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

21 November 1985

DIVISION HEARING

IN THE MATTER OF:

Application of Monsanto Company for an unorthodox gas well location, dual completion, and simultaneous dedication, Eddy County, New Mexico. CASE 8758

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

I N D E X CONT'D

E X H I B I T S

I N D E X CONT'D

MR. STOGNER: The hearing will come to order.

We'll call next Case 8758.

MR. TAYLOR: The application of Monsanto Company for an unorthodox gas well location, dual completion, similtaneous dedication, Eddy County, New Mexico.

MR. STOGNER: Call for appearances.

MR. LOPEZ: If the Examiner please, my name is Owen Lopez with the Hinkle Law Firm in Santa Fe, New Mexico, appearing on behalf of the applicant, and I have three witnesses to be sworn.

MR. STOGNER: Call for additional appearances.

MR. CARR: May it please the Examiner, my name is William F. Carr, with the law firm Campbell and Black, P. A., of Santa Fe. We represent Amoco Production Company in opposition to the application of Monsanto.

I have one witness.

MR. STOGNER: Are there any other witnesses?

Will all witnesses stand and be sworn at this time?

(Witnesses sworn.)

MR. STOGNER: Mr. Lopez, you may continue.

MR. LOPEZ: Thank you.

KEVIN T. PFISTER,

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

DIRECT EXAMINATION

BY MR. LOPEZ:

Q Mr. Pfister, would you please state your name and where you reside?

A My name is Kevin T. Pfister. I live at 3804 Willingham, Midland, Texas, and I'm employed by Monsanto Oil Company.

Q And what is your occupation?

A I'm a Senior Landman.

Q And have you previously testified before the Commission and had your qualifications accepted as a matter of record?

A No, I have not.

Q Are you familiar with the application of Monsanto Oil Company in Case Number 8758?

A Yes, I am.

Q And have you done the study of the land area in connection with the application?

A Yes, I have.

Q Would you briefly explain to the Commission your educational background and employment experience?

A All right. In 1975 I graduated from the University of Wyoming with a Bachelor of Arts degree in zoology.

Also in 1975 I graduated with a Bachelor of Science degree in education; and in 1978 I graduated from the University of Wyoming law school.

I have also, in 1978 I began working for Cities Service Oil Company in Tulsa, Oklahoma, as a landman, was transferred to Cities Service in Midland and worked there for another six months as a landman.

Then I went to work for BTA Oil Producers in Midland, Texas, as a -- my title was Contract Supervisor, and worked for them for about eight months and then I've been with Monsanto Companyl for six years now as a landman and am now a Senior Landman.

MR. LOPEZ: Are the witness'

qualifications acceptable?

MR. STOGNER: Any objection?

MR. CARR: No objection.

MR. STOGNER: Mr. Pfister --

A Pfister.

MR. STOGNER: -- is so qualified.

Q Mr. Pfister, I ask you to refer to what's been marked Exhibit Number One and ask you to explain what it shows.

A All right, Exhibit Number One is an attempt to show many things.

The first thing I'd like to direct everybody's attention to is the Section 36, which has been outlined in red. This is the present communitized area for the Lowe State Well No. 1, which was drilled at 1712 feet from the west line and 1995 feet from the north line. This well is shut-in. It was shut in on May 9th, 1985.

There is colored within that section and also on the -- on the map itself, an area marked or colored yellow. This indicates Monsanto's lease and you'll note that this lease is held by production from the North Indian Basin Unit up to the north and also from production from the Texaco "DF" Well in Section 32, Township 21 South, Range 23 East.

Also within the section is another State tract which is owned by Maralo, and you'll also find on there an arrow pointing to a little circle there and that denotes our location for the (not understood), or I'm sorry, for the Monsanto Lowe State Well No. 2 to be located 330 feet from the south line and 330 feet from the west line.

Also on the map you'll see sections in Section 35, that lease is held by production and Amoco is the operator of that lease.

Down in Township 23 South, Range 23 East, in Section 1, ARCO is the operator of that well, the Smith Federal Well.

And in Section 2 of that same township and range, there is a Monsanto lease. Incidentally, that well was also communitized. It also consists of two State leases, one of the leases owned by Conoco and the other owned by Monsanto. Monsanto is the operator of that unit.

Q Did you notify the offset operators of the subject matter of this hearing?

A I personally did not notify them of the hearing. I am aware of the fact that they were notified and another person to this hearing will testify on that matter.

MR. TAYLOR: Can we take a recess for a minute?

MR. LOPEZ: Sure.

(Thereupon a recess was taken.)

MR. STOGNER: I apologize.

MR. LOPEZ: That's quite all right.

MR. STOGNER: Please continue.

Q I think the witness just finished testifying that to his knowledge the offset operators were notified and we have another witness that will give specifics.

Then if I understand your testimony correctly, the lease in question is a State lease and the offset leases, except for the lease, the State leases in Section 2, are U. S. leases.

A Yes, those -- the lease in Section 35, Township 21 South, 23, and Section 1, Township 22 South, Range 23 East, are both Federal leases.

Q Was Exhibit One prepared by you or under your supervision?

A Yes, it was prepared under my supervision.

MR. LOPEZ: I'd like to offer Exhibit Number One into evidence.

MR. STOGNER: Any objections?

MR. CARR: No objection.

MR. STOGNER: Exhibit Number One will be admitted into evidence.

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

MR. STOGNER: Mr. Carr, your witness.

CROSS EXAMINATION

BY MR. CARR:

Q Mr. Pfister, you were talking or proposing a location 330 from the south and west lines of Section 36, is that correct?

A That is correct.

Q Do you happen to know what the spacing is for wells in this area?

A No, I don't.

Q Do you know what well location requirements are in the area?

A No, I don't.

Q Are you -- we have four tracts here that we're interested in, Sections 35 and 36 and Sections 1 and 2. Are you -- is all of the royalty in Sections 1 and 35 held by the Federal government?

A Yes, they are.

Q And all the royalty interest in Sections

36 and 2 would be State of New Mexico?

A Yes.

MR. CARR: I have no further questions.

MR. STOGNER: Mr. Lopez, any redirect?

MR. LOPEZ: No, Mr. Examiner.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Pfister, you, I believe if I heard you right, you said that you did not know the location requriements as set out by the Division in these special pool rules in both these pools, is that right?

A No, sir.

Q Is there somebody here that can testify to that?

A Yes.

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

If nobody else has any, he may be excused.

Mr. Lopez?

MR. LOPEZ: I'd like to call our second witness, Mr. Morris.

WILLIAM J. MORRIS,

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

DIRECT EXAMINATION

BY MR. LOPEZ:

Q Would you please state your name and where you reside?

A My name is William J. Morris. I reside in Midland, Texas.

Q By whom are you employed and in what capacity?

A I am a petroleum geologist employed by Monsanto Oil Company.

Q Have you previously testified before the Commission and had your qualifications accepted as a matter of record?

A No, sir, I have not.

Q Are you familiar with the application of Monsanto Oil Company in Case Number 8758?

A Yes, sir.

Q Would you briefly describe your educational background and work experience?

A Okay. I have a Bachelor of Science de-

gree in mathematics from Michigan -- or from Lake Superior State College.

I have a Bachelor of Science in geology and a Master's of Science in geology from Michigan State University. My Master's was received in 12 of 1977.

