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

9 ~~22~~ January 1986

EXAMINER HEARING

IN THE MATTER OF:

Application of Southland Royalty Company for special pool rules, Lea County, New Mexico. CASE 8802

BEFORE: David R. Catanach, 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. CATANACH: We'll call next Case 8802.

MR. TAYLOR: Application of Southland Royalty Company for special pool rules, Lea County, New Mexico.

MR. CATANACH: Are there appearances in this case?

MR. IVES: Peter Ives, with the law firm of Campbell & Black, P. A., on behalf of Southland Royalty Company.

MR. CATANACH: Are there other appearances?

MR. IVES: I have one witness.

MR. CATANACH: Will the witness please stand and be sworn.

(Witness sworn.)

JOHN STARK,

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

DIRECT EXAMINATION

BY MR. IVES:

A Mr. Stark, could you please state your name and place of residence?

A My name is John Richard Stark. I live in Midland, Texas.

Q And by whom are you employed and in what capacity?

A Southland Royalty Company and I'm a petroleum engineer.

Q Have you previously testified before the Oil Conservation Division?

A No, I haven't.

Q Okay. I'd like to then go into your previous work experience and educational background to qualify you before the Commission.

Let us start with your educational background beginning with college, if you could relate that to us.

A I received a Bachelor of Science degree in mechanical engineering from Texas Tech University.

I then worked with Union of California in Midland, Texas, as a petroleum engineer, with looking after areas in southeastern New Mexico and Texas.

Q And how long did you work with Union Oil

of California?

A I worked approximately 3-1/2 years and the I went to work with Southland Royalty Company and have been with them for approximately 4 years as a petroleum engineer, again looking after areas in southeastern New Mexico and West Texas.

Q And what sort of responsibilities have you had with Southland Royalty?

A We're assigned areas, geographic areas, in which we perform drilling, production, reservoir engineering in that area.

Q Let me ask, do you belong to any professional organizations?

A Yes. The Society of Petroleum Engineers is the main one.

Q Do you also belong to the American Society of Mechanical Engineers?

A Yes, sir.

Q And how about the Society of Professional Well Log Analysts?

A Yes, sir, I belong to that, also.

Q Are you familiar with the wells in the area which is the subject of the application here today?

A Yes, I am.

Q And are you familiar with the application

in this matter?

A Yes.

MR. IVES: I would tender Mr. Stark as an expert witness in petroleum engineering for purposes of this proceeding and before the Commission.

MR. CATANACH: Mr. Stark is so qualified.

Q Mr. Stark, could you briefly state what Southland Royalty Company is seekign with this application?

A Yes. Southland Royalty Company is requesting that the current 40-acre spacing be changed to 80-acre spacing for a temporary time, approximately eighteen months, effective February 1st of '86.

Q So you are seeking special pool rules in connection with the West Corbin-Wolfcamp?

A Yes, the West Corbin-Wolfcamp Pool.

Q And if I could ask you to refer to what has been marked as Exhibit Number One, and explain to the Examiner what it is and what it shows?

A Okay. This -- this map shows the current West Corbin-Wolfcamp Pool. It's indicated in a shaded area. Also the wells, the current existing wells, dry holes, and shut-in wells are shown, along with other well information.

This -- as can be seen, approximately nine wells have been drilled in approximately twenty years,

with the original well being in 1967.

And also note that the spacing is actually closer to 160 acres per well.

Q Let me ask, Exhibit Number One refers to the South Corbin-Wolfcamp Pool. Did you -- before you were speaking about the West Corbin-Wolfcamp Pool. Did you mean the South Corbin-Wolfcamp?

A Yes. Yes, the South Corbin-Wolfcamp Field.

Q Very good. Does Exhibit One set forth the pool boundary?

A Yes, it does.

Q And where is that shown?

A The shaded area on this map indicates the current boundary.

Q And does the map show all producing oil and gas wells in the pool or within one mile thereof?

