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

14 July 1988

COMMISSION HEARING

IN THE MATTER OF:

Application of Phillips Petroleum Company for a non-standard gas proration unitand unorthodox gas well location, Lea County, New Mexico, and — CASE 9331

Application of Phillips Petroleum Company for compulsory pooling and amend Division Administrative Order NSP-1470 (L), Lea County, New Mexico, and — 9429

Application of Mobil Exploration and Producing U.S. Inc. as agent for Mobil Producing Texas and New Mexico, Inc. for compulsory pooling, Lea County, New Mexico. — 9430

BEFORE: William J. Lemay, Chairman
Erling Brostuen, Commissioner
William M. Humphries, Commissioner

TRANSCRIPT OF HEARING

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MR. LEMAY: The hearing will reconvene.

We'll continue this afternoon with Cases 9331, 9429 and 9430.

MR. STOVALL: Application -- or Case 9331, the application of Phillips Petroleum Company for a nonstandard gas proration unit and unorthodox gas well location, Lea County, New Mexico.

Case 9429, application of Phillips Petroleum company for compulsory pooling and amend Division Administrative Order NSP-1470-L, or in the alternative to rescind Administrative Order NSP-1470-L, rededicate acreage to form a standard 320 gas spacing and proration unit, and for an order pooling all mineral interests therein, Lea County, New Mexico.

And Case 9430, application of Mobil Exploration & Producing U. S. Inc. as agent for Mobil Producing Texas & New Mexico Inc. for compulsory pooling, or in the alternative either (1) to rescind Division Administrative Order NSP-1470-L, rededicate acreage to form a standard 320 acre gas spacing and proration unit, and for an order pooling all mineral interests therein, or (2) for a nonstandard gas proration unit, Lea County, New Mexico.

MR. LEMAY: For the purposes of this hearing all three cases will be consolidated unless

there is objection.

Are there appearances in these cases?

MR. KELLAHIN: Mr. Chairman, I'm Tom Kellahin of the Santa Fe law firm of Kellahin, Kellahin and Aubrey, appearing on behalf of Phillips Petroleum Company.

MR. CARR: May it please the Commission, my name is William F. Carr, with the law firm Campbell & Black, P. A., of Santa Fe. I'm appearing today on behalf of ARCO Oil & Gas Company and Sun Exploration and Production Company. I have one witness.

MR. PEARCE: May it please the Commission, I am W. Perry Pearce of the law firm Montgomery & Andrews. I appear in this matter on behalf of Mobil Exploration and Producing U.S. as agent for Mobil Producing Texas & New Mexico.

I have three witnesses who need to be sworn.

MR. LOSEE: Mr. Chairman, I'm A. J. Losee of Losee and Carson, Artesia, New Mexico. I have with me Mr. George Hunker of Hunker and Fedric. Roswell. We're both appearing on behalf of T. H. McElvain and C. W. Trainer.

We've got four witnesses.

MR. LEMAY: Mr. Kellahin, how many witnesses?

MR. KELLAHIN: Two, sir.

MR. LEMAY: The witnesses will stand and raise your right hands.

(Witnesses sworn.)

You may be seated.

In terms of taking -- we have proponents and opponents, it looks like we have three points of view in this case. Do you want to discuss just a little bit how you want to do this thing?

Mr. Kellahin?

MR. KELLAHIN: Mr. Chairman, as the original applicant before the Division for a non-standard spacing unit, we certainly have no objection to having Phillips make its presentation first, followed by whichever other party desires to (unclear). I think we have the burden with regards to going forward in this matter and will be happy to be first.

MR. LEMAY; Fine. Is there any objection to Phillips taking the lead in this?

MR. CARR: No, sir.

MR. LEMAY: Do you want to

fight about the second and third point or is there any -- just in order?

Mr. Carr, Pearce, Losee, Hunker?

MR. CARR: I would suggest that my testimony is very short and it is possible we would not call a witness, and we probably should go after the applicants in this case, being Phillips and Mobil.

MR. LEMAY: You'll be after Phillips and then -- or after Mobil?

MR. CARR: Or maybe at the very end.

MR. LEMAY: At the very end, okay.

MR. CARR: Or maybe not at all.

MR. LEMAY: Fine, we'll proceed and you can make that decision.

Does Mobil want to be second on this, then?

MR. PEARCE: We'll take second place, Mr. Chairman, we are one of the applicants.

MR. LOSEE: Mr. Chairman, we're Respondents so we'll follow the pack.

MR. LEMAY: Do you have

opening statements in this case?

MR. KELLAHIN: Yes, sir, I'd like to make an opening statement when it's appropriate.

MR. LEMAY: We'll start with opening statements.

Mr. Kellahin.

MR. KELLAHIN: Gentlemen, we've put on this display board what will be Phillips Exhibit Number One and for illustration I'd like to use it for moment and refresh your recollections about how we got here and tell you where Phillips proposes to go and what its position is.

On this display you're looking at a portion of an Atoka reservoir in southeastern New Mexico. We're dealing with the South Shoe Bar Atoka Pool.

The technical testimony from our engineer and geologist will show you that this Atoka reservoir is elongated, and it's a shape running generally from northwest to southeast, elongated cigar-shaped reservoir producing out of the Atoka formation.

Specifically, the section in question is Section 22, which is outlined in yellow. This portion of the reservoir on the southeast side of the reservoir involves four principal wells that we're discussing and you'll hear the witnesses talk about.

One of the first wells, and obviously one of the most important wells, is the McElvain Well in Section 22. That well was originally drilled by Humble back in 1953 as an oil well. I believe it was a Devonian test.

Mr. McIlvain and Mr. Trainer, and we will use those names interchangeably, I will attempt to consistently refer to the McElvain well as McIlvain well, but this is the well in which Mr. Trainer and Mr. McElvain have their interest, along with a number of other parties.

The Humble Well in '53, then, was abandoned, I believe, and it was not until 1985, late 1985, that the McElvain group elected to re-enter that wellbore and to recomplete it in the Atoka formation. The entire section is a State of New Mexico oil and gas multiple leases and within that section, then, one lease consists not only of the northeast quarter but the west half of the northwest quarter.

When the well was recompleted as an Atoka well through an administrative order, Mr. Stamets, then Director, without any hearing but with no objection, approved a 240-acre nonstandard spacing unit for the McIlvain Well.

Thereafter, in December of

'87, Sun drills an offset well to the north in Section 15, dedicates the south half of it, and that is also a significant Atoka producer and this is the Sun well at this location.