I have three years of experience with Texaco as a petroleum geologist and the last five years I've been a petroleum geologist with Monsanto.

MR. LOPEZ: I would tender the witness as a qualified, expert, petroleum geologist.

MR. STOGNER: Any objection?

MR. CARR: No objection.

MR. STOGNER: Mr. Morris is so qualified.

Q Mr. Morris, I'd like for you to refer to what's been marked Exhibit Number Two and ask you to identify it, please, and explain what it shows.

A Exhibit Number Two is a structure map on top of the Cisco formation over the Indian Basin Field. As you can see, the field is defined to the west by a fault, which is shown by a dashed line. The down dip portion of it to the east is defined by down dip water production and lateral facies changes define the field to the south and to the north.

Now the blue shaded portion of the map

shows the area of water encroachment prior to 1976, and the wells that are colored darker blue are wells that have watered out prior to 1976.

Okay, the red shaded portion of the map shows the water encroachment from 1976 to the present day and the darker red colored map -- wells are those wells that have watered out in that 10-year interval.

The green colored wells on the map are wells that are currently still active producing wells that make better than 20 barrels of water per day and are anticipated to be the next wells to water out in the field.

As you can see, Monsanto's No. 1 Lowe State is colored red and it has watered out in May of this year.

Our proposed location directly to the southwest of our No. 1 Lowe State is the structurally highest location and furthest from the water encroachment on our lease.

Q Okay. I now ask you to refer to what's been marked Exhibit Number Three and ask you to identify it.

A Exhibit Number Three is a northeast/southwest structural cross section through Section 36. The cross section clearly shows the structural attitude of the reservoir and that, in fact, that most operators perforated the upper portion of the Cisco carbonate. The red

shaded portion of the Cisco formation is that portion that has been invaded by water and the blue shaded area is that portion that has not been invaded by water.

Q And where would be the location of the proposed well, between which two logs?

A Okay. It would fall between the third and fourth well counting from the left.

Q I now ask you to refr to Exhibit Number Four and ask you to identify it.

A Exhibit Number Four is a Cisco net pay Isopach map of the Indian Basin Field. I've used a 3 percent porosity cutoff and which is kind of an accepted value by most operators in the field and it shows that our No. 1 Lowe State to have 111 feet of greater than 3 percent porosity in the wellbore.

Q Okay, is there anything else about that exhibit?

A I don't believe I have anything further to say at this time.

Q I'd now like to refer you to what's been marked as Exhibit Number Five and ask you to identify it.

A Exhibit Number Five is a Morrow structure map and is contoured on a 100-foot contour interval. I'd like to say that the Morrow produces from deltaic sandstones in this portion of the Basin and gas is produced along up-

thrown faulted areas.

The wells colored green on this map are or have been productive from the Morrow formation and the cumulative production figures are shown in red next to these wells.

The Monsanto No. 1 Lowe State has produced 1/2 of a BCF and 2000 barrels of oil and this well has been shut in since August of '84.

I would like to also say at this time that the Morrow is a secondary objective in this application and it lies only 2000 fet deeper to the or from the Cisco and we think it only prudent to go down further and test the Morrow formation. We could not drill this well based on Morrow economics alone, and based on my interpretation, I do not believe we would cause any drainage of the offset operators.

Q Were Exhibits Two through Five prepared by you or under your supervision?

A Yes, sir, they were.

MR. LOPEZ: I would like to offer Exhibits Two through Five.

MR. CARR: No objection.

MR. STOGNER: Exhibits Two through Five will be admitted into evidence.

MR. LOPEZ: I have no further

questions of this witness.

MR. STOGNER: Mr. Carr, your witness.

CROSS EXAMINATION

BY MR. CARR:

Q Mr. Morris, are you familiar with the special pool rules for either of the pools which are involved in your application here today?

A Generally I am.

Q Would that be a question I should defer to a subsequent witness?

A I would think so, yes.

Q You stated that the Indian Basin Upper Penn is your primary objective. If I look at your Exhibit Number Two, is it fair to say that at the present time the north central portion of Section 36 has been watered out?

A Yes, I would say so.

Q And the well you have presently on that tract, being your Lowe State No. 1, has watered out?

A Yes.

Q Do you know why you're seeking to simultaneously dedicate that with the later well? Are you aware of there being any chance that that well could be returned to production?

A I do not believe that well could be returned to production.

Q Now, as you -- as I look at this map, I guess this is a structure map on top of the Cisco.

A Correct.

Q You are moving to a higher structural position as you move to the south and to the west.

A That is correct.

Q So your proposed location is at the highest structural point you can realistically place this well on that section.

A Right; right.

Q And that would put you as far away from the water that's encroaching upon the north --

A Yes.

Q -- as possible.

A Yes.

Q And as you move off to the west across Section 36 the structure continues to rise.

A That is correct.

Q And so we get farther up structure the farther west we go and we also tend to go up structure as we move toward the south.

A Yes.

Q Have you in reviewing for this hearing

seen a log of the Amoco well in Section 35?

A Yes, sir, I have.

Q How does a log of that well compare to the log of the well that you used on your cross section that would be located in Section 2? Would they be comparable?

A Basically I would say yes. Perhaps the Amoco well may have a little bit higher porosity, footage of porosity, as well.

That is clearly shown on the -- my net pay Isopach map.

Q All right. As we look at the net pay Isopach, is it fair to say that the formation tends to get thicker as we move into Section 35 from Section 36?

A The amount of net pay would increase, yes.

Q And the 111 figure right below your well symbol in 36, is that the net pay in that well?

A Yes, that is above the original gas/water contact.

Q And if we go to the Amoco well in 35, we would have 264 feet of net pay?

A That's correct.

Q Now if we look at the Morrow, how important is structure, actually in making a Morrow well out in this area?

A Our company believes the structure is critical to Morrow production. We believe you have to be on the upthrown sides of faults.

Q Now you've placed a fault running across this map coming down across the northwest quarter of Section 36. Is there any well in the area that has actually intercepted that fault?

A I believe not.

Q And this -- you -- this is your interpretation of where that fault actually --

A That's correct.

Q -- should lie? And this is based on the control that you have in the area.

A Yes, sir, and regional trends, as well.

Q And based on your interpretation is it possible that that fault could be moved closer to your well as existing in Section 36?

A Sure.

Q And likewise could be moved closer to the Amoco Well in 35.

A Sure.

MR. CARR: I have no further questions.

MR. STOGNER: Mr. Lopez, any redirect?

MR. LOPEZ: None, Mr. Examiner.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Morris, let's refer to Exhibit Number Three, I think, to better explain the question.

In your present Well No. 1 are these the perforations in the Morrow formation shown?

A I'm not sure all of the correct perforations are shown on that log there.

I did make this cross section several years ago and I used the scout ticket information that was published in PI and our records in our Production Department disagreed with that, so I believe there's some more perforations on the Morrow.

MR. STOGNER: Mr. Lopez, is your next witness going to be an engineer?

MR. LOPEZ: Yes.

MR. STOGNER: Okay, I'll just hold off on my questions until that time.

I have no questions of Mr. Morris at this time.

Are there any other questions

of this witness?

If not, he may be excused.

Mr. Lopez.

MR. LOPEZ: Okay.

HAL H. CRABB,

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

DIRECT EXAMINATION

BY MR. LOPEZ:

Q Okay, would you please state your name and where you reside?