A Yes, it does.

Q And does it show the producing formation and total depth of those wells?

A Right, yes.

Q And all the dry holes within one mile thereof are also shown on the map.

A Yes, sir.

Q When was the pool created?

A In 1967.

Q And has there been much activity in the pool?

A No, there hasn't. There are approximately nine wells in the twenty year period to date.

Q Directing your attention to the recently drilled wells, could you state for the examiner the names, locations, and the acreage that you propose to dedicate to each?

A Okay. The most recent activity is by Southland Royalty Company in the northern end of the field in Section 17. Both wells are in Section 17, the West Corbin Unit No. 5, and then also in the very southwest quarter of that section, the Southland Royalty Company Huber No. 17 Federal No. 1.

The West Corbin No. 5 was completed in August of '85 and the Huber Well was completed at the end of December of 1985.

Q And what acreage do you propose to be dedicated to those wells?

A We're proposing stand-up 80-acre proration units.

Q And does Exhibit One demonstrate effectively 80-acre or greater spacing for the South Corbin-Wolfcamp Pool?

A Yes, it does.

Q Is Southland Royalty Company planning to drill additional wells in this area?

A Yes. We're proposing three wells in the next six months and --

Q What -- what is the status of that drilling activity?

A Well, we're currently awaiting on the outcome of this hearing and then we'll submit them as soon as possible.

Q What sort of obligations does Southland Royalty have with regards to drilling -- the drilling you're referring to?

A Okay, we have in the southwest quarter of Section 17, we have farmout agreements with one expiring within a little over a month that we -- we'll lose the acreage if we don't drill it.

We also have two other locations, 40-acre locations, we'd be forced to drill due to a continuous drilling clause on another farmout.

MR. IVES: I think those are all the questions I have with regards to Exhibit One, Mr. Examiner.

MR. CATANACH: You may proceed.

Q If I could please ask you to refer to Ex-

hibit Number Two and explain to the Examiner what it is and what it shows?

A Okay, this is a structural cross section throughout the entire South Corbin Field. There's a reference map on the righthand edge that shows the cross section running from northwest to southeast.

The main information to note from this is how the Wolfcamp zone, or overall interval, is continuous throughout this whole -- this whole field; however, it does also show individual limestone intervals to be -- to be present but also to be very erratic in nature.

Perforations are shown on these wells with the emphasis on the three wells close together on the lefthand side.

Q Let me ask you, if you couldn't correlate those wells to the wells which appear on Exhibit One?

A Okay. The second well from the left is the Southland Royalty's West Corbin Federal No. 5. That is a well that was drilled in August of '85.

The third well from the left is the West Corbin No. 1. That was completed in 1982. It's a Southland operated well.

And then the fourth one from the left is the Southland Royalty's most recent well, the Huber 17 Federal No. 1.

Q With regards to the West Corbin Unit No. 5 and Huber 17 Federal 1, what does Exhibit Two show to be the relationship between those?

A The West Corbin No. 5, I might first point out that the perforations below 11,200 have been plugged off and the remaining perforations above that are the current ones open.

In the Huber 17 No. 1, the perforations below 11,000 have been plugged off after they tested wet, and the perforations around 10,900 are the current -- current intervals.

The cross section indicates that these intervals can come and go and right now we're not sure if these intervals are connected or not. These intervals are very possible in this type of field development, in that they could, away from the wellbore, be in contact with these others, so that pressure and some fluid could be transmitted across.

Q So in other words, you -- are you saying, telling us that there is a relationship possibly between the two wells but based on present information you can't be sure what that relationship is?

A Yes, that's right. We have original bottom hole pressure of the West Corbin No. 5 and original bottom hole pressure measured in the Huber well.

The Huber well, which was completed in

December, had approximately 400 pound -- 400 psi less original pressure, which is causing us to suspect there is possible drainage effect going on and the possibility of these intervals being connected away from these wellbores.