There are to two other wells in this area of the pool that we will discuss to no great extent. There's the HNG well in Section 14 and then there's an ARCO well over here in 23.

Principally what has happened is in response then to the administrative order issued by Mr. Stamets, this 240-acre nonstandard unit was carved out. Phillips in this year, and I believe it was March of '88, filed and obtained a hearing before the Division Examiner to request the development of its acreage which is this 80-acre tract, the west half of the northwest quarter. It was Phillips' engineering the geologic point of view and it's their testimony today that their acreage is being drained; that this entire section or a substantial portion of this section is in this same Atoka reservoir, and that their correlative rights are being violated because they're subject to drainage and they need to either participate in a spacing unit or drill another well and participate in that well.

Their plan of operation was then to take the Phillips acreage and combine it with the

Amerada Hess acreage, the north half of the southwest quarter, to form then, and requested the formation of a 160 acre nonstandard spacing unit with a well located at an unorthodox location. That request came to a hearing before Examiner Catanach on March 16th and again on April 13th, and as a result of Division Order R-8644, entered on April 27th, 1988, that application was denied.

At the time of this hearing before the Examiner, the only party to appear and oppose the application was the interest of ARCO. After the Examiner order was entered, Phillips raises for consideration for you today various combinations of potential solutions.

First and foremost it's request by a de novo process is to again consider, and we request your approval at this time, of the original nonstandard spacing and proration unit, 160 acres.

As an alternative remedy, we have pled that you withdraw the 80-acres in the west half of the northwest quarter now dedicated to the McElvain well, take that acreage out, allow the formation by forced pooling of the west half of that section, so that Phillips as operator can drill a well on the west half.

As an adjunct to that application, Mobil has done the reverse to accomplish the pooling of the east half and they seek then the formation of

the east half to pool their interest in the McIlvain well.

And so to have all the options available to the Commission for consideration, we filed in the third alternative the other consideration and that is to lay the proration units down and to put the Phillips' 80-acre tract in with the McIlvain interest and let's let us participate then in the producing well by paying some equitable share of those costs and sharing in future production.

That would then free up the south half for a standard spacing unit.

It is our position and our proof that this section, unless it's further developed, is going to be drained and depleted by a single well, the McIlvain well, and not only does it drain the 240 acres dedicated to it, not only will it drain the Phillips acreage, it will drain the entire section. The further proof from our engineer is that this section will support the drilling of two wells and can justify three wells.

We leave then with you how to puzzle us through to a solution. The original request for a nonstandard unit was predicated on the existence of that 240-acre nonstandard unit there already. If you seek to terminate it or to reform it, it is our position that's within your rights to do so. We believe you can do that,

you can reform a spacing unit in order to protect correlative rights. It's our position that the reformation of that spacing unit is now necessary based upon additional evidence and information and data that was not then available to or known by the Division when they approved the nonstandard unit.

We believe the new information shows that this reservoir is highly communicated. Pressure information will demonstrate that to you and we believe that in order to protect the correlative rights of all the parties in Section 22 we either need to approve the Phillips' application or in fact reform the spacing units so that we can get more wells in that spacing unit.

MR. LEMAY: Thank you, Mr. Kellahin. Additional opening statements.

If there are none, we'll continue with Mr. Kellahin.

MR. LOSEE: I'm sorry, I was waiting for Mr. Pearce --

MR. LEMAY; Excuse me, Mr. Losee.

MR. LOSEE: -- to speak and I apologize. It thought he was thinking about the question.

MR. LEMAY: He declined an opening statement. You may proceed with yours.

MR. LOSEE: Yes, a very short one here.

On behalf of the Respondents, back in 1985 they made application to the Commission under its existing rules for administrative approval of one, the unorthodox location, which was occasioned by the fact that the well was originally drilled as an oil well properly spaced. The Commission rules then provided, and still do today, that you can obtain administrative approval for that kind of location for a gas well, which was done in this case.

Secondly, the rules also provide for administrative approval of nonstandard units. In each case notice was given by certified mail to Phillips, to Sun, and to Mobil of this application. No objection was entered by any of them.

The order was entered by this Commission under the same rules that exist today. Based upon that order McElvain and Trainer re-entered this well. They obtained what is an excellent Abo well. It's produced about 4-billion cubic feet of gas, slightly over that, to date, and based upon Phillips' engineering study and graphs, it will produce pretty close to another 4-billion cubic feet.

Did I say --

MR. LEMAY: It's Atoka, not Abo, I think.

Q Okay, I'm sorry, I meant Atoka.

Since entering that hole and completing that well. the development has run to the northwest. There have been four other wells spaced on it. The risk of that re-entry was taken by McIlvain and Trainer based upon this order of the Commission. They have spent something like $600,000 to this date. It is a good well and it has encouraged the development of the rest of the area in the South Shoe Bar Field.

At this time to change the spacing unit in favor of companies who had leases in this area for fifty years and never developed it, to deprive the people of the success of their -- the risk they took drilling this well, is a destruction of their correlative rights, not only of the working interest owners in this well, but the State of New Mexico, who has a lease with McIlvain for a sixth royalty and all of the surrounding leases held by all of the other companies are 1/8th royalty.

The State will lose royalty, which we will show.

We, contrary to Mr. Kellahin's assertion, we do not believe there is anything known

about the Atoka reservoir today, the Pennsylvanian, than there was at the time the order was entered back in 1985.

The North Vacuum produces out of the same and they probably tie right together and it stretches on to that boundary. Geologically there is no difference, there's no difference in the drainage of the Morrow, or the Atoka, than there was then.

We think it's mandatory that the sanctity of the Commission's order be upheld so that the spacing unit is not changed and these people deprived of a portion of their success. If there is drainage we think Phillips ought to be permitted to drill a well and they can show you up in the northwest northwest corner, and if Mobil wishes to drill a well in the southeast, there is no objection by the Respondents. The objection is to destroy the spacing unit that was created by the valid order of this Commission under the same rules that still exist.

MR. LEMAY: Thank you, Mr. Losee.

Additional opening comments?

If not, you may continue. Mr. Kellahin?

MR. KELLAHIN: Mr. Chairman, we would like to call our geologic expert as our first witness. His name is Rick Halle, he pronounces the E on the

end of his name, and it's spelled H-A-L-L-E.

R. E. (RICK) HALLE,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Halle, would you please state your name and occupation?

