodd A and M Dodd B Leases, the footage locations of those wells, the quarter quarter section and the OCD order number authorizing unorthodox locations.

I would note that -- excuse me.

Q The next question was that of all the wells drilled and completed by Marbob since it commenced operating the M Dodd A and M Dodd B Leases in October, 1982, how many were infill wells, that is, wells drilled for production on established proration units, and how many were the first well on a proration unit?

A All right. All wells with the exception

of two were infill wells.

The two wells that are M Dodd A No. 30, located in the southeast southwest of Section 14, Township 27 South, Range 29 East, and the M Dodd B No. 35, located in the southeast southeast quarter of the same section, township and range.

Q Mr. England, will you now please identify what has been marked as Marbob Exhibit Ten and explain it?

A Exhibit Ten is a performance curve for the Mary Dodd A Lease.

What's shown on the curve is actual production from 1976 to October of 1984 along with projected production into the future from October of 1984.

The well in barrels of oil per month is shown on the curve in green.

The average gas/oil ratio for the lease is shown on the curve in the form of red x's.

The well count for the lease is shown on the curve in black.

At the time that Marbob Energy Corporation acquired this lease, there were nineteen wells on the lease that had produced in excess of 1000 barrels of oil, and I used 1000 barrels as my cutoff to determine productive wells because a number of wells had been drilled for purposes of injection. These wells were tested for various periods of time and accumulated relatively minor volumes of oil in terms of 10, 20, 150, maybe as much as 800 barrels.

The cumulative production for these nineteen wells at October, 1982, was in the range of 2000, in excess of 100,000 barrels of oil per well.

At October of '82 I estimated that the ultimate recovery would be approximately 1,504,000 barrels of oil. With the future recovery infinitely continued to have been operated under the old administration and if no new wells had been drilled, it would have been about 60,000 barrels of oil to be recovered over future econmic life that at that time was approximately eight years.

MR. QUINTANA: What was that --

A I would think --

MR. QUINTANA: Excuse me, I didn't mean to interrupt.

What was that additional recovery?

A The future recovery would be approximately 60,000 barrels.

MR. QUINTANA: As compared to the previous -- as compared to your --

A Well, I haven't made that comparison. I'm just saying that -- that had the lease continued to have been operated on the old system and no new wells would have been drilled, it would have cumed out at an additional 60,000 barrels.

I do make that comparison in a later exhibit.

I would point out that the first new well which was an infill well, No. 22, came on stream in March of 1983.

I would direct your attention to the average gas/oil ratio history at this time. The GOR varied from some 1200 feet a barrel to 1500 feet per barrel during the period 1976 to 1978 and then you can see the trend downward with the average gas/oil ratio being some 508 cubic feet per barrel during the period 1979 through September, 1982.

Now the most recent period in which I looked at gas/oil ratios for the old wells was that period from July through Octobr of 1984. At that time the average gas/oil ratio for the old wells was 407 cubic feet per barrel. This shows that the increase in the gas as shown on this exhibit is due to the new wells.

Q Mr. England, will you now please identify the document which has been marked --

A Excuse me, just one more.

There is another point that I would like to make that I think is rather dramatic.

If you look at the actual performance, look at the oil rate at Sepbember of 1984, and compare that to the oil rate at September of 1982, you can see that there's been an approximate fourteen-fold increase in rate of production.

MR. QUINTANA: Would you attri-

bute that to infill?

A I would attribute that primarily to the infill wells.

Q Mr. England, would you now please identify the document which has been marked as Marbob Exhibit Number Eleven and explain it?

A Marbob Exhibit Number Eleven is a performance curve of the Mary Dodd B Lease.

Again, the actual and the projected performance is depicted.

The oil rate in barrels of oil per month is shown in green.

Again the gas/oil ratio is shown in red x's and the well count is in black.

At the time that Marbob assumed operation of this lease in October of 1982, the lease contained a total of 24 wells that had produced in excess of 1000 barrels of oil. The cumulative recovery for these wells varied from 6000 barrels to in excess of 100,000 barrels, and average 46,000 barrels per well.