Q Let me ask, will the drilling that Southland Royalty is anticipating doing within the next six months and the production history from the drilling serve to provide greater information as to what the relationships within the field might be?

A Yes. We plan to drill and to core a number of these wells, at least -- at least one of the three planned, and also to gather production history on the current wells and the new ones and to gather pressure data on all of them so that we can help understand which intervals are connected together and have an effect on each other.

Q So the pressure logs, the cross section, and Exhibit One show that the West Corbin Unit No. 5 and Huber 17 Federal 1 are on effective 80-acre spacing and there may be a relationship between those wells, is that correct?

A Yes, that's correct.

MR. IVES: Those are all the questions I have on Exhibit Number Two.

MR. CATANACH: That's fine. You may proceed.

Q If I could ask you to refer to Exhibit

Number Three, Mr. Stark, and explain to the Examiner what it is and what it shows.

A Okay, Exhibit Number Three are some volumetric calculations I've performed on the Southland Royalty West Corbin Federal No. 5 and Southland Royalty's Huber 17 Federal No. 1, the two wells we previously mentioned that we suspect possible effect on each other though they are 80-acres apart.

First of all, let's go through the -- what I've done.

The equation for the recoverable oil in place is shown in which I assumed the estimated ultimate recovery of 100,000 barrels of oil per well. This is based on average decline curve analysis of the existing wells in the field and appears to be a fairly conservative number, if these, the West Corbin 5 and the Huber 17 continue their top allowable flow rates.

The -- on the West Corbin No. 5 the H-net stands for net pay thickness. I'm using 16 feet. More than that is perforated; however, we've run a flowing production survey that indicated just the top 16 feet was contributing all the production.

The next is average porosity of that net pay, that net thickness, which I came up with 2, 2-1/2 percent.

The next B-sub-OY (sic) stands for formation volume factor of the oil, and that was obtained by correlation charts using the oil gravity and the GOR that the wells initially came in at.

The S-sub-W is for water saturation from the electric logs, calculated around 32 percent.

The RF stands for recovery factor. I assumed 25 percent. We're not sure if the drive mechanism out here is solution gas drive, with approximately a 15 percent recovery factor or water drive could be around 20 percent, thus I've chosen a number in between there to try to give a realistic look.

As shown, the result of that calculating the area with the given information, I came up -- it resulted in 271 acres of possible drainage.

Similarly, for the Huber 17 No. 1, the same assumption for the estimated ultimate recovery, or the recoverable oil in place of 100,000 barrels was used.

The net pay from analysis of the well log, 28 feet was used.

Also the average porosity of 6 percent from log data.

The same formation volume factor for the oil and the recovery factor as the West Corbin 5 was used; however, the water saturation of 40 percent was obtained

from log data.

Again, using the same volumetric equation, rearranging the result for area, this well is estimated to possibly drain 73 acres.

Q Let me ask, Mr. Stark, will granting this application be in the best interest of conservation, the prevention of waste, and the protection of correlative rights?

A Yes.

Q In seeking this appplication for special pool rules, are you seeking to avoid drilling unnecessary wells?

A Yes, sir. If we drill -- to drill these additional 40-acre spacing wells in the time that we have to respond to this farmout agreement, we may find out that they were not needed for the drainage. That will make the -- the investment in this area higher than it should be. Our overall projected drilling cost would be higher, and therefore affect our economics in a poorer way, and that could cause us to reduce our drilling and development of this field.

Q Were Exhibits One through Three prepared by you or compiled under your direction and supervision?

A Yes, they were.

Q Do they accurately and correctly set forth the information contained therein and as you have

tified to here today?

A Yes, they do.

MR. IVES: I would offer Exhibits One, Two, and Three into evidence in this proceeding.

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

Q Mr. Stark, let me ask, does Southland Royalty Company need an expedited order in connection with this proceeding?

A Yes, they do. As I said earlier, we have a farmout agreement that will expire in approximately a month that we will either drill it or lose the -- lose the acreage.