A My name is Rick Halle. I'm a geologist employed by Phillips Petroleum Company in Odessa, Texas.

Q Mr. Halle, we don't have benefit of a microphone in the auditorium today so you're soft-spoken and you'll have to speak up as best you can.

Would you summarize for the Commission what is your educational background as a geologist?

A I have a Bachelor's degree from the University of Minnesota and also a Master's degree from the same school.

Q In what years, sir?

A '72 for the Bachelor's and '81 for the Master's.

Q Would you summarize for the Commission what has been your employment experience as a petroleum

geologist?

A I was employed by Phillips Petroleum in 1974; worked as a minerals geologist in coal and lignite until 1984 and from that date forward I've worked as a petroleum geologist.

Q Would you describe what has been your specific involvement with regards to studying the geology in the South Shoe Bar Atoka Gas Pool?

A I studied this area since the end of 1986 and have proposed several wells, including this one in this area and worked it through.

Q Did you testify and qualify as an expert geologist before the Division Examiner when they heard the original application of this case in March of this year?

A Yes, sir, I did.

MR. KELLAHIN: We tender Mr. Halle as an expert petroleum geologist.

MR. LEMAY: His qualifications are acceptable.

Q Mr. Halle, would you take a moment and identify what we have passed out and marked as Phillips Exhibit Number One?

A This is our location map to give you a feeling for the area we're interested in. The wells

spotted on it are deep wells that penetrate the Strawn formation and deeper, generally 11,000 feet or deeper. The names of the wells are posted on there. Also indicated is Phillips' acreage position marked by the stippled pattern, and in the area around the proposed well is also indicated the other deep right leaseholders.

Q Have you participated and been involved with discussions among the other operators within Section 22 about the development of that section?

A Yes, we've talked with -- through several meetings and phone conversations, with all of the offset leaseholders.

Q What is your understanding of the ability of Phillips to obtain a voluntary resolution with all those operators on the formation on a voluntary basis of further development in Section 22?

A I believe everyone wants to continue development of this prolific gas field but we're having problems coming up with the appropriate proration units.

Q Is it correct to say that you cannot get unanimous agreement for the formation on a voluntary basis for a west half oriented 320-acre spacing unit?

A Yes, sir, that would be correct.

Q And is the corollary also true that you have not been able to form on a voluntary basis a north

half proration unit consisting of 320 acres?

A Yes, sir, that's also correct.

Q And have you been able to obtain unanimous voluntary agreement with Amerada Hess and Phillips for the formation of this nonstandard proration unit?

A Yes, we have. We have a farmout agreement from Amerada Hess and we obtained Commission approval for this location and we want to drill that well and they will farmout to us.

Q On your further geologic displays you identify and discuss certain key wells for us, Mr. Halle. Would you look on this display and show us which are the key wells to remember?

A The closest offset to our proposed location would be the Sun E & P Shoe Bar State Com in the south half of Section 15. This well is completed in the same sand that we will talk about today in December of '87 and is on production at this time.

The other key well would be the McElvain New Mexico State "AC" Well, which is completed in the end of '85 and have been a very prolific well from this same sand.

Q Let's turn now, sir, to a discussion of the structure within this area. Have you prepared a structure map?

A Yes, sir, Exhibit Two is a structure map on the top of the Morrow limestone, which sits immediately underneath the pay sand. The structure of the base of the sand would be very similar to the structure on the Morrow limestone.

The main things to notice on here is that the structure in the area of the field is very simple, just a monoclinal dip off to the northeast between the Vacuum structure, North Vacuum structure, and the Shoe Bar structure off to the northeast. There are no wet wells; there's no oil, gas, water contacts in this field we don't feel that structure has a great deal of bearing on this field.

Q When we look specifically within Section 22, Mr. Halle, and look at the structure map, do we see -- describe for us what geologically you see within Section 22 based upon the structure.

A Very simple structure of a monoclinal dip and our proposed location would be on very similar structure to the McElvain well and the recently drilled Trainer Betty State No. 1 Well in Section 16.

Q What is the range of structural displacement, if you will, as you move from south to the northeast corner of Section 22

A This is a -- this map is based on 100

foot contours so we have maybe 200 feet dip across this section.

Q Can you as a geologist form any useful geologic opinions based upon a structure analysis in -- within Section 22?

A No, sir, I don't -- I don't believe the present structure has any bearing on this sand reservoir at all.

Q Have you studied and are you familiar with any seismic information available with regards to development or interpretation of the structure within Section 22?

A We have two seismic lines in the area and have constructed synthetics of a couple of key wells. Primarily we've looked up in the North Vacuum Area and we can't resolve the sand on seismic modeling.

Q Is that seismic information useful to you in determining the thickness and the location of the Atoka Sands?

A No, sir.

Q Does it show you enough structural information to tell you whether structure plays an important part of the development of Section 22?

A I don't believe it gives you any resolution in Section 22 on sand beds.

Q How then have you attempted to analyze the geology for locating wells and determining the shape and thickness of the Atoka reservoir within Section 22?

A We've looked at all the well logs in this area, correlated the Atoka sand, and isopached those thicknesses.

Q In constructing your cross section did you use a structural cross section?

A No, sir, I used a stratigraphic cross section.

Q And why did you do that?

A Because structure didn't seem to have a lot of bearing on the field and so we were looking at a stratigraphic interval.

Q I believe everyone has a copy of Exhibit Number Three, which is the cross section. Do you have one, Mr. Halle?

A Yes, Exhibit Number Three is a stratigraphic cross section. The --

Q Just a minute, let me get mine opened up here.

Do you have a portion of a display on Exhibit Number Three, Mr. Halle, which shows us the location of the wells on the cross section?

A The lower center portion on this cross

section is an index map which shows the wells which have been put on the cross section.

Q Why have you chosen these particular wells to put on the cross section?

A These wells penetrate the thicker sands and show some of the edge sands on either end; show the relationship of sand in the different wells and the range of thickness, how they correlate.

Q Have you included in your cross section the McIlvain well and the Sun well?

A Yes, I have, on the right side, the east side. The second well from the right is the McIlvain well and the third well from the right is the Sun well in Section 15.

Q What are your conclusions after you analyzed the information you put on the stratigraphic cross section?

A That the pay sands in the North Vacuum Atoka Morrow Field is the same sand as the pay in the Sun and the McIlvain wells; that this sand body is continuous from one field to the other and should be present at our location.