At October of '82 I estimated that the ultimate recovery would be 1,115,000 barrels. Future recovery would have only been 6000 barrels with a future life in the order of two plus or minus years.

Looking now at the gas/oil ratio history, we can see that during the period 1976 to 1978, that the gas/oil ratio generally was in the order of 600 to 800 cubic

feet per barrel, again trending downward and averaging only 226 cubic feet per barrel during that period 1979 through September of 1982.

The most recent period which I have studied the gas/oil ratios of the old wells was July of this year through October and the average gas/oil ratio was 600 cubic feet per barrel at that time, again demonstrating that the new wells are responsible for the increase in gas.

Q Mr. England, when did --

A Again I want to point out the rather dramatic increase. This time we're looking at an approximately 33-fold increase in the rate of production as a result and a consequence of infill drilling.

Q I was going to ask one more question.

A Yes.

Q At what point did the first new well go on stream for Marbob on that B Lease?

A Okay, the first new well on the Mary Dodd B Lease was B No. 35, and it came on stream in March of 1983.

Q Please refer to Marbob Exhibit Number Twelve and explain it.

A Marbob Exhibit Number Twelve is a performance curve of the G. J. West Co-op Unit, a recent acquisition of Marbob Energy Corporation.

Again what is depicted is the actual lease performance and a projectio of the performance without

any new wells.

At the time of acquisition by Marbob the lease contained a total of 50 wells that had produced in excess of 1000 barrels of oil per well.

The cums per well for this lease, or this unit, varied from 2000, were in the range of 2000 to 9000 barrels of oil per well. The average was 31,000 barrels of oil per well.

I estimate the ultimate recovery as of September of 1984 to be 1,618,000 barrels or a future of 53,0900 barrels, a future economic life slightly less than nine years.

Again I would direct your attention to the gas/oil ratio history. You can see that it was generally flat during the period 1976 to 1982, averaging some 4 to 5,000 cubic feet per barrel.

In 1983 to date the gas/oil ratio has decreased until it's now in the order of 1300 to 1500 cubic feet per barrel.

I point this out because this level is still less than the average of 2 to 3000 cubic feet per barrel for those leases that have enjoyed infill drilling, namely the Mary Dodd A and the Mary Dodd B Leases.

I would conclude that the G. J. West Co-op Unit will show a similar response, or respond in a similar manner, as that of the M Dodd A and the M Dodd B with infill drilling.

MR. QUINTANA: I just have one question.

A Yes, sir.

MR. QUINTANA: West Co-op Unit --

A Yes, sir.

MR. QUINTANA: -- your production curve on September of 1984, why did it drop so abruptly there?

A There is a one month period of time in which, as the assignment was being made and the properties were changing hands, that only one well was on production and the remainder were all shut in.

Q Mr. England, will you now refer to what has been marked as Marbob Exhibit Number Thirteen and identify it and explain it for the Examiner?

A Marbob Exhibit Number Thirteen is a comparison of recovery data of certain leases in the Grayburg Jackson Field, Eddy County, New Mexico.

What is shown on the exhibit are the leases involved in the subject area; the general location of these leases -- they're all located in Township 17 South, Range 29 East; the size of the lease in acres; the number of wells on each individual lease that have produced in excess of 1000 barrels of oil per well; the estimated ultimate recovery at October 1st, 1982, expressed in terms of barrels of oil, Mcf of gas, and then these recovery units have in

turn been reduced to acre recovery designation.

Also is shown for those two leases that have undergone infill drilling activity, the estimated ultimate recovery at November 1st, 1984, as a result of these new wells.

On the Boyd Dodd B Lease, it's a 160-acre lease, containing four wells. The estimated recovery at 10-1-82 for this lease is 377,000 barrels of oil and 123,000 Mcf of gas.

This translates to a per acre recovery of 2356 barrels of oil and 769 Mcf of gas, with an overall average gas/oil ratio of 326 cubic feet per barrel.