Q And what are you seeking as an effective date from the Commission for an order in this case?

A We would like to see an effective date of February 1st of 1986.

MR. IVES: I have nothing further, Mr. Examiner.

CROSS EXAMINATION

BY MR. CATANACH:

Q Mr. Stark, let me just make sure I understand what you're asking for.

This is currently spaced on 40 acres and

you request 80-acre spacing, is that correct.

A Yes, sir, on a temporary basis.

Q Do you request a stipulation as to whether the 80 acres be standup or laydown?

A Well, our current plan is for standup. I feel like that would fit the current well situation.

Q Do you seek a restriction that would prohibit a laydown, a laydown 80 acres?

A Not at this time, we don't.

Q Do you, Mr. Stark, have any recommendations for well locations within the pool?

A Yes, sir, we -- we plan for well locations, a northeast diagonal offset to the Huber 17 Federal No. 3, and then also a diagonal northeast offset to the West Corbin No. 5.

And also a diagonal offset to the northwest of the West Corbin Unit No. 1.

Those are the three wells that we plan to drill within the six month period.

Q Specifically do you have any -- do you have any recommendations requiring where the wells should be located within the 80-acre unit?

A Well, just that they would be, I believe the current status is within 150-foot from the center of the 40-acre location, which these wells --

Q Or by their 40-acre location?

A Yes, sir.

Q Than the 80-acre --

A That's what we're seeking now and may I note that on our map there's a dot representing the West Corbin Unit No. 1, was placed too far over to the section line. It's, as the location is given, the footage isn't on the data, and it should be in the center of that -- of that 40-acres. It was misplaced when the map was made.

Q I'm sorry, that was the --

A Southland Royalty's West Corbin Unit No. 1 in Section 18.

Q That should be in the center of the quarter section?

A Yes, sir, the map misplaced it.

Q Mr. Stark, have the other operators within the pool been notified of your application (not understood)?

MR. IVES: Mr. Examiner, if I may, notice was provided in accordance with the rules and regulations, the application being filed before January 1st, 1986.

MR. CATANACH: Well, you folks aren't aware of any opposition?

A None.

Q Mr. Stark, you asked for rules to be in effect for a period of 18 months. Do you feel that that's time enough to establish whether these wells drain 80 acres?

A We would like to have at least that long. We're planning to drill those three wells within a six month period and then allowing us to evaluate the production and gather pressure data the following year, and for a geologist to -- to further their evaluation of the formation with those additional wells.

MR. CATANACH: I have no further questions of Mr. Stark at this time.

Are there any other questions of this witness?

If not, he may be excused.

Is there anything further in Case 8802?

MR. IVES: That concludes our presentation.

MR. CATANACH This case will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY 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

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

7 October 1987

EXAMINER HEARING

IN THE MATTER OF:

Case 8802 being reopened pursuant to the provisions of Division Order No. R-8181-B, Lea County, New Mexico. CASE 8802

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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I N D E X

ARDEN WALKER

E X H I B I T S

MR. STOGNER: Call next Case Number 8802.

MR. TAYLOR: In the matter of Case 8802 being reopened pursuant to the provisions of Division Order No. R-8181-B, which order promulgated temporary special rules and regulations for the South Corbin-Wolfcamp Pool in Lea County.

MR. STOGNER: Call for appearances.

MR. KELLAHIN: If the Examiner please, I'm Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of Meridian Oil, Inc., and I have one witness to be sworn.

MR. STOGNER: Are there any other appearances in this matter?

Will the witness please stand and be sworn?

(Witness sworn.)

MR. STOGNER: Mr. Kellahin.

MR. KELLAHIN: Mr. Examiner, I would like to share with you a copy of the Division Order R-8181-B, which was entered in May of 1986. It represents an order entered on an application by Southland Royalty Company

to create on a temporary period of eighteen months 80-acre spacing in the South Corbin Wolfcamp Pool.