A Hal H. Crabb, III. I live in Midland, Texas.

Q By whom are you employed and in what capacity?

A Monsanto Oil Company as a petroleum engineer.

Q Have you previously testified before the Commission and had your qualifications as an expert petroleum engineer accepted as a matter of record?

A No, I have not.

Q Are you familiar with the application in Case Number 8758 of Monsanto?

A Yes.

Q Would you briefly describe your educational background and work experience?

A Yes. I graduated from the University of Texas at Arlington in December of 1978, receiving a Bachelor of Science in mechanical engineering.

I went to work for Texaco in January of 1979; worked there for two and a half years as a production and reservoir engineer.

I've -- since then I've been employed by Monsanto for approximately five years. My responsibilities are primarily production but I also do -- do reservoir work.

And during my employment in the oil business I have attended many technical courses dealing with all phases of the oil business.

MR. LOPEZ: I would tender Mr. Crabb as an expert petroleum engineer for the purposes of this hearing.

MR. STOGNER: Any objections?

MR. CARR: No objection.

MR. STOGNER: Mr. Crabb is so qualified.

Q Mr. Crabb, I'd ask you to refer to what's been marked Exhibit Number Six and ask you to identify it and explain it.

A Exhibit Number Six is a brief production history of the subject well. It's kind of an overview chronologically presented. I'll just go over some of the high points or the main events in this well's producing life.

Note that it was drilled and completed in September of 1964, dually completed in the Morrow and the Cisco.

Note that in February, 1979, the Lower Cisco watered out after producing 14.9 BCF and 135 KBL.

In September, 1979, the well was recompleted to the Upper Cisco and in August of 1984 the Morrow depleted, after producing .5 BCF and 2 KBL.

And the most recent event in the well history is in May of 1985, the Upper Cisco watered out after having produced an additional 2.1 BCF, 6 KBL from the upper perfs, bringing the total cumulative production from the Cisco formation to 17 BCF and 141 KBL.

Q Will you now refer to what's been marked Exhibit Number Seven and ask you to explain it?

A Exhibit Number Seven is a tabulation of the production history on the Cisco formation of the subject well.

Beginning in the lefthand column and going to the right I've shown the year, gas sales in MCF,

condensate production, water production, both in barrels. On the far righthand column I've shown the water/gas ratio in barrels per million.

Please note that for the first nine years production is recorded on a yearly basis because the well did not produce sufficient water to really merit us recording it on a monthly basis.

Beginning in January of 1975 we've switched to recording production on a monthly basis and you can note how the water production is increased through time.

And I direct your attention to the third page where the totals are shown. The well has a cumulative of almost 17 BCF and 141,000 KBL.

Q Okay. I ask you now to refer to what has been marked Exhibit Eight and ask you to explain it.

A Okay. Exhibit Eight is a graphical representation of the same information from the previous exhibit.

I have two curves shown here. One is the gas production rate in million cubic feet per month. That is the solid curve.

The dashed curve is the water/gas ratio in barrels per million.

Once again this is for the Cisco formation. You'll note that the well produced roughly an average

of about 120-million per month, or 4-million per day through 1974 and when the water production began to affect production, gas production, note that the rate steadily began to decrease.

At the same time notice that the water production, as shown by the water/gas ratio, steadily increased until the well ultimately watered out in February, 1979, at a ratio of about 150 barrels per million.

In October of '79 the well was recompleted in the Upper -- Upper Cisco and at that point it produced approximately 40-million a month and the water, we were able to decrease the water to about 60 barrels per million but we were not ever able to really eliminate the water production by recompleting it in the upper perfs.

And finally the well watered out in the Upper Cisco in May of 1985 while producing roughly 1-million cubid feet per day and 300 barrels of water per day.

Q Okay. I now direct your attention to what's been marked Exhibit Number Nine and ask you to identify it.

A Exhibit Number Nine is a tabulation of the production history for the Morrow formation on a yearly basis. Note that the well has produced a cumulative of almost .5 BCF and almost 2 KBL.

Q Okay. Now I refer you to what's been

marked Exhibit Number Ten and ask you to identify it.

A Exhibit Number Ten is a bottom hole pressure over z versus cumulative plot for the Cisco formation in the subject well. I have prepared this for the purpose of estimating reserves.

As you can see by extrapolation of the bottom hole pressures through time, that this yields an original gas in place figure of 32 BCF.

Now, assuming a 500 pound abandonment pressure bottom hole, that leaves us a total recoverable reserve figure, according to this exhibit, of 27.5 BCF.

Now, we've produced to date a cumulative of 17 BCF from the subject well, so we believe that we have at least 10.5 BCF recoverable reserves from the Cisco, according to this exhibit.

Now in order to substantiate this reserve figure we performed a separate independent calculation, a volumetrics calculation, which we based on the net pay Isopach map that has already been submitted by our geologist. I believe that's Exhibit -- Exhibit Four. Now I refer your attention to that exhibit. All the net pay above the original gas/water contact was planimetered and an original gas in place figure of 36.2 BCF for your lease was arrived at.

Now this agrees reasonably well within 4.2 BCF, or 13 percent, of the pressure versus cum calcula-

tion in Exhibit Ten.

Now in a volumetrics calculation assuming the same 500 pound bottom hole abandonment pressure, we calculated the recoverable remaining reserves to be 30.9 BCF and therefore, according to volumetrics calculation there remain 13.9 BCF reserves to be recovered from our lease.

So based on these two, two methods, two independent methods, the pressure versus cum and the volumetrics, we estimate that there remain somewhere between 10.5 and 13.9 BCF recoverable reserves for us to recover on our lease.

Q Okay. I now refer you to what's been marked Exhibit Number Eleven and ask you to identify and explain it.

A Exhibit Number Eleven is a map of Cisco cumulative production in current rates as of January of 1985. I'd like to direct your attention to the legend in the lower righthand corner of the exhibit, assist you in reading it. Note that beside each well there are two -- two lines of numbers. The upper line contains two numbers. The left-most number is the cumulative gas in BCF and the right-most number on the other side of the slash is the cumulative oil in KBL.

On the lower line there are three figures separated by dashes. The left-most number is the current

gas production in million cubic feet per day. The second number is the current oil production in barrels per day. The third number is the current water production rate in barrels per day.

And Monsanto's acreage is shown in yellow and the subject location is highlighted with a red arrow.

Now the reason that we're showing this exhibit is really to show that the vast majority of wells in this field have cumulative production figures in the range of 24 to 27 BCF and I'm not talking about ultimate recoveries or EUR's, but merely cumulative production figures.

The ultimate recoveries from many of these wells are going to be substantially higher than the 24 to 27 BCF they've currently produced to date.

For example, I'd like to direct your attention to the well in the northwest diagonal offset to our well in Section 36.

I'd like to direct your attention to the well in Section 26, 21, 23. This well has a cumulative production of 25.9 BCF and a current producing rate of 4.1-million cubic feet per day.

The Amoco well directly to the west also has a cumulative production figure of 25.9 BCF and is currently producing 4.2-million cubic feet per day; that well

being in Section 35 of 21, 23.

Dropping to the south the well in Section 2, 22, 23, the Conoco State, this well has a cumulative production figure of 26.1 BCF. It is currently producing at a rate of 4.2-million cubic feet per day.