There have been no new wells drilled on this lease.

The next lease on the -- the next property on the exhibit is the Continental State. This lease contains 240 acres, three wells. Estimated ultimate recovery at October '82 was 54,000 barrels of oil and 8000 Mcf of gas.

This per acre recovery is 226 barrels of oil and 33 Mcf of gas. The average gas/oil ratio is anticipated to be 148 cubic feet per barrel. Again, no new wells on this lease.

On the M Dodd A Lease, it's a 600 acre lease. It had 19 wells. The estimated ultimate recovery at October of '82 is 1,504,000 barrels of oil and 1.4 Bcf of gas. This is equivalent to 2507 barrels of oil per acre recovery and 2244 Mcf of gas per acre recovery with an aver-

age gas/oil ratio of 835 cubic feet per barrel.

At the time I prepared this exhibit there had been 13 new wells drilled and completed on this lease.

The estimated ultimate recovery for all wells on the lease is 2,050,000 barrels of oil and roughly, 2.5 Bcf of gas.

Our per acre recovery is now 3417 barrels of oil and 4296 Mcf of gas.

The increase in the oil recovery is in the ordere of 35 to 36 percent.

The average gas/oil ratio over the life of the property with the new drilling is anticipated to be 1257 cubic feet per barrel and it's anticipated that the economic life as a result of infill drilling has been extended to approximately 20 years, or an increase of about 12 years.

The M Dodd B Lease is a 1480 acre lease. It contained 24 wells. Its estimated ultimate recovery at October 1st, 1982, was 1,115,000 barrels of oil and approximately a half a Bcf of gas.

The per acre recovery is 753 barrels of oil and 351 Mcf of gas and an overall gas/oil ratio anticipated at that time to have been in the order of 550 feet per barrel.

The estimated ultimate recovery at November 1st, 1984, with new wells, with some eight new wells having been completed, is 1,513,000 barrels of oil and ap

proximately 1.4 Bcf of gas.

The increase in the per acre -- excuse me.

The per acre recovery would be 1022 barrels of oil and 934 Mcf of gas. Again, the increase in the per acre recovery is in the order of 34 to 36 percent.

The anticipated average gas/oil ratio over the life of the property is 913 cubic feet per barrel.

Again, as a result of infill drilling, the economic life has been extended in this case to approximately 16 years for a gain of some 14 years.

I would conclude from this exhibit, it's obvious that infill wells are necessary to produce additional oil and gas that would not be produced by old wells on existing proration units. In other words, when looking at the performance curves, it is difficult to see how one could give recovery credit much beyond what I have for the old wells.

Q So, Mr. England, it was your conclusion that infill wells were necessary to recover additional reserves of oil and gas on existing proration units?

A Yes, sir.

Q Given what you know about the Dodd A and Dodd B Leases, and given the testimony of Jack Ahlen regarding the similarity of geologic circumstances in the entire subject area, is it your opinion that in those proration units within the subject area with existing or previous pro-

duction, that infill wells will be necessary to recovery the oil and gas reserves existing in those units?

A Yes, sir, absolutely.

The performance of the infill wells drilled to date has been very convincing.

Q Mr. England, as can be observed in Exhibit Nine, Marbob has drilled a number of wells at unorthodox locations and it proposes to drill a number of additional wells at unorthodox locations in the future, including the Dodd B 46, 47, and 48.

Referring to Exhibit Two, could you explain why these particular locations were chosen for the M Dodd B 46, 47, and 48?

A Okay. Looking at Exhibit Two, it was already established by Mr. Ahlen in previous testimony what is contemplated by the drilling in this area is the continuation and the extension of a pattern that has been initiated by an offset operator. I direct your attention to Section 23.

There are -- there are many facets involved in answering this question. The -- it was desired to not only develop San Andres reserves utilizing the existing pattern, but it was also desired to be able to develop the Grayburg reserves and for those wells that have not initially been completed in the Grayburg along with the San Andres, it is contemplated that these wells will be completed in the Grayburg some time in the future.