It is this order now which has come before you for hearing for permanent pool rules.

Southland Royalty Company's successor in interest in this property is Meridian Oil, Inc. and we are here to support the continuation of the pool on 80-acre spacing and the other temporary rules set forth in that order for which our witness will testify and request that these rules now be made permanent.

With your permission, Mr. Examiner we'll call our first witness, Mr. Arden Walker.

ARDEN WALKER,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Walker, for the record would you please state your name, sir?

A Yes. My name is Arden Walker.

Q And what is it that you do for Meridian Oil, Inc.?

A I'm a reservoir engineer in Midland.

Q As a reservoir engineer have you previously testified before the Oil Conservation Division of New Mexico?

A Yes, I have.

Q Let me have you take a moment, sir, and look at Exhibit Number One and explain to the Examiner what was the status of development in this pool back in May of 1986 when the Commission established temporary 80-acre spacing for the reservoir.

A Exhibit Number One is a map of the South Corbin Wolfcamp Field as it currently exists. Since the time the original temporary ruling was prepared there have been three wells drilled.

Up in Section 17 the Huber 17 No. 2 Well, which is in the northeast of the southwest quarter.

Q Hang on just a minute.

A Okay.

Q All right, let's find the first well that's been drilled subsequent to the temporary order being entered in May of '86. What's the first well?

A Again, in Section 17 it's the northeast of the southwest quarter, which is the Huber 17 No. 2 Well.

Followed by that was our West Corbin No. 8 Well, which was drilled earlier this year.

And then subsequent to that our recent

completion, the State 16 No. 1, located over in Section 16.

Q Have you made an engineering investigation and an examination to deterine whether or not you could reach engineering opinions concerning the ability of one well in this pool to drain and deplete 80-acre spacing?

A Yes, we have. It's been an on-going study since the beginning of this temporary ruling to try to obtain as much pressure data, as much engineering data, to support 40-acre, 80-acre, whatever it might be that would be the most efficient way to develop this field.

Since the time we obtained this ruling again we've obtained pressure data on each of the wells drilled and have prepared enough data today to insure that 80-acre spacing is the logical choice in this field.

Q Has that study and those opinions been reached either by you directly or through your direction and assistance by employees of Meridian Oil, Inc.?

A Yes, by me directly.

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

MR. STOGNER: Mr. Walker is so qualified.

Q Let me have you take a moment and describe for us what generally is occurring with the develop-

ment of the three new wells in the reservoir in terms of how you have addressed the question of 80-acre spacing, and then gone through the methodology by which you have satisified yourself that in fact that spacing is appropriate.

A All right. Well, the first well drilled subsequent to the temporary rules being established again was the Huber 17 No. 2 Well. We obtained pressure data from that well subsequent to its completion and have seen significant pressure depletion in this northern portion of the field.

Subsequent wells to that, the West Corbin No. 8 Well, also saw significant pressure depletion from the offset wells. This, in our minds, is evidence that 80-acre spacing is -- is definitely necessary. 40-acre spacing is not -- not prudent and wouldn't be economically viable at present.

The -- some of the other data that we've used in this -- in this analysis would be some volumetric analysis taking performance curves and backing into an areal extent and coming up with some areal extent drainage areas. Those range anywhere from 65 upwards to over 100 acres, depending on the well. I've got calculations to back -- to back all this up.

Q Have you also made a re-examination of the economic information that was presented to the Commis-

sion which resulted in the May '86 order?

A I guess I have. I've prepared an economic analysis using current well prices and current oil prices, which indicate that it's economically viable to drill out here on eighties, where it would not be economical to drill on40-acre spacing.

Q All right, sir. Let's go to the first area of review and talk about the pressure data that Meridian has developed from wells in the reservoir, and I believe that is identified for the Examiner as Meridian Exhibit Number Two.