Q What causes you to believe that there is sufficient continuity of the sand in the Atoka reservoir to give you continuity of the reservoir throughout Section

22?

A The persistent appearance of the sand in this area, this trend we've mapped.

Q All right, have you attempted to map the location and thickness of the Atoka sand?

A Yes, sir, Exhibit Four is a map of the same sand that is colored and outlined on the cross section. This is a regional map and it's essentially a gross sand map based on gamma ray cutoff, 60 API, which is the standard cutoff that I use.

Q All right, let's talk about the gamma ray cutoff values that you as a geologist use. If you have 100 percent API cutoff, what is that telling you?

A 100 API units would indicate a shale, very radioactive.

Q And when you're looking for Atoka sand production we back off that 100 percent number and get into what percent or what value range to show you Atoka sandstone development?

A The value range, many of these sands, their lowest gamma ray value would 20 or 30 API units but 60 API units is a good cutoff to indicate the thickness of the sands.

Q And have you mapped that location of that sand reservoir using that cutoff?

A Yes, I have.

Q All right, show us what you conclude from mapping the Atoka sand on Exhibit Number Four.

A I conclude that the sand body that we are discussing today is a long, narrow, linear sand, about 7,500 feet across in the North Vacuum Field and using that same width, which I see no reason to change, in the South Shoe Bar Area, this would be a reasonable interpretation of the thickness of sands you could expect.

Q When we look specifically in Section 22, what do you conclude as a geologist with regards to the thickness and the location of the Atoka Sand within that section?

A The thickest sand would be in the north half of the section and that's where we proposed our location.

Q How important to you as a geologist in picking a location is the thickness of the reservoir within Section 22?

If you think back to the cross section a little bit, you see the variation in the thickness of the sand change very rapidly. We would prefer to stay in the thicker part of the sand. I expect they're stacked sand bodies, and you can penetrate thicker sand; you're probably penetrating more sand bodies and have a better chance of

draining the whole reservoir available to you.

Q The Phillips 80-acre tract in the northwest -- in the north half of the northwest quarter of 22 is not now currently participating in any of the producing wells, is it?

A No, sir, it is not.

Q Do you see any geologic reason or event that would preclude the Phillips acreage from being drained by the Sun acreage to the north?

A No, sir.

Q Do you see any geologic event or information to cause you to believe that the McIlvain well is not capable of draining the Phillips acreage?

A No, sir.

Q There's nothing geologically to tell you that they're separated.

A No.

Q In fact, the geology shows you they're continuous.

A Yes.

Q And connected.

A Yes.

Q When we look at the orientation of possible spacing units for dedication of potentially productive acreage to a well, have you made an examination

like that?

A Yes, sir.

Q That's normally called a Phi-H map, is it not?

A The Phi-H map is the map that is a composite of porosity and thickness, so if you have an interval in your sand bed that is more highly porous than another, it gives it more emphasis, and I have constructed a map of that type and it mimics this map very closely.

Q All right. Specifically tell us what you mean when your Phi-H map mimics the isopach thickness map.

A It means that the gross sand in the pay sand, the Phi-H, the best part of the pay sand is -- is indeed consistent. You don't have big variations in the reservoir and that this is a good regional guide to where you would want to drill to find this reservoir.

Q In terms of the relationship between the zero contour line on the Phi-H map and the zero contour line on the isopach, how do they compare?

A The zero contour line on the Phi-H map would trace a line inside the zero isopach on the gross sand map.

Q Have you provided the Phi-H map and your geologic analysis to Mr. Mueller, the reservoir engineer

for Phillips for his analysis and and reservoir study?

A Yes, I have.

Q Do you have a geologic opinion to express to the Commission with regards to how they ought to treat the further development of Section 22?

A Yes, sir, I do.

Q And what is that opinion?

A It's my opinion that the first logical step-out to trace the outline of this sand would be here in the thickest part of the sand, would be the best location, comparing the reservoir the best.

Q In terms of dedication of acreage to a well at that location, what is your recommendation as a geologist as to what acreage ought to be dedicated?

A We -- we are limited there because of availability of acreage and our proposal has been to dedicate 160 acres that lay in this area, and that should include most of the productive acreage, not all the productive acreage, left in Section 22.

MR. KELLAHIN: That concludes my examination of Mr. Halle. We move the introduction of his Exibits One through Four.

MR. LEMAY: Exhibits One through Four into the record.

Questions of the witness,

cross examination.

CROSS EXAMINATION

BY MR. CARR:

Q Just one question. Mr. Halle, do you have an opinion as to whether or not the northwest quarter of Section 22 is being drained by the McElvain well?

A Yes, sir, I do.

Q And what is that opinion?

A That it is.

MR. CARR: That's all I have.

MR. LEMAY: Questions of the witness?

CROSS EXAMINATION

BY MR. PEARCE:

Q Mr. Halle, briefly, if I may, I'm Perry Pearce for Mobil at this proceeding, do you have available through your -- perhaps I can ask Mr. Kellahin, will the next witness have any pressure information?

MR. KELLAHIN; Our engineering witness will discuss pressures.

MR. PEARCE: All right, fine. Thank you.

Q You mentioned during your direct testi-

mony that you had two seismic lines that you had relied upon. Where were those lines?

A We have the northwest/southeast line that runs through here, that comes down into Section 22, and we also have the north/south line which is about on the east edge of this map, and we haven't relied on them, so we haven't used them to (unclear) any structure. This is purely based on --

Q I apologize. I thought you were telling us that you had relied upon those in constructing an earlier exhibit.

A No, I'm sorry. No, we haven't.

Q You -- you indicated, I believe, that the Phi-H line was inside the zero line shown on Exhibit Number Four, the gross sand, is that correct?

A That's correct.

Q Could you step down and show us about where you recall that line being?

A I can do it from here. I can't be very specific, I don't have the map with me, but it would be, say, several hundred feet inside that line. We have a very little bit of Phi-H in the ARCO well in Section 23, and then (unclear) there's a little bit in the HNG well, also.

Q Okay. On what basis did you draw the

gross sand zero line shown on that exhibit? What information did you use in constructing that?

A These control points. This width, and these control points in the South Shoe Bar Field.

Q Any zero gross sand control line in the southeastern section of the area shown on that map?

A No, sir, there are no zeros. There are two thin wells.

Q No well control to the south of Section 22?

A No, not that I -- on the bigger map, which I don't -- I don't have here, let me pull it out, there are some zero points considerably further south. Is that a point?