By locating the wells at unorthodox locations, it presents the greatest opportunity for Marbob Energy Corporation to encounter Grayburg conditions that will have been the least altered from original.

MR. QUINTANA: You mean locations which have not been drained or have been drained --

A Locations which have shown the least effect of drainage.

I might also point out that Marbob is watching with a great deal of interest the waterflood that is going to be conducted by Phillips Petroleum in Section 23 and they've been -- they've been looking to the future and if this waterflood is successful, then the spacing program that they're utilizing is going to allow them to be able to immediately implement a similar waterflood in their acreage -- on their acreage.

Q Mr. England, is the size of the Marbob treatment in the San Andres also a factor in its desire to locate these wells at unorthodox locations?

A Yes, sir, primarily because of the large volume of treatment and the concern -- one actually has no control over the direction that the fracture might go, and we try to stay as far as possible away from the old locations so we don't have to be concerned about fracing into the old wellbore, won't have to be concerned about perhaps old poor primary cement jobs that would not contain the fluid and might eventually wind up with a well actually pro-

ducing out of the surface head, and I've seen that occur in some fields.

Q Why will it be necessary to drill future wells at other unorthodox locations within the entire subject area?

A I believe it will be necessary to drill future wells on unorthodox locations in the subject area in order to complete the existing spacing pattern that we've discussed or as is contemplated by Marbob and to achieve the greatest ultimate recovery.

Q Mr. England, will you now refer to the documents which have been marked as Marbob's Exhibits Numbers Fourteen and Fifteen, and identify them and explain their contents?

A All right, sir. Marbob Exhibit Number Fourteen is a summary of the completion data on the recently drilled wells on the Mary Dodd A and Mary Dodd B Leases, Grayburg-Jackson Field, Eddy County, New Mexico.

What's shown on Exhibit Number Fourteen are the leases, the individual well numbers, the unit letter designation, and location by section, township, and range.

Also shown on Exhibit Fourteen is the top of the San Andres and depth datum, the perforated interval in the Grayburg and the San Andres, the net pay perforated in the Grayburg and the San Andres, and the initial production along with the test date.

Exhibit Fifteen is the unorthodox loca-

tions provide additional Grayburg reserves, Mary Dodd A and Mary Dodd B Leases, Grayburg-Jackson Field, Eddy County, New Mexico.

What's listed on this lease -- I beg your pardon, what's listed on this exhibit are two recently drilled wells, Mary Dodd B No. 36 and Mary Dodd A No. 31, and two of their immediate offsets and what's -- what's -- the comparison that's made on the exhibit are the perforated intervals, the initial production, production in October of '84 for the offsets as compared to the test data of these two recently drilled wells.

If I might, I'd like to come back now to Exhibit Fourteen and discuss it in a little more detail.

The Mary Dodd A No. 31 was completed in the perforated interval in the Grayburg from 2379 feet to 2495 feet and in the San Andres from 2572 feet to 3344 feet.

24 feet of Grayburg and 248 feet of San Andres pay were perforated.

Now, coming down to Mary Dodd B No. 36, its perforated interval in the Grayburg was 2437 feet to 2557 and in the San Andres, 2620 to 3336. In this well 38 feet of pay was perforated in the Grayburg and 201 feet of pay was perforated in the San Andres.

If we take all ten wells on this exhibit as a whole on a fee acre basis, the Grayburg formation should have contributed approximately 16 percent of the total daily production.

Now, if I might, I apologize for skipping back and forth, but I need to refer to both exhibits in order to make the next few points.

Going to Exhibit Fifteen and looking at the data for Mary Dodd B No. 36, its initial test was 67 barrels of oil per day, 100 Mcf of gas per day, and 40 barrels of water per day, tested in February of 1984.

You will note that I have noted that the Grayburg perfs tested 18 barrels of oil per day, 2 barrels of water per day, and 20 Mcf of gas per day over a 12 day period.