First of all, Mr. Walker, tell us the method by which the pressure data was taken from the wells and then what -- what calculations or conclusions you derive from an analysis of that data.

A Well, the pressure data presented here varies in source. Some of the older pressure data is determined from DST information and that's all that was available at the time.

The later pressure data was obtained from bottom hole pressure bombs in all cases.

Q Can you generally describe for us what you as an engineer would identify as being reservoir pressure in the reservoir that would represent virgin pressure?

A Somewhere on the order of between 4000

and 4500 pounds. We've seen development over the years since the discovery of the field in 1967 of 4400 pounds. We've seen wells since that time with pressures in the same -- same ballpark.

Q In analyzing the pressure data that's indicated on Exhibit Number Two, what conclusion have you reached about pressure interference between and among wells?

A Well, as you can see from the exhibit, Exhibit Number Two, the first well drilled was drilled in the central portion of the field in 1967, as I mentioned earlier. The bottom hole pressure was 4400 pounds.

The next well drilled was way down in the south in Section 28. It had somewhere on the same order, 4347 pounds in 1980, which was thirteen years later.

So it doesn't appear that over a section in size that you're seeing significant pressure depletion but then subsequent completions of wells in the northern portion of the field have seen again initial pressures up in the 4000/4500 pound range but subsequent wells have seen pressures significantly less than that, which in our minds is indicating we're seeing some pressure depletion from -- from 40-acre to 80-acre locations.

Q Are you satisfied that the amount and quality of the pressure data that you have derived from this reservoir is adequate and sufficient enough a basis upon

which to reach a conclusion about spacing?

A Yes, I do, especially with the late development in the northern portion of the field. We've got four or five good pressure points up there in the north part of the field in which it seems evident to us that we've got good information enough to say that 80-acre spacing is what's required in this case.

Q Let's now turn, Mr. Walker, to the second issue you raised earlier and that was the analysis of the reservoir based upon volumetric calculations to determine areas of drainage.

Have you reduced that analysis to a display? I believe we have that marked as Exhibit Number Three?

A Yes, I have.

Q All right, sir. First of all would you identify the parameters that you used in the calculation and then go on and explain the results and then finally your conclusion?

A Yes, I, from log -- log calculations I've -- I've taken the effective pay thickness which is labeled here as H, porosity, permeability, I mean, excuse me, formation volume factor, water saturation, and recovery factors, and using indicated performance data from the performance curves backed into an EUR, and obtained an areal extent from

that, and as you can -- as you can see from the various wells I've -- I had sufficient data on to do tnis analysis. I have six wells presented here and the areal extents ranging were from 102 acres on the West Corbin No. 1 Well to 63 acres on the West Corbin No. 8 Well.

Q To put your analysis in perspective, Mr. Walker, let me have you explain to the Examiner what volumetric calculations were presented to the Commission which resulted in the Commission order establishing 80-acre spacing back in May of '86?

A Okay. In 1986 there was an assumed EUR of 100,000 barrels from a couple of existing wells at that time.

Q Which were the two wells involved in that hearing?

A The West Corbin No. 5 and the Huber 17 Federal No. 1 Well.

Q Those earlier volumetric analyses assumed 100,000 barrels per well?

A Exactly.

Q Based upon subsequent development and information, have you determined whether or not any of those parameters used in the volumetric calculation ought to be modified or adjusted?

A Well, the West Corbin No. 5 Well had a

net thickness that they used originally of 16 feet. That was taken from the logs and it appears now that we may be -- may actually be producing a much thicker zone. We may be channeling behind the pipe and may have another zone open.

The -- also the recovery factors were down-graded slightly from previous estimates down to 20 percent rather than 25 percent.

Q Down-grading the recovery factor, would it be a more conservative analysis in terms of the amount of acres to be drained?

A That's correct.

Q In preparing Exhibit Number Three can you reach an engineeing opinion as to whether or not there is sufficient information by which to make reliable volumetric calculations for these wells?