MR. KELLAHIN: Which exhibit number are you referring to?

A Referring to Exhibit Number Four. Refer to the points on the southeast edge of the -- of the map, which would be 17 South, 36 East, Section 31; 18 South, 35 East, Section 2 and Section 4. There's no Basal Atoka sand present in these wells.

Q Mr. Halle, you've indicated that you see no geological evidence that the McElvain well is not draining the Phillips acreage, is that correct?

A That's correct.

Q Upon what do you base the conclusion that a well is therefore needed in the Phillips acreage to adequately drain those reserves?

A To protect our leasehold rights.

Q It's not needed to drain the reserves, it's needed to protect your lease rights.

A We either need into Mr. McElvain's well or we need to (unclear) one.

Q I understand that one or the other --

A Yes.

Q -- is necessary.

A Yes.

Q And my question is, is a well on the Phillips acreage necessary to drain those reserves?

A That -- that would be speculative. It might be better than a well anywhere else in the section because it has the thicker sand.

MR. PEARCE: I don't think I have anything further. Thank you, Mr. Chairman.

MR. LEMAY: Mr. Losee, any questions?

CROSS EXAMINATION

BY MR. LOSEE:

Q Mr. Halle, I believe you testified that

the pay zone in this South Shoe Bar was identical or similar to the pay zone in the Atoka in the North Vacuum.

Would you point out on your isopach there where the North Vacuum is?

A I believe Mr. Trainer's Betty State Well is the southeasternmost well in the North Vacuum Atoka - Morrow Field, and the new Marathon well and (unclear) well.

Q Okay, now, to the northwest on your map, was that the early development of the North Vacuum?

A This well here, this Texaco --

Q Yes.

A -- well, was the first, first well in that sand.

Q When was that drilled?

A '78, I'm guessing. I'm sorry, I can't answer that.

Q Well, to reach the conclusion you did in answer to Mr. Kellahin's question, you have studied the wells, I take it, in the phase, similar phase on the North Vacuum in the Atoka?

A Yes.

Q Are the sections substantially the same? Are they producing in the pay section?

A Yes, it's a correlative sand. It's a similar-looking sand.

Q And it's generally continuous throughout the Vacuum, North Vacuum Field, I take it.

A It's extent is limited. We have a zero point here and a zero point here, and thin sands around the thicker sand.

Q But the section actually is continuous throughout that field, is it not?

A The sand thickness?

Q Yes.

A Yes, I assume that these contours would represent a reasonable --

Q All right, isn't that similar to the situation in the South Vacuum?

A South Shoe Bar?

Q South Shoe Bar, excuse me.

A Yes, that -- that's my interpretation, that you'll have a massive sand like this in -- in the South Shoe Bar Area.

Q Now, is the drainage area in the Vacuum Pool, North Vacuum Pool, has that been good over the years?

A I would defer to Mr. Mueller here.

Q Okay. Do you know what spacing units have been developed in the North Vacuum?

A 320 acres, sir.

Q Is the permeability good in those wells?

A Yes, it is.

Q Is it similar permeability to what you've found in the South Shoe Bar?

A Again, I probably should refer to Mr. Mueller.

Q You looked at the logs, didn't you?

A Yes.

Q And that field was developed many years before the administrative order entered in 1985 on the McIlvain "AC" Well, wasn't it?

A Yes, it was.

Q No further questions.

MR. LEMAY: Additional questions of the witness?

Mr. Kellahin?

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q Two follow-up areas, Mr. Halle.

First of all, in response to Mr. Pearce you said you did not rely on the two seismic lines and the data from those seismic lines in making your geologic evaluation of this area. Why not?

A We didn't -- we didn't feel we could

isopach sand from it. The seismic data could be useful for mapping the structure in the Morrow limestone. We did not use it. We have enough well control. It's not necessary.

Q The key in the development, then, is mapping the thickness on an isopach using a stratigraphic analysis of the sand thickness and continuity.

A Yes.

Q And structure is not important to you?

A That's correct.

Q All right. Let me go back to Mr. Losee's discussions with you as to what the status was of the generally known information among geologists in the fall of 1985. Let me show you, sir, what has been taken from the Commission files from a Marathon case. It's Exhibit Number Seven in Case 9222.

Are you familiar with that display, Mr. Halle?

A Yes, sir, I've seen this display before.

Q In October of 1985 am I correct in saying that it was generally believed that the southern extension of the North Vacuum Pool was going to terminate with this well here in the southwest quarter of Section 16?

MR. LOSEE: Mr. Chairman,

MR. LEMAY: Mr. Losee.

MR. LOSEE: If the witness is testifying from his own knowledge, I have no problem. If he's going to use a map to introduce, I'd kind of like to interrogate the Marathon geologist who prepared it, Mr. Carlson, who introduced this map.

What's generally known is fine, but I believe the question needs to be not relying upon that map to establish what you knew of what was done out there.

MR. LEMAY: Maybe Mr. Kellahin can rephrase the question in terms of the witness' own knowledge.

MR. KELLAHIN: I believe if that's an objection it's premature, Mr. Chairman, I'm not yet even there.

MR. LEMAY: Okay, well, let's see where you're going.

Q What was the general status of information and what did you specifically know as a geologist in October of 1985, about then, what was available for -- for geologic purposes in terms of an interpretation of the southeastern extension of the North Vacuum Pool?

A I see in '85 these -- these two wells had not been drilled yet.

Q Well, you've got to tell me, when you

say "these", which -- what you're talking about.

A Okay, I'm sorry. The Marathon well in Section 17, the Trainer Betty State Well in Section 16, the Sun well in Section 15, had not been drilled yet and this well, this location in the northwest of Section 17 had been proposed to working interest owners several times from '83 to '85 and they never -- it wasn't drilled.

So at that time this was a separate area. No one had stepped out and carried that field to the southeast, and the confirmation of the Sun well had not been drilled; Mr. McIlvain's well was a very good producer, a very good IP but it was a thin sand.

The HNG well in Section 14 was also quite thin and a poor producer, and it wasn't until '86 - '87 when Marathon proposed and got working interest approval in Section 17, that this field began to extend southeast and became obvious that the two fields were not together.

Q Phillips has an acreage position in both 16 and 17 on this display, don't they?

A Yes.

MR. KELLAHIN: No further questions.

MR. LEMAY: I think in terms of Mr. Losee's objection, we accept this testimony as an

expert testifying to his own experience in the area.