Coming down to Mary Dodd A No. 31, it tested 32 barrels of oil per day, 50 barrels of water -- 50 Mcf of gas per day, and 48 barrels of water per day.

Both of these tests were the combined production from both the San Andres and Grayburg formations.

Now, on the -- as far as Mary Dodd A No. 31 is concerned, its Grayburg test was 7 barrels of oil per day and a trace of water and 5 Mcf of gas per day.

Looking at these two sets of test data the Mary Dodd A No. 31 on the theoretical basis, 9 percent of the production should have been coming from the Grayburg. On an actual test basis about 22 percent of the production is coming from the Grayburg.

While on Mary Dodd B No. 36, on a fee acre basis about 16 percent of the production should have been coming from the Grayburg; on an actual test basis 27 per-

cent.

Therefore, I consider on this basis that the Grayburg will contribute anywhere from 9 percent to 27 percent of the recovery.

MR. QUINTANA: Additional recovery.

A Of the total recovery from the two perforated zones. I only have a limited number of well tests from which to draw this conclusion.

MR. QUINTANA: And what you're saying is by drilling at those unorthodox locations you -- gives you 9 percent more reserves from the Grayburg.

A I don't think I can go that far. I can say that 9 percent of the total production stream is attributable to Grayburg.

MR. QUINTANA: Grayburg.

Q At, excuse me, at a minimum.

A At a minimum. I was going to say that the actual test data makes it reasonable to me that you could anticipate that this could be as high as 22 to 27 percent.

Now, the only other thing that I would point out on Exhibit Number Fourteen, that in addition, the Mary Dodd No. 31 and the Mary Dodd -- Mary Dodd B No. 36, there are three other unorthodox locations in this tabulation.

They are Mary Dodd A No. 34, and Mary

Dodd B No. 41 and No. 42.

Now, going to Exhibit Fifteen, all we've done here is compare an example with Mary Dodd B No. 34, and I would like to point out there is a typo on this exhibit. The test date for Mary Dodd B No. 34 should be 11-04-71 and not 11-01.

But this well tested 34 barrels of oil per day and 105 Mcf of gas per day and 45 barrels of water per day in November of 1971, after squeezing off the Grayburg perforations.

The -- during the completion period the rate of production from the total well varied from 2 to 7 barrels of oil per day and 160 to 180 barrels of water per day.

The operator ran a survey and concluded that all this fluid was coming from the Grayburg perforations and squeezed the Grayburg off with 150 sacks of Class C cement.

In October from the San Andres by itself, this well was making -- I didn't write that figure down -- going to the other offset, Burch B No. 20, it was completed in March of 1971 for 125 barrels of oil per day. The Grayburg was commingled with the San Andres and not reported separately, but I would point out in October of this year from both the San Andres and the Grayburg perforated intervals, the well produced an average of 2 barrels of oil per day, 5 barrels of water per day, and 37 Mcf of gas, so that

the test in Mary Dodd B No. 36 in the Grayburg by itself, about a nine-fold increase.

On the Mary Dodd A No. 31, the offset that was chosen there was Mary Dodd A No. 3. In March of 1936 this well was completed for a reported 55 barrels of oil per day after shooting the Grayburg and San Andres open hole sections with 200 and 100 quarts of nitro, respectively.

It was shut in in 1976 as being uneconomic and Marbob cleaned out in December of 1982, produced an average of 4 barrels of oil per day and one barrel of water per day, 2 Mcf of gas per day in October of '84, but out test data on Mary Dodd A No. 31 is a 1.75 increase over that October production level.

Looking at the Burch C No. 36, which is a southeasterly offset, it was compared for 102 barrels of oil per day, 120 Mcf of gas per day, 127 barrels of water per day, in May of 1973.

Again, the Grayburg was being commingled with the San Andres and not reported separately; however, in October of this year the well produced an average of 5 barrels of oil per day, 2 barrels of water per day, and 2 Mcf of gas per day from both zones and the test rate that's shown for Dodd A No. 31 represents about a 1.4 increase over the October average production from the Burch C No. 36.