A The -- all indications we have is our log data is accurate. We feel like the areal extents that we've calculated here are indicative of what we're actually seeing.

Q For each of the volumetric calculations made for each of the wells, do you find and can you conclude that each of those wells are in fact draining more than 40-acre tracts?

A Yes.

Q Have you identified on the exhibit the

exact number of acres that you've calculated for each of the wells?

A Yes, I have.

Q And they range from how many acres minimum to maximum?

A 63 acres minimum to 102 maximum.

Q Ultimately, then, Mr. Walker, what is your opinion with regards to 80-acre spacing based upon a volumetric analysis of the reservoir wells?

A Based on valumetric analysis it appears that wells are capable of draining in excess of 80 acres, I mean in excess of 40 acres.

Q Let me direct your attention now to the third issue that you addressed in the reservoir study and that was to again examine an economic analysis of the reservoir to determine whether or not from an economic perspective you could space wells on 40 versus 80 acres.

I direct your attention now to Exhibit Number Four and ask you if you prepared that exhibit.

A Yes, I did.

Q And what do you conclude having made that economic analysis?

A The conclusion is that you can viably drill for 80-acre wells where you could not viably drill for 40-acre wells.

Q Describe for us using this exhibit the reasons that cause you to reach that opinion.

A What I've presented here is a one well case in which 80-acre spacing is assumed, using a risk reserves of 100,000 barrels of oil and 180 cubic feet of gas. For simplicity's sake I've assumed 100 percent working interest and 87-1/2 percent net revenue interest.

For an investment of $760,000, which is a typical well cost for a Wolfcamp well in this field, you get a 39.7 percent rate of return in a payout of 1.8 years.

Should a well be drilled on 40 acres with roughly half the recovery, you're looking at no rate of return. It's not something you would actually drill.

Two wells to drain that same 80 acres would give you the same results with twice the investment.

Q From Meridian's perspective, would they be able to drill wells on 40-acre spacing if 40-acre spacing was to be the spacing reverted to in the field?

A No, we wouldn't.

Q Let's go now, if you will, Mr. Walker, to a copy of the Commission order entered in May of '86, and let me review with you the order portions of that decision, starting on Page 3 where you find the temporary rules.

A Uh-huh.

Q Have you re-examined each of the six

temporary rules that have been established for the South Corbin Wolfcamp Pool?

A Yes, I have.

Q And do you find in each instance that each of those rules is appropriate rules to now be made permanent for the operation of this reservoir?

A Yes.

Q Do you have any recommendations to the Examiner as to any modifications in these rules or additional rules to apply to the reservoir?

A No, I don't.

Q Has the depth bracket allowable for an oil producing rate in barrels of oil per day proved adequate to the reservoir?

A Yes, it has.

Q And is the statewide gas/oil ratio 2000-to-1 acceptable?

A Yes, it is.

Q What kind of gas/oil ratio do you experience in the reservoir now?

A The northern portion of the field is running around 1000 GOR upwards to 1800 to almost 2000 in the south.

Q Do you have an opinion at this date, Mr. Walker, as to what the drive mechanism is in the reservoir?

A It appears to be a solution gas drive.

Q Are you aware of any facts or data that you have examined that would cause you to believe that 80-acre spacing should not be approved?

A No, I'm not.

Q Were Exhibits One through Four prepared by you or compiled under your direction and supervision?

A Yes, they were.

MR. KELLAHIN; If the Examiner please, we move the introduction of Exhibits One through Four.

MR. STOGNER: Exhibits One through Four will be admitted into evidence.

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

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Walker, these wells on Exhibit Number One, are they presently producing on pump or how is their completion?

A With the exception of one well all are pumping wells. The -- our latest completion over in Section 16 is a flowing completion.

Q And that's the State 16 Well No. 1?

A Exactly.

Q What has been your past experience on the flowing wells on some of the other sections? How long before you had to put them on pump?

A It varies but most of the time within six to nine months at the longest.