And directly south of our subject lease in Section -- the well in Section 1, 22, 23, has a cumulative production figure of 23.1 BCF.

So due to the fact that all the wells in -- most of the wells in this field have cumulative productions much higher than the cumulative production in our subject well, this indicates that our lease still contains substantial recoverable gas reserves.

The Cisco, the Upper Penn formation is a very homogeneous reservoir and due to the fact that the gas, as has been previously testified, is moving up dip from the northeast to the southwest, being displaced by the encroaching water from the northeast, it will be necessary for us to drill a well in a southwestern corner of this section in order to protect our correlative rights and in order to produce the remaining 10.5 to 13.9 BCF reserves, which are ours on our lease, before this gas escapes and migrates up dip.

As can be seen by Exhibit Number Two, which was the Cisco structure map, that our highest position structurally is in the southwest corner, and that's where we

proposed our well.

Q Okay, I'd now like you to refer to what's been marked Exhibit Twelve and ask you to explain this exhibit.

A Exhibit Number Twelve is also a Cisco cumulative production map; however, it is -- what it does, it shows current cumulative -- it shows cumulative production and producing rates as of January, 1975, and you read this chart much like -- much like you read the previous exhibit.

We have shown this exhibit for the purpose of showing that the reason our well only produced 17 BCF before watering out is not due to anything other than water encroachment. It's not due to poorer reservoir quality or any -- anything that would make the pay inferior to offset wells because this is a homogeneous reservoir.

I've shown this current to January of 1975 because this was the date when the subject well first began to produce water. You'll note at this time period the cumulative production of the subject well and its flow rate was very similar to all the offset wells in the area of the subject well.

For example, let's once again go to the well in Section 26, 21, 24, I believe. 23. In January, 1975, it had produced a cumulative of 11.8 BCF and was pro-

ducing 4-million cubic feet per day.

Dropping down to the well, the Amoco well in Section 35, 21, 23, it had produced a cumulative of 11.9 BCF and was producing at a rate of 4-million cubic feet per day.

The well in Section 2, 22, 23, the Conoco State, had produced a cumulative of 11.9 BCF and was producing at a rate of 4.2-million cubic feet per day.

The well in Section 1, 22, 23, had produced 12.4 BCF and was producing at a rate of 4.5-million cubic feet per day.

Compare all these cumulative production rates, cumulative production and current rates, to the subject well, at the same time period it had produced 11.3 BCF and was producing at a rate of 4-million cubic feet per day.

So the point here that we're trying to make is that before the water encroachment the subject well had a production history quite similar to the surrounding wells. So the lower ultimate production of 17 BCF from the subject well was not due to poor reservoir quality but it was due to water encroachment.

Q What is Monsanto's position with respect to the magnitude, if any, of any penalty that would be applied to the Cisco production from the unorthodox location?

A Well, of course, the best thing from our

point of view would be to have no penalty because all we really want is a fair chance to recover the remaining reserves which are contained under our lease; otherwise they'll migrate up dip. They will escape. Offset operators will end up producing them and we'll lose them.

So -- however, based on Exhibit Two, which is the Cisco structure map which showed the current gas/water contact, from planimetering the remaining acreage we believe that there are approximately 400 productive acres remaining on our lease up dip from the water table.

Now if the Commission does see fit to impose some sort of a penalty, we believe that any penalty in excess of the productive acreage ratio, or 37 percent, would be excessive and harsh.

Q What is your position with respect to any penalty regarding the Morrow formation?

A Well, I do not believe that we should be penalized on the Morrow production.

Q And the reason for that?

A First of all, as previously testified, the Morrow is only a secondary objective, our primary objective being the Cisco formation. The reserves that are involved in the Morrow we feel are very small. In fact, we could not justify drilling a well in this location exclusively to the Morrow, based on a small amount of reserves

involved.

The only way that we could justify going to the Morrow is if we already had a prospective location, and since we're going to the Cisco anyway, differential economics will justify drilling the additional 2000 feet to the Morrow.

Additionally, as was shown on Exhibit Five, which was the Morrow structure map, due to the fact that there is a fault to the west of our section (not understood) the contesting parties suffer no drainage from our well; therefore, due to the small amount of reserves involved and due to the high risk involved in drilling the Morrow, we request that no penalty be imposed on this formation.

Also, due to the fact that if we did complete the well in the Morrow and a penalty were imposed, production rate would be so low in the first place that any type of a penalty would probably render the Morrow completion unprofitable.

Q Did you notify the offset operators in the Sections 1, 2, and 35 of the application in this case?

A Yes, all the contesting parties were notified.

Q And all the operators. Is it your opinion that the granting of the application for the unorthodox

well location without penalty is in the interest of prevention of waste and protection of correlative rights?

A Yes, it is.

Q Were Exhibits Six through Twelve prepared by you or under your supervision?

A Yes, they were.

MR. LOPEZ: I would like to offer Monsanto's Exhibits Six through Twelve.

MR. STOGNER: Any objections?

MR. CARR: No objection.

MR. STOGNER: Exhibits Six through Twelve will be admitted into evidence at this time.

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

MR. STOGNER: Mr. Carr, your witness.

CROSS EXAMINATION

BY MR. CARR:

Q Mr. Crabb, what are the spacing requirements for the Upper Penn in this particular pool?

A Well, the spacing requirement, each well shall be located no closer than 1650 feet from the lease lines.

Q And so the closest standard location you

drill to the proposed location would be 1650 from the south and 1650 from the west of Section 36.

A That is correct.

Q And in essence you're moving both to the west and to the south 80 percent closer than you're permitted to under existing pool rules.

A I haven't ratio-ed it out but that's probably close.

Q You're 330 and this is 1650.

A Yes.

Q Whatever percentage that is, that is the percentage.

A Yes.

Q The spacing units in each of these pools are 640 acres, are they not?

A That is correct.

Q And that would be acreage that we can assume that a well would drain.

A Are you talking about the Cisco and the Morrow or --

Q Yes, both of them.

A I would say that the Cisco probably will drain 640 acres.

Q What about the Morrow?

A Well, it's -- it's hard to say. Our well

in Section 36 produced only half a BCF. We had over 60 feet of pay. So if you're going to calculate volumetrics you're going to get a pretty small drainage area.

Q As to the Morrow, you indicated in terms of a penalty that you would anticipate that it would not be capable of a high producing rate in all probability, is that correct?

A That is our viewpoint.

Q You really won't know that, however, until you get there, isn't that right?

A That's true.

Q And if you get any high producing rate then you might be draining from the adjoining property.

A Well, that is a possibility; however, all indications are due to the low Morrow cumulative in this area of the field that it would -- that we would experience either a very low producing rate or we might not find any productive acreage at all in the Morrow.

Q But for some reason it's spaced on 640-acre spacing.

A Those are the field rules.

Q Now you've indicated that the Morrow is your secondary objective. That fact alone doesn't have any bearing on what that would drain, what a completion in that interval would drain, does it?

A No, not that itself.

Q As to the penalty that you're recommending for a Cisco well, if I understand your recommendation, it was that a straight acreage approach should be taken and that you should be entitled to have that production restricted by no more than a ratio of 400 acres to the 640, I think, in the section.

A That is correct.

Q And to do that we would have to assume that each of the acres in that section and the offsetting section are comparable, is that not true?

A Would you repeat that?