MR. LOSEE: Fine.

MR. KELLAHIN: And for the record, Mr. Chairman, although I showed him the exhibit, we have not shown it to the Commission and I have stopped short of trying to ask this witness about Mr. Carlson's work.

MR. LEMAY: Fine.

MR. KELLAHIN: We'll withdraw that.

MR. LOSEE: And I'll withdraw my objection.

MR. LEMAY: Additional questions of the witness? I have one.

QUESTIONS BY MR. LEMAY:

Q Mr. Halle, if you were going to honor those -- those tight points where you show the sand terminating, specifically the well in Section 23 and the well in Section 14, could you not take that sand trend and make the axis go a little bit further south rather than terminate the trend; extend it but include all of Section 22 in productive sand?

A This is my interpretation of this sand. I've stopped it here basically because of this relationship

I see here; looking at other sands that correlate with this in a more regional area, they seem to be a consistent width.

Q I guess my question then would be is there any evidence to show that there is nonproductive acreage in Section 22?

A There's no conclusive evidence either way.

Q Thank you.

MR. LEMAY; Additional questions? If not, the witness may be excused.

Call your next witness, Mr. Kellahin.

MR. KELLAHIN: Thank you.

Mr. Chairman, at this time we'll call Mr. Bill Mueller. Mr. Mueller spells his last name M-U-E-L-L-E-R.

WILLIAM J. MUELLER,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Mueller, will you please state

your name and occupation, sir?

A My name is Bill Mueller. I'm a Reservoir Engineering Supervisor for Phillips Petroleum Company in the Permian Basin region of Odessa, Texas. This region comprises two major areas, what they call the north area and the south area and I'm the supervisor over the north area, which handles southeast New Mexico.

Q Mr. Mueller, for the record would you summarize your educational background and employment experience as a petroleum engineer?

A I have a Bachelor of Science in engineering degree from Washington University in 1953; went to work immediately for Phillips Petroleum Company, and I've completed 35 years of service on June 22nd of last month.

I worked for Phillips Petroleum Company 8 years in Big Spring, Texas; about 3 years in Hobbs, New Mexico, and in 1965 I transferred -- they closed the two district offices at that time and I transferred to Odessa, Texas, as a Reservoir Engineering Supervisor in a staff position, and since that time that's where I have been in my position.

Q Mr. Mueller, do your duties include analysis and reservoir study and supervising engineers for Phillips under your control to analyze production in southeastern New Mexico?

A That's right. I have six reservoir engineers under my supervision.

Q Have you and your staff analyzed the South Shoe Bar Atoka Gas Pool and the North Vacuum Pool?

A Yes, sir.

Q And have you previously testified before the Oil Conservation Division and Commission as an expert reservoir engineer?

A Yes, sir.

MR. KELLAHIN: We tender Mr. Mueller as an expert reservoir engineer.

MR. LEMAY: His qualifications are acceptable.

Q Mr. Mueller, let me direct your attention, sir, to Exhibit Number Five, just as a point of illustration, and have you identify, sir, what the problem is.

A Okay. Exhibit Number Five shows outlined in red the 160-acre nonstandard proration unit in the South Shoe Bar Atoka-Morrow Gas Field that Phillips Petroleum Company is requesting approval of.

This unit comprises the west half of the northwest quarter and the north half of the southwest quarter. Phillips also requests an approval of this nonstandard

unit, that the unit be assigned a 50 percent acreage penalty factor, a ratable take determination by the gas purchaser at the time the well is connected.

It is also requested that this nonstandard unit of 160 acres be assigned to an unorthodox location located in Unit D of Section 22, 660 from the north and 660 from the west.

Also shown on Exhibit Number Five in green are the current producing wells in this area. As an example, in the northeast quarter of Section 22 is the McIlvain well colored in green and its unorthodox location and nonstandard unit comprising the 240 acres in the north half of Section 22; the Sun Shoe Bar Well, located in Unit M of Section 15, it's full 320-acre assignment is the south half of Section 15; the C. W. Trainer operated Betty State No. 1 in the west half of Section 16, with a standup unit and 320 acres assigned to it; and the proposed C. W. Trainer Betty State No. 2, with an east half assignment in Section 16.

Q With regards to this case, Mr. Mueller, what do you as a reservoir engineer see as the problem?

A As regards to this case the main problem is the nonstandard unit and unorthodox location of the McIlvain well, with reference to the productive acreage that is now developed in this area.

Q How is that a problem?

A Because it leaves Phillips' 80 acres dangling out on the end and we need to somehow have this acreage become incorporated into a well or drill a well on this acreage.

Q What has your reservoir study showed you in terms of the ability of the McElvain well to produce all the Atoka reserves within Section 22?

A Very well, it could. Yes, the McElvain well is a high productivity well, even though it has a small amount of net pay sand and is capable of draining a considerable area.

Q Do you have an opinion as to whether or not Section 22 and a reservoir underlying 22 will support the drilling of more than one well?

A Yes. There are sufficient reserves in the productive acreage of the Shoe Bar (not clearly understood) to support the drilling of one or two more wells.

Q One or two more wells?

A Yes.

Q So there is enough reservoir reserves to support maybe three wells in the section?

A Definitely.

Q All right. What happens if the Phillips

acreage is not dedicated to a producing well, whether it's the McIlvain well or it's own well in the west half?

A The reserves under that acreage will be drained from it.

Q How did we get into this situation, Mr. Mueller?

A We got in this situation by not knowing the full extent of the North Vacuum Atoka - Morrow Field until the Marathon well, which was drilled in, I believe, early of '87.

That Marathon well in State 17, it came in with 40 feet of sand, a depleted pressure of about half the original area, started kicking the sand development to the southeast. It was this well here. At that time people were thinking only the North Vacuum in this area and this well here come in with 40 feet of sand. It was then people started looking, connecting these two, the McElvain well down here and the Marathon well up here.

Q At the time the Division approved the 240-acre nonstandard proration unit in October of '85 for the McElvain well, what was the status of engineering information known about the ability of a well such as the McElvain well to drain and develop 320 acres?

A None, I would say, because the McElvain re-entry was a re-entry of an Exxon plugged and abandoned

Devonian oil well that had actually DST'd the Atoka sand and I believe had a million or so open flow on the DST, but Exxon then perforated the sand, acidized it, and most Exxon could get out of it was like, I believe, 449 MCF a day. They subsequently plugged the well, so that, you know, McIlvain's re-entry in that well took a high risk, I'd say.