Q Okay. Let's kind of cut that down, how about the wells up to the north?

A Okay, the north, the only well that probably was flowing for any period of time was our West Corbin Unit No. 5 Well, which is in the southwest of the northwest quarter of Section 17. It flowed for approximately 12 months, I would guess.

The subsequent drilling of the Huber wells down in the southwest quarter of Section 17 and then our West Corbin No. 8 Well up in the northwest of the south -- northeast of the northwest of 17, those were flowing for very short periods of time.

Q Okay, how about the original well, the discovery well?

A The discovery well flowed for probably twelve months, on that -- on that order.

Q When was the discovery well P&A'd, what date?

A Well --

Q What year?

A The discovery well is in Section 27 and -- I mean Section 21, excuse me.

Q 21?

A Yes, sir.

Q Okay.

A And that well has just been -- it's not been P&A'd. It's just --

Q Okay, I'm sorry, I was looking at the Aztec Federal PA Well No. 1, my mistake.

A Right.

Q That was the second well on the proration unit -- I mean on the -- in the pool, wasn't it?

A Exactly.

Q Okay. Let's talk about that Aztec Well, then, when was that one P&A'd? That's the one in Section 20.

A That well was never a very good well. I don't believe it produced more than about four or five years.

Q Okay.

A So it's been several years ago. It's probably back in the early 1970's when that was P&A'd.

Q Do you have any idea of the reason it wasn't a good producer, was it maybe its completion, or do

you have any ideas?

A It doesn't appear to be as good a zone. The Wolfcamp out here varies a lot from well to well. You'll have some zones that are -- have real net, real clean, thick, pay sections and then the next well over may not have that same appearance. So the pay will vary quite a bit and this appears to be on the very western portion of the good -- good portion of the Wolfcamp part of the field.

Q So the review of the well logs really doesn't tend to show you that they might have completed in the wrong zone?

A No, it doesn't, not on that particular well.

Q How do you see the future development on this pool, from the north coming to the south, or do you have any idea?

A Well, our recent completion -- our recent activities have been in the northern portion, as I've mentioned before, up in 17 and Section 16. We will probably continue developing up in the northern portion but we do have some plans for some tests in the southern portion of the field, as well.

Q Do you see the zone as a future waterflood possibility?

A At this time it's probably a marginal. I

would -- I would think it very far down the road.

Q On Exhibit Number Four, that was your economic analysis, are these estimated reserves pretty close to actuality out there or --

A Yes, sir, those are -- those are average for the field. Again, these are risk reserves and we'd probably use somewhere on the order of a 75 percent probability of success, so you're looking at ultimate recoveries on the order of 130,000 barrels.

Q Okay.

A Which is -- which appears to be in the ballpark of your average.

Q What kind of payout do you usually get on your average well? I mean this is after all a fairly deep (unclear)?

A Well, the average well is going to be somewhere just under two years, probably, for an average well. I think the economics I presented here were 1.81 year payout.

Q That was your average. Now you had wells being drilled out there in the early eighties and in the late eighties.

A Yes, sir.

Q Did you get -- did you see the same kind of results?

A Probably the -- there's been some marginal wells drilled. The Huber 17-1 and 2 were not -- not great completions. Those wells are probably going to be, you know, on the three or four year payout order, even though they were drilled back when oil prices may have been a little higher.

Wells like our State 16 No. 1 may payout on the order of a year or so.

So it's going to vary from spot to spot across the field.

Q Okay.

MR. STOGNER: I have no further questions of Mr. Walker.

Are there any other questions of this witness?

MR. KELLAHIN: No, sir.

MR. STOGNER: He may be excused.

Mr. Kellahin, do you have anything to add here?

MR. KELLAHIN: Nothing.

MR. STOGNER: Does anybody else have anything further in Case Number 8802?

This case will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY 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. 8802 heard by me on 7 October 1987.

Oil Conservation Division, Examiner