Q Are each of the -- would you -- as we go -- let's look at Section 35 for a moment.

A Okay.

Q If we look at the evidence presented by you and earlier by your geologist, there is a thicker pay section in 35 than 36.

A That's correct.

Q And that you also are higher structurally in Section 35 than in 36.

A That is correct.

Q And that the acreage in this pool therefore in 35, each of those individual acres has a greater potential than each of the acres in 36.

A Based on the amount of pay.

Q Now your well that you're proposing is only 330 feet off that common leaseline between Sections 35 and 36.

A Yes.

Q As you have studied this area, have you noticed that the -- the influx of water having any effect on the pressure in any of these wells?

A This field is a water drive field; however, the pressure versus cumulative curves that I've looked at pretty much extrapolate a straight line, which would indicate (not clearly understood).

Q So there has not been a pressure increase as a result of the water influx.

A There may be some pressure maintenance. It's known as a water drive field but from what I've examined I haven't seen it.

Q Now, you have testified that this is a fairly homogenous reservoir.

A Yes.

Q Without that pressure increase, would you not anticipate fairly radial drainage for wells in this pool?

A Well, it's possible, but it would depend on different factors.

Q If it is possible that you would drill at your proposed location and it's possible that you'd have radial drainage, as you testified earlier that you drained 640 acres in the Upper Penn, a substantial portion of the reserves that would be produced in your well, your new well, would come off the adjoining tracts, would they not?

A If it were radial drainage, but once again, the -- we believe that the production is moving up dip as it's being displaced by the water.

Q Now in estimating recoverable reserves under these tracts, what percentage of recovery were you using?

A I believe I used 70 percent recovery on the volumetrics.

Q In your volumetrics were you assuming a 640-acre drainage?

A Yes. I'll have to backtrack on that. On my volumetrics calculation I used the abandonment pressure, they were based on pressure.

Q Okay. And you were using 640-acre drainage?

A Yes.

Q Mr. Crabb, why is Monsanto proposing to simultaneously dedicate the wells in Section 36 if the existing well has watered out?

A Well, the field spacing is 640 acres.

Q Do you have any plans to try and return the Lowe State No. 1 Well to production?

A No, that well cannot be -- we don't believe it can be restored to production. We'll either P & A the well or possibly turn it to salt water disposal.

Q So it's your intention to only have one producing well on Section 36, that being the well you are here seeking approval for today.

A That is correct.

Q Now if we look at the wells surrounding your -- surrounding Section 35, if we go to Section 25 immediately north of -- of the subject section, what is the current status of that well?

A That well is shut in, I believe. Let me check here on Exhibit Eleven. The well was shut in on August of '83.

Q And did it water out, do you know?

A Yes, sir.

Q Now your well in Section 36 has watered out. What about the well directly to the south of it in Section 1?

A This well is currently making about 800 MCF per day and it's making over 100 barrels of water a day, so --

Q Okay, and as of what date? Do you know what date those figures are?

A Well, these are as of January of 1985.

Q Now, as to the well that is operated by Amoco in Section 35, do you know whether or not that's a nonmarginal well?

A I'm sure it's nonmarginal.

Q Would that also apply to the Conoco State Well that you operate in Section 2?

A Yes.

Q Now would that -- do you know whether or not that would apply to the well up in Section 26?

A It -- I would think so.

Q This is a prorated pool, is it not?

A Yes, it is.

Q And it's a straight acreage basis for the allowable in this area.

A Yes.

MR. CARR: No further questions.

MR. STOGNER: Mr. Lopez, redirect?

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Crabb, let's refer to your geologist's Exhibit Number Two. The reason I'm referring to this one, it shows the gas/water contact very well.

A Yes.

Q Do you know the well location requirements in both these pools as set out by the special rules and regulations?

A It's 1650 from the lease lines.

Q Okay. So the furthest standard location in Section 36 to the south and west would be 1650 feet from the south line and 1650 feet from the west line?

A Yes, sir.

Q Okay. If a well was put in that location in your opinion what length of time would it be before that well was watered out?

A In my opinion it would be a very short period of time before that well were watered out because it's just too close to the existing location which we know is watered out, and for us to -- to have the best chance at getting up dip and gaining some structure and getting a productive well, we need to move as far away from that well to the southwest as we can.

Q If a well was located at that standard

location 1650 from the west and 1650 from the south, what percentage of the additional roughly, what did we figure, 10 MMCF?

A 10.5 to 13.9 are the two estimates.

Q About what percentage do you think would be produced from a well at the standard location?

A Well, I'd have to -- I'd have to calculate that. First of all, we wouldn't drill it. I'd have to calculate it. I'm sure it would be a great big number.

Q Let's refer to your Exhibit Number Ten. That's your BHP/z curve?

A Yes.

Q Is it safe to say that the Cisco formation is a water drive?

A Yes.

Q Okay. Is this type of calculation standard for a reservoir with a water drive system?

A No, it's really not, but I'll have to clarify my answer.

According to the literature, the studies that have been done on this field, it has water coming in from the northeast, water encroachment, and this has been proven, you know, time and again as you follow the wells that have progressively watered out and you can see the advancing of the water front; however, a study that was done

on this field in 1975 by Frinzel and Sharp, they stated that they believed it to be water encroachment but at that time they had not seen any pressure maintenance that you would expect from a water drive reservoir.

We have not seen that either and from my discussions with other engineers, offset operators, ARCO, CONOCO, Marathon, they all used these pressure versus cumulative curves as reliable methods of estimating reserves, because we haven't seen that pressure maintenance as of yet.

Q As a petroleum engineer what other types of calculations could be used to figure the cumulative out of (inaudible)

A Well, we also performed a volumetrics calculation on the subject acreage under our lease, and that is a completely independent method from the pressure versus cumulative calculation, and we received a higher original gas in place figure for the valumetrics calculation.

I guess the best thing that we could say about this reservoir is that it is a weak water drive, partial water drive, but as far as having seen the real presure maintenance aspect of it, I haven't seen that yet.

Q Let's refer now to Exhibit Number Five. This particular exhibit was introduced by your geologist, is that right?

A Yes, sir.

Q In drilling your Lowe State No. 1, does it show in your records -- I know you weren't around in '64 but in the records does it show that this fault might have been encountered while drilling this well?

A To the best of my recollections, no.

Q What plans does Monsanto Oil Company have for your Lowe State No. 1? Is the -- both strings of tubing still there?

A Yes, sir, both strings are still in the well.

We -- we have the option of considering either plugging and abandoning the well or turning it into a disposal well.

We do not feel there is anyway we can restore the well to production.

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

Are there any other questions or Mr. Crabb?

There being none, you may be excused.

Let's take a fifteen minute break right now.

(Thereupon a recess was taken.)

MR. STOGNER: The hearing will come to order.

Mr. Carr, I believe it's your turn.

STEPHEN P. SCHEFFLER,

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

DIRECT EXAMINATION

BY MR. CARR:

Q Will you state your full name and place of residence?

A Stephen P. Scheffler. I reside in Houston, Texas.

Q Mr. Scheffler, by whom are you employed and in what capacity?

A I'm employed by Amoco Production Company and I'm employed as a petroleum reservoir. I work in the Regional Regulatory Affairs Section in Houston.

Q Petroleum reservoir engineer?

A Petroleum engineer.