Q Was there any engineering information available to an engineer to an engineer such as you in October of '85 from which you could determine that that well could be justified on a 240-acre nonstandard proration and spacing unit?

A No. Am I answering that? I guess I got the question. Is it was there engineering data available?

Q Yes, sir, and there was not.

A There was not.

Q Let's turn, sir, to Exhibit Number Six.

A Okay. Exhibit Number Six in conjunction with Exhibit Number Seven, is a tabulation of the annual shut-in pressure surveys required by the New Mexico Oil Conservation Commission on dry gas -- or gas wells in the State of New Mexico.

This exhibit is primarily to show the excellent communication throughout the North Vacuum Atoka - Morrow and its connection to the South Shoe Bar Atoka - Morrow Gas Field, such that the productive, all the produc

tive acreage in both of these fields is being depleted by the current production out there.

In other words, you have to be participating in a well or you're suffering drainage at this time.

Our particular attention is drawn to the Exhibit Six. You can see that in 1973 --

Q You'll have to speak up, Bill, it's hard to hear you.

A I'm sorry. On Exhibit Number Six, in 1973 Texaco completed the DK State Com No. 1 in Unit F of Section 8. That's this well, in Section 18, I'm sorry.

Q You want you Section 8 or 18?

A Section 18. This is the first well, the Texaco DK State, and it came in in 1973 with a shut-in tubing pressure of 4856 pounds.

The next development in this pool did not occur until 1977, which was four years, excuse me, three years later in 1976, Mobil completed the UU Com No. 1 in Unit F of Section 7. That's this well, one full mile north. At that time the Mobil well came in with a shut-in tubing pressure of 4300 pounds or some 500 pounds less than this well came in at three years earlier and right at about the same pressure this well had now declined to in 1976.

One year later, in 1977, Marathon completed in Unit G of Section 7, this well, and it came in at

a shut-in tubing pressure of approximately 3600 pounds, again right in line with where these two wells had declined to.

In that same year Mobil completed the State NN Com No. 1 in Unit L of Section 8 and here again we see 3300 initial pressure in that well such that in plotting this shut-in tubing pressure for these four wells versus time, you can see that they all lay in essentially the same straight line, such that every subsequent well has already suffered drainage by the previous well's completion.

And this shows that the current depleted shut-in tubing pressure in these four wells is around 1500 pounds in 1987, as reported by these operators.

Q Have you made a similar analysis of the pressure information when we move to the Shoe Bar Atoka on the south?

A Yes. In Exhibit Number Eight, along with Exhibit Number Nine, you see we have the Enron, or HNG Well in Unit L, which was completed in 1984, way over there in Unit L of Section 14, and it reported initial shut-in pressure shut-in pressure of 3500 pounds. It was produced until 1986 at which time its pressure had declined to about 2500, as reported when McElvain recompleted the State AC in Unit H down here. Now McElvain initially reported a

shut-in tubing pressure of 4400 but within one year their pressure had declined to 2190, such that right now in 1987 the shut-in pressures for the McElvain well here and the Enron well is very close to the shut-in pressures for the North Vacuum Atoka - Morrow wells.

Q If you took the initial reported shut-in pressure from the McElvain well in '86 and accepted that as being correct, what would that relationship of that pressure to the North Vacuum cause you or lead you as a reservoir engineer to believe?

A There was possibly separation at that time but then subsequent rapid decline showed that they're not in communication.

Q Do we have plotted the pressure information on the Sun well in Section 15?

A The only -- I have made some, it's untabulated.

Q Okay, we'll come to that in a minute, then.

A Right.

Q Let's go now, sir, to Exhibit Number Ten and look at the production information on the McElvain well.

A Exhibit Number Ten shows the production history of the McElvain well which was completed and

initial production reported in February of '86. It has produced consistently between 5 and 6-million a day. It has cumed, to April 1st of this year, 4.2-billion cubic feet of -- billion cubic feet of gas and 49,497 barrels of oil, condensate, and I believe the well is currently is currently producing 5.5-million a day at about 700 pounds flowing tubing pressure.

Q All right, sir, turn to Exhibit Number Eleven now and identify and describe that information.

A Exhibit Number Eleven is a tabulation of the monthly condensate in barrels and the monthly gas volumes for the McElvain well and it shows the cum production through March of 1988 is a little over 4-billion cubic feet of gas.

Q Have you prepared a decline curve analysis for the McElvain well?

A Yes, we have. As Exhibit Number Twelve we plot the engineering data of shut-in pressure, bottom hole pressure, over Z and we obtain a straight line, which gives a good indication of the recoverable reserves indicated at that time by a well's performance, and you can see we have three pressure points here on the McElvain well. I think initially there are 400-to-1, a 2800-to-1 one year later and then the latest one they report here of 2200 in the '87 annual.

These three points line up well when plotted versus their cum and indicate that the McElvain well at that time when this exhibit was prepared in March, would anticipate a recovery of about 7.6-billion cubic feet.

I reviewed the good productivity and communication throughout the sands. With the Sun well now coming on production, with the Marathon well, I think, coming on production later in last month, and the Betty State in April, the remaining reserves will now be reduced, probably, to in the neighborhood of 2 to 3-billion cubic feet, rather than the .36 indicated here.

Q Based upon your reservoir study, have you also made an analysis of what the allocation will be of remaining recoverable reserves if the orientation of the spacing units are such that you have a west half and an east half unit, and we now have the existence of the Phillips well as you propose it.

A Yes.

Q Have you analyzed that?

A Yes.

Q And what do your numbers show you?

A My numbers show that -- it shows me that with the west half forced pooling and a well in the west half, and a well only in the east half, the McElvain well,

McElvain will recover about 2-billion and the well in the west half will recover 2.2-billion.

Q Are those sufficient recoverable reserve volumes to justify and support two wells in the section?

A Yes.

Q When we turn to Exhibit Number Thirteen, Mr. Mueller, would you identify and describe that information?

A Exhibit Number Thirteen shows there's excellent pressure communication throughout this whole sand lens.

It shows that the Texaco DK State No. 1 in Unit F of Section 18 reported in 1987 a shut-in tubing pressure of 1590 pounds; that the Marathon Oil Company new completion here in Section 17, had an initial shut-in pressure of 1672 pounds; that the C. W. Trainer Betty State No. 1 here, this well had not produced at all up to that time.