Q Mr. England, is it your conclusion based on the Exhibits Fourteen and Fifteen that these two particu-

lar unorthodox wells examples, the A 31 and the B 36, provided additional Grayburg recovery?

A Yes, sir.

Q Is it your opinion, based upon this evidence, that Marbob by drilling in unorthodox locations on the entire subject area will be able to recover reserves in the Grayburg formation which would not otherwise be recovered?

A Yes, sir.

Q Mr. England, in your opinion will the drilling of additional wells on all or some of these 40-acre tracts at unorthodox locations be necessary in order to efficiently and economically drain these 40-acre tracts?

A Yes, sir.

Q And in your opinion will granting this application allowing Marbob to drill M Dodd B 46, 47, and 48, as well as future unorthodox locations on the subject area under the administrative approval procedure applied for herein result in the recovery of additional oil and gas in both the Grayburg and San Andres formations which would not otherwise be recovered.

A Yes, sir, that's my conclusion.

Q And in your opinion will it be necessary for Marbob to drill wells at unorthodox locations as close as 330 feet from a leaseline or in the case of a unit, unitized area, in order for Marbob to adequately drain the reservoir, produce its equitable share of the reservoir, and

thereby protect its correlative rights?

A Yes, sir.

Q And in your opinion will the granting of this application in all respects be in the interest of conservation, the prevention of waste, and the protection of correlative rights?

A Yes, sir, it is.

Q Were Exhibits Numbers Nine through Fifteen either prepared by you or under your direction and supervision and can you testify as to their accuracy?

A Yes, sir.

MR. BLISS: Marbob Energy moves the admission of Exhibits Nine through Fifteen at this time.

MR. QUINTANA: Exhibits Nine through Fifteen will be accepted into evidence.

MR. BLISS: And I have no further questions of this witness.

MR. QUINTANA: I have one question.

CROSS EXAMINATION

BY MR. QUINTANA:

Q Are any of these leases, the Dodd A, Dodd B, or the West Co-op Unit, designated as waterfloods already?

Do you have any orders showing that they were waterfloods?

MR. BLISS: This might be a better question to address to Raye Miller because --

A I'll refer that question to Raye Miller.

MR. BLISS: -- he might have a better idea of operations in that respect.

MR. QUINTANA: Other than that I don't have any questions of the witness.

MR. MILLER: May I ask him one, or is that out of place?

MR. QUINTANA: No.

QUESTIONS BY MR. MILLER:

Q On Exhibit Fifteen in looking at the M. Dodd B 34 and 36, given the poor results of the Grayburg in the Well No. 34, do you think it would have been as advantageous to have drilled the well at an orthodox location thereby being closer, or was the 36, being unorthodox and further away from the 34 wellbore a better location?

A I think Well No. B-36 being located at an unorthodox location did exactly what it was suppposed to do, and that was to provide the maximum opportunity for the well to encounter the least altered Grayburg reservoir conditions.

MR. QUINTANA: Okay, you may now be excused.

MR. BLISS: I would now like to call Mr. Raye Miller as my next and final witness.

RAYE P. MILLER,

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

DIRECT EXAMINATION

BY MR. BLISS:

Q Will you please state your name, your occupation, and where you reside, please?

A My name is Raye Miller. I work at Marbob Energy Corporation in the Land Department. I'm also Secretary-Treasurer of Marbob Energy Corporation, and I reside in Artesia, New Mexico.

Q Mr. Miller, have you previously testified before the Division?

A No, I have not.

Q Mr. Miller, what is your eductional background?

A I hold a Bachelor of Arts in economics from the University of New Mexico in 1976 and a Masters in Business Administration from the University of Southern Califonnia in 1978.

Q And how long have you worked in the Land Department at Marbob?

A I've worked in the Land Department approximately three years and been employed by Marbob Energy about four and one-half years.

Q Are you familiar with the application of Marbob Energy Corporation in these cases?