Q Have you previously testified before this Division and had your credentials as a petroleum engineer accepted and made a matter of record?

A Yes, sir.

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

A Yes, sir.

Q Are you familiar with the subject area?

A Yes, sir.

MR. CARR: Are the witness' qualifications acceptable?

MR. STOGNER: Any objection?

MR. LOPEZ: None.

MR. STOGNER: Mr. Scheffler is so qualified.

Q Mr. Scheffler, will you briefly state what Amoco is seeking by appearing in this case today?

A Amoco is seeking the imposition of a penalty on the proposed unorthodox location that Monsanto has made application for here today, based upon the fact that the well will be located some 80 percent from a standard location.

Q Are you familiar with the pool rules for the two pools, the Upper Pennsylvanian Pool as well as the Morrow Pool in this area?

A Yes, sir.

Q And what are the spacing units provided for for both the Upper Penn and the Morrow?

A For both of those regulatory field -- pools, the spacing requirements are such that a well be drilled 1650 feet from a section line or proration unit and that the wells be assigned 640-acre proration units.

Q Based on the exhibits that have presented by Monsanto's geologist prior today, are there standard locations above the water contact in Section 36 that are available to Monsanto for development?

A Yes, sir, I can point to two locations. One would be in the southwest quarter of Section 36. That location would be 1650 feet from the west line of the section and 1650 feet from the south line.

The other location would be 1650 feet from the east line of the section and 1650 feet from the south line of the section.

Q Mr. Scheffler, if we go on an east/west axis, how much too close to the south line of Section 36 is Monsanto's proposed location?

A On an east/west axis they are some 80 percent too close.

Q To the west line?

A To the west line, yes.

Q And on the north/south axis, how much too close are they to the south line?

A Again 80 percent too close.

Q You heard Mr. Crabb testify today as to the general nature of the Upper Penn in this area. Do you concur in his recommendations or his interpretation?

A The lithological description I would agree with. It is basically a vugular, dolomitized pay that is very fractured, which is the fractures are the source for the movement of the gas, the very prolific movement of the gas and the very homogenous reservoir.

I would agree, or do feel very strongly, that to categorize this as a water drive reservoir is completely incorrect. It is basically what we're seeing here, water encroachment that is following as a result of the withdrawal of the gas.

Q Mr. Scheffler, would you anticipate there being radial drainage in the Upper Penn?

A I certainly would.

Q I believe you were present when Monsanto testified that they would anticipate a poor well in the Morrow. Do you have any response to that?

A The Morrow is a very difficult formation to determine what kind of well you're going to have. I don't think that can be determined until after the well is drilled, but the potential is certainly there for a good well as well as a poor one.

Q If a good well should be drilled at that

location, would Amoco have available to it at that time an opportunity to seek a penalty on that well's production?

A If a well's already been drilled it would be very impossible for Amoco to get a penalty assessed.

Q No, Mr. Scheffler, would you refer to what has been marked as Amoco Exhibit Number One and first identify this for the examiner.

A Exhibit Number One is a portion of the Indian Basin Upper Penn Field area. It comprises the sections that I've noted on this exhibit.

In particular I've noted in Section 36 the loation of Monsanto's Lowe State Gas Com No. 1 Well. I've also noted on this -- on this section the location of an orthodox or standard location, being 1650 feet from the east line and 1650 feet from the south line, that location moving in the direction that Monsanto is proposing to move.

Q Is that the closest standard location possible under the existing pool rules to the proposed Monsanto location?

A Yes, sir, it is.

Q Now I would like for you just briefly to tell us what the status of each of the wells in each of these sections is as you understand it at this time.

A My understanding is, starting in Section 25, that the Indian Basin Well No. 3-C as shown there, ac-

tually that's indentified, should be identified as the Indian Basin No. 1-F, that well has not produced since March of '83, and has been shut in and due to very high water production.

Monsanto has testified their well is currently shut in due to high water production, and as well the ARCO Well, the Smith Federal No. 1 in Section No. 1 to the south of Section 36. My understanding from speaking to ARCO just this past week is that well is also shut in due to high water production.

Q Mr. Scheffler, are all three of the wells on the western portion of this plat, being the wells in Sections 26, 35, and in Section 1, are all of those a nonmarginal well?

A Yes, sir, everyone of those wells are currently classified as nonmarginal gas producing wells in the Upper Penn.

Q If we look at the location proposed by Monsanto as depicted on this exhibit, would it be possible for Amoco to offset this well to protect itself from drainage?

A It would be very difficult for Amoco to probably justify such a driling venture. We would definitely suffer drainage as a result of the placement of that well at a 330 location as a result of that.

Q Is it difficult for Amoco -- for what reason is it?

A Basically, probably it would not be a commercial venture on Amoco's part.

Q I'd like to direct your attention to the location that you have depicted in Section 36 being 1650 from the south and west lines.

Would you explain to the Examiner what that circle is that circumscribes that well?

A Yes, sir, that circle around the 1650 location represents a 640-acre drainage area that is consistent with the spacing or proration acreage that is to be assigned an Upper Penn Well, which should be consistent with the drainage area.

I have identified by that circle the area that will be drained outside of Section 36.

Q What is the -- now, you've got another circle circumscribing the proposed location.

A Yes, sir, the second circle, which is moved down to the southwest and it circumscribes the red dot which is the proposed unorthodox location, would represent the 640-acre drainage area that would be exhibited by a well drilled at that location.

As well that area that lies outside of Section 36 that is within that circle would be the area that

would be drained by that well outside of Section 36.

Q Now there is a cresecent shaped piece that you have cross hatched that is in Section 35, Sections 2 and 1. What does that indicate?

A That is the net acreage that would be realized or drained as a result of the well being moved from a standard location to a 330 location.

Q So this is the additional drainage area that would be gained by Monsanto by moving in that -- by moving to the south and west.

A Yes, sir.

Q And how many acres are in that additional drainage area?

A It's approximately 210 acres.

Q Mr. Scheffler, would you now refer to Amoco Exhibit Number Two, identify this, and review it for Mr. Stogner?

A Yes, sir. Exhibit Number Two is Amoco's proposal for the establishment of a production limitation factor for the Monsanto unorthodox well location. I have shown here how that limitation factor should be calculated.

As I've mentioned, that there is a variation from a standard location in the north/south direction of some 1320 feet, or 80 percent of the 1650 location, and in the east/west direction there's a variation of some 1320

feet, or again, 80 percent of the 1650-foot location. As I mentioned here, the net acres of encroachment on offset acreage by moving the well to a 330 location is some 210 acres, or 33 percent of a 640-acre drainage area.

We would recommend that the penalty on this production on this well, should it be drilled, be calculated by taking into consideration the 80 percent east/west factor, the 80 percent north/south factor, and the 33 percent net acre factor.

Taking these factors into consideration, we would feel that a 64 percent restriction of the unorthodox well's production should be required, or, in other words, a 36 percent production limitation factor should be applied against the well's prorated allowable.

Q Is this a method of imposing a penalty consistent with the approach used by the Division in other recent unorthodox well location cases?

A Yes, sir, it is.

Q And would you recommend that this production limitation factor be applied to each of the zones in the well?

A Yes, sir, I would.

Q In your opinion is an imposition of a penalty of this nature fair to Monsanto?

A Yes, sir, I certainly feel it is.

Q And why is that?

A Given the fact that Monsanto is -- has recovered a significant amount of gas from the existing well, the Lowe State Gas Com No. 1, they are in a structurally lower position, as well they have much less thickness in their well, as they have indicated, than the up structure well, particularly Amoco's well to the west in Section 35.

Q And the penalty that you're recommending is actually based on a straight acreage approach, is it not?

A Yes, sir, it is.

Q And what you've just stated indicates that the acreage on the Monsanto tract is not as good in terms of its producing capability as that on the Amoco property.

A Yes, sir, that is correct.

Q In your opininon will granting this application with the imposition of 64 percent penalty protect the correlative rights of Amoco?

A Yes, sir, it will.

Q Will it be in the best interest of conservation and the prevention of physical and economic waste?

A Yes, sir, it will.

Q Were Exhibits One and Two prepared by you?

A Yes, they were.

MR. CARR: At this time, Mr. Stogner, we'd offer into evidence Amoco's Exhibits One and Two.

MR. STOGNER: Are there any objections?

MR. LOPEZ: No.

MR. STOGNER: Exhibits One and Two will be admitted into evidence.

MR. CARR: That concludes my direct examination of Mr. Scheffler.

MR. STOGNER: Mr. Lopez, your witness.

CROSS EXAMINATION

BY MR. LOPEZ:

Q Mr. Scheffler, referring to what is your Exhibit Number One, it's true, is it not, that neither ARCO nor Monsanto that have been notified of the application for hearing in this case have opposed Monsanto's application that --

A No, sir. That -- that is true, yes.

Q And therefore, the only opposition is Amoco's, which controls and operates the acreage in Section 35.

A Yes, sir, that is correct.

Q Have you calculated the cross hatched area in Section 35 alone to determine what acreage factor that would constitute?

A No, sir, I have not.

Q Would you agree with me that it would be less than a third of that that's been testified to earlier, 210 acre feet, just by looking at the exhibit?

A It would be less.

Q The spacing and proration rules pertaining to the Indian Basin Pool and the Cisco production are based on the acreage factor, are they not?

A I'm sorry, would you repeat that, Mr. Lopez?

Q The spacing and prorationing rules that pertain to Indian Basin Pool and the subject application are based on acreage factors and not net pay factors, aren't they?

A Yes, sir, that is correct.

Q Therefore, the fact that there is more, presumably, net pay in the Amoco Section 35 as opposed to Monsanto's Section 36 is not a factor that the Commission takes into account in determining allowables or spacing requirements in this pool, is that correct?

A From the standpoint of the calculation of the allocation, proration allocation factor, that is not

taken into consideration.

Q Now, answer me this question, if you can: Would you recommend that Amoco drill a Morrow well solely to test the Morrow formation at a standard location in the southeast quarter of Section 35, based on the geology of the area as you know it and other reservoir and production characteristics?

A Given the information I have, which is -- I would have to say that probably not.

Q Let me ask yoiu this question. If you were in the position of Monsanto in Section 36, recognizing the water encroachment, and knowing the relative production capacibilities of the wells in the area in question, would you recommend that a well be drilled at a standard location in the southwest quarter of Section 36?

A I haven't evaluated that situation so I really can't give you an answer to that question.

Q Is it your serious contention that -- well, let me rephrase the question.

You've acknowledged, as I understand, the fact that this is a water displacement reservoir and that the gas is migrating up dip generally in the direction as indicated on our Exhibit Two. Is that -- would you agree with that?

A I agree with the fact that there is water

encroachment occurring and that it is occurring at -- as a result, yes, in more of an up dip location, yes, than -- occurring as a result of the withdrawal of the gas. It's not a water drive situation where you have a very complete water front moving up dip.

Q And I think you've testified that the well -- that the pool is homogeneous and --

A Yes, sir.

Q -- therefore is not only theoretically possible but actually conceivable that a well, a single well drilled at the upper limits of the reservoir could drain all the gas in the reservoir over time based on its reservoir characteristics.

A It's conceivable.

Q In light of this fact, and in light of the fact that the water is encroaching in Section 36, is there any other conceivable way that the operator of that section could recover its fair share of the reserves underlying the tract without moving to the uppermost limits of the structure within the lease tract?

A I think the movement to an uppermost structural location is a -- is a position that would allow you to recover reserves that you've not been able to recover in the No. 1 Well; however, I don't deny that right. I deny you the right to recover reserves offsetting that location

that do not rightfully belong to you.

Q Is it your testimony, then, that you believe that there will be actually migration of gas from Section 35 to Section 36 if the well is drilled at the unorthodox location?

A There will certainly be drainage, yes, sir.

Q Given the nature of the reservoir characteristics, do you think that kind of drainage will begin to amount to the kind of penalty you've recommended here today?

A I think the penalty is perfectly in order given the location of the proposed well.

Q Do you have any opinion as to how soon, if the proposed well is drilled, that water might encroach at that (not clearly understood.)

A No, sir, I don't. I would only say that this reservoir is treated more, I think, as a volumetric reservoir than as sort of a water drive reservoir.

Q Would you agree with me that the approximate or average production rates of the wells in the vicinity ranges about the area of 4-million per day?

A What vicinity are you talking about?

Q Let's say, I think the wells, when they're producing the Monsanto Well No. 1 and your well in Section 35 and the Monsanto Well in Section 2, most of these

wells do produce in the area of about 4-million a month, I think, as shown by our exhibits, a million a day?

A Well, let me, let me just say this. From the information I have, I would admit that Amoco's Federal "C" No. 1 Well, as of June produced about 4.5-million a day on an average producing day basis, and that the Conoco well to the south in Section 2 produced 4.9-million a day.

Monsanto's Well, as of that date, was producing about 1 million a day and 285 barrels of water, and as of that date the ARCO Well was producing 716 MCFD a day and 210 barrels of water.

And in Section 25 to the north of Section 36, that well was not producing at all because it had watered out.

Q If Monsanto were successful in completing a well at the proposed location, would you be surprised if it were capable of producing about the same rate, 4-million a day?

A Would I be surprised? Not necessarily.

Q Would you be surprised if it were capable of producing at much greater rates than that?

A I, you know, all I can say is that by moving structurally high you're going to be in a well that should be consisten in terms of its production characteristics to wells on structure with that well, which can be bet-

ter than what you're -- you were producing in June of '65, or '85.

Q And if I heard your testimony correctly, I don't believe you had particularly any argument with our estimate of remaining recoverable reserves underlying Section 36.

A I haven't made the calculations myself. The only thing that I would say is that there certainly are some remaining reserves to be recovered.

Again, as I said, I have not made those calculations myself.

Q If a penalty were adopted along the lines you recommended, which would reduce the production rate to a rate within the range of a million to a million and a half a day, do you believe it possible for Monsanto to recover the remaining reserves of approximately 10-billion cubic feet before the well would suffer water encroachment?

A I have no way of knowing that.

MR. LOPEZ: No further questions.

MR. STOGNER: Mr. Carr?

MR. CARR: No further questions.

MR. STOGNER: I have no questions of Mr. Scheffler.

Is there any other questions of Mr. Scheffler?

If not, he may be excused.

We're ready now for closing statements, unless you would like to recall any of your witnesses, Mr. Lopez.

MR. LOPEZ: No, Mr. Examiner.