A Yes.

MR. BLISS: Are Mr. Miller's credentials acceptable as a landman?

MR. QUINTANA: Mr. --

MR. BLISS: Miller.

MR. QUINTANA: Mr. Miller's credentials as a landman are acceptable.

Q Mr. Miller, will you look at what has been marked as Marbob Exhibit Sixteen and explain what it is?

A Marbob's Exhibit Sixteen is a map identifying all offset tracts in the Grauburg-San Andres formation offsetting the entire subject area, and a list of offset operators.

In the cases where there were no producing wells and the ownership of the operating rights were split among several entities and no one entity could be clearly defined as "operator", all of the interest owners were notified.

Also, the first tract listed, which, that being the Featherstone Development Corporation, concerning title flaws and all the persons who may be "the offset operator" were notified.

Q Was there any case where the State of New Mexico still owned the ownership in the --

A Yes. One tract, which was shown down there as Pioneer Production Company and Commissioner of Public Lands, Pioneer Production Company was the lessee from the State of New Mexico, but that expired May of '84 and the Commissioner of Public Lands now holds the oil and gas rights in an unleases status.

Q Will you now refer to what has been marked collectively as Marbob Exhibit Seventeen and identify these for the Examiner?

A They are copies of letters which were sent to the offset operators by certified mail.

I'd like to point out that the letters were also sent to three owners of a portion of the Grayburg-San Andres formation within the subject area but who own rights below those owned by Marbob. Those people are Atlantic Richfield, Midwest Investment Company and Conoco, and all parties received notice.

Q How was this information on the offset operators obtained?

A The information was obtained by researching the records in Eddy County, New Mexico, and supplemented by take-offs from Federal abstracts and C-115 data from the Artesia Office of the Oil Conservation Division.

Q Will you now refer to what has been marked collectively as Marbob Exhibit Number Eighteen and identify these for the Examiner?

A Yes. Contained here are waivers of ob-

jection signed by the offset operators or owners which have been received by Marbob to date.

We have yet to receive all of these and they will be forwarded to the Division upon receipt.

I'd like to point out one letter, that from Jack Plemmons. It's the one on top and also the second page there was a letter which he sent to Mr. Stamets here at the Oil Conservation Division.

As you can see, Mr. Plemmons has requested that no unorthodox locations or injection wells be allowed within 2640 feet of his lease in Section 27.

This hearing does not deal with injection wells and it is Marbob's position that since we will never drill closer than 330 feet to his lease line, that he has no basis for objection and that Marbob should be entitled to have its application for administrative approval procedure approved based on the evidence presented at this hearing.

Q Mr. Miller, were Exhibits Sixteen through Eighteen either prepared by you or prepared by others under your direct supervision, and can you testify as to their accuracy?

A Yes.

MR. BLISS: At this time I will offer Marbob Energy Corporation's Exhibits Sixteen through Eighteen into evidence.

MR. QUINTANA: The Exhibits Sixteen through Eighteen will be accepted as evidence.

MR. BLISS: Mr. Examiner, that concludes our direct testimony.

I believe you have one question that you wanted to address regarding existing waterfloods to Mr. Miller.

CROSS EXAMINATION

BY MR. QUINTANA:

Q Mr. Miller, let me clarify for the record, in this -- when you first came to the Oil Conservation Division you applied to drill at unorthodox locations based on an expansion of a waterflood to -- your reason was to more efficiently drain the reservoir.

Are any of these leases currently under a waterflood order, our order that was issued by the Commission?

A Yes. Unfortunately I did not bring the information with me, but I believe that there have been orders and were active waterfloods on both the Dodd A, the Dodd B, and the Grayburg-Jackson West Co-op Unit.

There is currently disposal on all three leases and when I say disposal, it's utilization of injection wells that were permitted under those waterfloods and the wells that are being injected to, I believe, are the Dodd B No. 9, No. 17; the Dodd A 16 and 20. I believe that those are the four wells that are currently being injected into on the Dodd leases, and on the GJ West Unit, I believe

they're disposing or injecting into one of those authorized wells. I believe it's No. 14. I know it's one of the wells located in the north half of Section 28.

The status of the waterflood project is a situation where basically Marbob has only operated the Dodd A and Dodd B for a portion of about two years now and has just recently acquired the Grayburg-Jackson West Co-op Unit.

Sun Oil Company waterflooded what has been referred to here as the Premier Sand, sometimes noted as the MeTex Sand in the local area, in the Dodd B, extensively. In fact, at one point I believe there was a fire flood even put into effect on this area.

The Grayburg-Jackson was waterflooded in both the Upper San Andres and the Grayburg zones, I believe, and the Dodd A was waterflooded in the Keeley zone as well as some of the Grayburg sections.

Basically Marbob looks at the fact that both of these or all of these leases are qualified as active waterflood programs and what we are looking at is one, an assessment of Phillips' development of their waterflood in the same pool in Section 23, and also an evaluation of our development once the infill portion of the drilling has basically been completed.

There are some problems and I know that we'll be working closely with the Commission at some point when we look at really activating this.

Phillips Oil, in their application, had a

problem with a plugged well, the M Dodd B No. 3 feel within a half mile and was not properly plugged, and, of course, some of this will have to come under review, but it may be a thing where if Marbob elects to actively inject, they'll have to rework some wells to efficiently establish not only a drainage pattern but to correct some problems.

Q So it is possible that even though there is not current injection in all these leases, that they could be expanded in the future?

A Yes. Marbob owns 100 percent of the operating rights or Marbob and its related entities owns 100 percent of the operating rights in all of the subject area.

Q And it is my understanding that by drilling these infill wells at these proposed unorthodox locations, or future proposed unorthodox locations, that it does two things: It produces additional reserves that would not otherwise be recovered, and it also sets up a pattern for future secondary recovery that may occur.

A Exactly.

Q Thank you.

MR. QUINTANA: I have no other questions of the witness.

MR. BLISS: I have some very brief closing remarks in regard only to the matter of Mr. Plemmons objection, and that is only to reiterate that in its testimony today, that Marbob established that it will be necessary to drill wells at unorthodox locations within 330

feet of the outer boundaries of the leases and unit if Marbob is to protect its correlative rights, and also to note that Mr. Plemmons did not assert any legal basis for his objection in the letter.

And I would also like to note his absence at this hearing.

MR. QUINTANA: It will be so noted.

Mr. Bliss, I would like to point out that -- well, I would -- I would like to suggest that if you do happen to drill at an unorthodox location offsetting Jack Plemmons lease, that you would actively commence injection in those areas because the orders that were properly issued before and in the statewide rules allow for you to inject within 330 foot of the leaseline as long as it's an active injection.

That would save a lot of controversy between yourselves and Mr. Plemmons and if you wish to -- you know, if I do grant this order, it would allow you to do that, but I'm sure that he would probably come and create some type of controversy where you would have to come back to hearing, and I would make the suggestion that if you do happen to drill within 330 foot of the lease, you commence active water injection and statewide rules allow you to do that, and he would have a difficult time objecting to that.

MR. MILLER: I might note just

for the Examiner's information, there has been some work done subsequent to the time that the hearing was developing the information.

We have offset Mr. Plemmons in orthodox locations in the GJ West No. 63 Well on his north border, which would be between Well No. 26 and 24; on his west border in the GJ Well No. 64 Well, an orthodox location between his Well No. 17 and 16.

The GJ West No. 65 is currently being drilled at an orthodox location between Well No. 7 and 16.

The pad has been laid for the GJ West No. 6, which is between his well -- our Well No. 7 and 6, which would be the south offset, all at orthodox locations.

MR. QUINTANA: Thank you. Is there anything further of the witness?

If not, he may be excused and Cases 8432 and 8433 will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division 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. 8432 & 8433 heard by me on Dec. 19 1984.

Gilbert P. Quintana, Examiner
Oil Conservation Division