MR. STOGNER: Before I call for closing statements, yesterday I received a letter from the Land Commissioner, Jim Baca, in support of this application. I will make sure that copies were made and given to both of you.

MR. LOPEZ: Will it be entered in the record as well?

MR. STOGNER: Yes, it will be entered in the record, since they are the land -- they are leaseholders.

I'm sorry, the landowner.

Mr. Carr, you may go first. Mr. Lopez, you may go last.

MR. CARR: May it please the Examiner, Monsanto is before you today seeking the approval of a nonstandard well location in the Indian Basin Upper Penn and in the Morrow formations.

Both of these pools are spaced

on 640-acre spacing units. The reason the Division has spaced them on this spacing pattern, we submit, is because those are the acres that each well is presumed to drain.

To protect from drainage that isn't offset by counter-drainage in these pools, the Division has also set standard setbacks from the common lease line.

To drill at a standard location in this pool Monsanto would have to be 1650 feet from the offsetting -- from their lease line or from the section line.

Instead they want to locate their well 330 feet out of the southwest quarter of Section 36. In so doing they're 80 percent too close to the offsetting tract to the west and the offsetting tract to the south. In so doing they are gaining advantage on Amoco who operates a property immediately to the west and therefore we have come in and are asking you to set a penalty on that well's ability to produce so that we can be protected from drainage.

The only other option available to Amoco would be to go out and drill a well, a well that would be noneconomic.

It was noted by Monsanto in their questioning a few moments ago of Mr. Scheffler, that

Monsanto, the diagonal offset to the southwest had not objected, nor had ARCO.

I think it's important to note that when we look at the penalty formula that has been traditionally used by the Division in imposing penalties on nonstandard locations, that the penalty is based on the location of the well, not based on how many offsetting operators happen to object. We don't have a situation here where if all of the offsetting operators don't object the penalty is going to be somehow reduced, for no matter how many people object, the drainage is the same and if only Amoco objects or everyone objects, the drainage that they will sustain is the same and it is a false issue and a false question to start trying to decide whether one-third or two-thirds or 100 percent of those offsetting objected. Once you have an objection, someone is complaining because they well is being drained, or their acreage is being drained and they're asking you to impose a penalty to protect them so they won't have to go out and drill an uneconomic well.

The penalty that's proposed is based on the straight acreage concept. It doesn't, in this case, take into account that much of Section 36 is not going to contribute to the Monsanto well.

It doesn't take into account that a disproportionately great share of the reserves are

going to come off of Amoco's property because it's at a better structural position because there's greater net pay thickness in that area.

What we're proposing is a penalty that's based on a straight acreage approach.

Now if we look at the Upper Penn, there's no dispute in the record that one well will drain 640 acres. Both parties agree it's a homogeneous reservoir and yet Monsanto believes they should be able to come 80 percent closer to us than allowed by statewide rules or special pool rules, and do that without a penalty. We think that clearly violates our correlative rights.

Now as to the Morrow, well, we (not clearly understood) no penalty in the Morrow, stated there's a fault out here but we don't know where it is. It's never been intersected by a well. We submit that that is no reason at all, a fault that cannot be precisely located, no reason to not impose a penalty on Morrow production. Because it's a secondry objective there's no reason and furthermore, because we don't think it's going to be a very good well is not a reason not to impose a penalty because we're not going to know if we've got a well, a good well or not, until we get down there and we'll find ourselves, Amoco, in a position where we might have a good Morrow well 330 feet off our leaseline in a pool where the

spacing is 640-acres and no penalty on its production. We would then be looking at drilling an uneconomic well and even Monsanto admits that drilling to the Morrow alone out here is not an economically attractive venture.

So we submit to you that the penalty we have recommended must be imposed. If the well that they propose to drill is not an economic venture with the penalty imposed that is necessary to protect the offsetting operators, then they have a noncommercial venture. They have a noneconomic reserves and they shouldn't drill and we shouldn't be required, just because we're offsetting a noneconomical venture to contribute reserves, to let them be drained without a penalty to simply bail them out from an economic point of view.

We think there's only one way you can protect correlative rights and that is to impose a substantial penalty.

And I would remind you that you have a duty to all interest owners, not just the State of New Mexico. Of course they don't want a (not clearly understood). The Land Office wants to come in and drain us just exactly like Monsanto would want to. It's as easy to read as anything that's come in here today.

But you have a duty not only to the State but you have a duty to Amoco. You have a duty to

the Federal government, who is also a royalty owner, and you can only carry out that duty to everyone by imposing a proper penalty. In so doing you will prevent the economic waste that might be caused by the drilling of an unnecessary well.

We therefore submit that the application of Monsanto should be approved but approved only with the imposition of a production limitation factor of 36 percent.

MR. STOGNER: Thank you, Mr. Carr.

Mr. Lopez?

MR. LOPEZ: Thank you, Mr. Examiner.

If the issue were so simplistic as to be measured with a ruler, there would be no point in having a hearing with respect to the magnitude of the penalty to be imposed.

It seems clear from the basics of the experience of the Commission that each case has be weighed on the basis of the facts before the Commission at this time.

It seems apparent at the outset that the penalty on the Morrow production is essentially a non-issue. The evidence presented by Monsanto has shown

that there is virtually no Morrow production due to the fault to be drained on the Amoco acreage.

In addition, their own witness has testified that he would not recommend a Morrow well at a standard location in the southeast quarter of their section.

Further, the evidence has shown that no matter what the actual spacing rules are, that on the basis of the Morrow reserves in the wells in the area that there cannot conceivably be a 640-acre drainage pattern pertaining to that production.

It is clear that it is only being viewed as a secondary target in order to make the venture to drill the Cisco well attractive and prudent.

With respect to the Cisco production, the evidence is undisputed that there are remaining reserves to be produced underlying the Monsanto tract. The question then becomes as to what is a reasonable method of allowing the operator of that tract to recover his reserves and compensate the mineral owners for their just share of the production of their reserves underlying the tract without violating correlative rights.

The evidence, I think, further shows that the amount of reserves underlying the various 640-acre sections in the Indian Basin do have comparable volumetric reserves. It is clear that those reserves are

migrating; if not as a the result of an aggressive water drive, at least the reserves are being displaced up dip.

If any penalty, much less a significant penalty, is imposed upon the Monsanto location, essentially what the result will be is that Monsanto will be deprived of its fair chance at recovering its reserves and therefore its correlative rights would be jeopardized.

I think in a fair assessment of the evidence before the Commission here today, the Division, that it is clear that Amoco would be minimally, if at all, harmed by the granting of the unorthodox location with the setting of a minimum penalty. If the penalty is harsh, then it is clear that the well will not be drilled and the reserves and correlative rights of Monsanto will be violated.

MR. STOGNER: Thank you, Mr. Lopez.

Mr. Carr, Mr. Lopez, I would like a rough draft order on this proposed outcome in this case today from both of you within -- will fourteen days be sufficient?

MR. LOPEZ: Yes. I would like to point out, Mr. Examiner, again that I know that you can see it is of benefit to have as timely an order as possible, and we will be glad to provide (not clearly understood.)

MR. STOGNER: Thank you, Mr. Lopez.

Anything further in Case Number 8758 today?

If not, we'll conclude this case and the record will be left open for the next fourteen days for the rough draft orders.

That concludes the docket.

(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. 8758 heard by me on 21 November 1985.

Examiner
Oil Conservation Division