The C. W. Trainer Betty State No. 1, which had not produced up to this time, but in March of '88 had a shut-in tubing pressure of 1585.

You'll see that the Sun well located over here in the end of Section 15 had an initial shut-in tubing pressure of 1910, and we see that the McElvain well in Unit H had a 2203 shut-in tubing pressure reported in 1987, such as all these shut-in tubing pressures are very

close together.

Q What's your conclusion as a reservoir engineer?

A That they're all eaten out of the same pie.

Q Let's go back and discuss specifically your first recommendation, which is the formation of a 160-acre nonstandard spacing and proration unit --

A Yes, sir.

Q -- in 22 with the approval of an unorthodox well location?

A Right. You mentioned in your opening comments that you had a recommendation with regards to what allowable to assign to that well so as not to violate the correlative rights of the other operators in the pool.

A Right.

Q Tell us how you propose to establish an allowable for the well if that nonstandard unit is approved with the well as you propose to locate it.

A This currently being a nonprorated field there is essentially no (unclear) allowable; however, all common gatherers of gas in the State of New Mexico are required by state statutes to take ratably and in Exhibit Number Fourteen I show that in Sections 70-2-1 through 70-2-36, which are known as the Oil and Gas Act of the

State of New Mexico, under 70-2-19, common purchasers, paragraph E states that "Any common purchaser taking gas produced for gas wells ... from a common source of supply shall take ratably under such rules, regulations and orders, concerning quantity, as may be <determined> by the Division... The Division, in <determining> such rules, regulations and orders, may consider" the deliverability of gas, pressure of gas, or "acreage attributable to the well"...

That's the common purchaser out there who is taking gas from Phillips Petroleum Company with a 50 percent acreage factor, to take ratably, should only take half as much gas from our well as it would take from a well of equal deliverability with a 320 acre assignment.

Q Has the Commission previously ever adopted this as a solution for a nonstandard proration unit --

A Yes, sir, they have.

Q -- in a nonprorated pool?

A Yes, sir, they have.

Q Do you have a reference for the Commission to consider on that topic?

A Yes. Exhibit Number Fifteen is the Application of Pan American Petroleum Company for an unorthodox gas well location in Lea County, New Mexico.

This well was completed in the Ranger Lake Devonian Gas Pool at that time, which was a nonprorated pool. The Commission, because Pan Am wanted to drill 990 feet from the north rather than the 1980 from your end unit boundary, the Commission restricted the acreage assigned to this well to two 160 acres rather than the normal 320.

Q Do you have an opinion as a reservoir engineer, Mr. Mueller, with experience before this Commission, as to whether or not your proposed allowable will be in the best interests of conservation and the protection of correlative rights?

A Yes, sir.

Q And what is that opinion?

A It will.

Q Let's consider now the other alternative of compulsory pooling for the west half of Section 22. Have you studied that as an alternative?

A Yes.

Q All right, let's, for illustration purposes, let's go to Exhibit Number Sixteen and have you show us who the operators would be involved in such an orientation.

A Okay. On Section -- Exhibit Number Sixteen I show outlined in red the west half of Section 22

and forced pool proration unit comprising 320 acres. I show that the standard location for that 320 acres would be in either Unit E or F, or anywhere in between those two. The least risk location would of course be the one 1980 from the north and 1980 from the west, or Unit F; however, the lawyers think I should not be drilling on McElvain's acreage if we have a forced pooling.

Q Have you participated in discussions with all the working interest owners in the west half of 22 to see if you can resolve on a voluntary basis the participation in a well for the west half?

A In a forced pool west half?

Q No, sir, on a voluntary basis.

A Yes.

Q Have you participated in those discussions with all those operators --

A Yes.

Q -- and working interest owners?

A Right.

Q And have -- has Phillips been able to resolve on a voluntary basis in the absence of forced pooling, the formation of a west half spacing unit?

A No, we haven't.

Q Do you have an opinion as to whether further voluntary efforts will be helpful in order to

resolve that matter?

A They will not be.

Q We need a Commission decision, don't we?

Have you circulated among all those interest owners an AFE for the drilling and completion of the Phillips well?

A Yes, sir, I have and that is shown as Exhibit Number Seventeen, where we anticipate a drilled and completed well cost of $743,000.

Q In the event the Commission orders the compulsory pooling of the west half of the section, do you have an opinion, Mr. Mueller, as to whether this expenditure is a fair and reasonable estimate of well costs?

A Yes, I do, and it is.

Q What's your basis for comparison?

A My basis for comparison is that the estimate submitted by C. W. Trainer for the Betty State No. 1, I think, was $780,000 and he completed that well for around $690,000, so I think we're all very close here.

Q The Betty State Trainer Well is in the east half -- I'm sorry, the west half of 16?

A Yes, sir, and we're a 50 percent partner in that.

Q All right. Have you received any objection from any of the proposed working interest owners as

to your estimated costs?

A No, sir.

Q Do you have a recommendation to the Commission in the event of a west half forced pooling what should be the overhead charges on a monthly basis for a drilling well rate and a producing well rate?

A Phillips' standard drilling well rate is $6,130 a month for drilling and after completion the producing well rate is $613 per month.

Q Do you have a recommendation to the Examiner as to what a risk factor penalty ought to be against any party that after the election period fails to tender their fair share of the cost of the well?

A Yes. I think it -- rather than -- there has to be some type of penalty otherwise nobody would put their money up front; they'd wait till the well paid out and just come in on a free ride, so we would recommend at least a 200 percent penalty; that's the return of the well costs plus 100 percent additional.

Q All right. In the vocabulary of the Commission that's return of your money and 100 percent penalty.

A Right.

Q Why have you not sought the maximum 200 percent risk factor penalty for this well, Mr. Mueller?

A All our data indicates this to be good productive acreage. We think there is not a high risk associated at this time.

Q The risk associated with it is the extent that the west half has already been depleted by other wells?

A That's right.

Q Have you also considered recommendations with regards to the forced pooling of the north half of Section 22?

A Yes, sir, I have.

Q Is that shown on Exhibit Number Eighteen as to what the orientation will be and what the participation is?

A Yes, sir, it does. It shows that outlined in red would be the force pooled north half proration unit of Section 22, which would show the Phillips acreage joining in the proration unit for the McElvain well located there in the southeast of the northeast corner.

It also shows outlined in green the current McElvain acreage at 240 acres.

So McElvain would have a 75 percent working interest and Phillips would have a 25.

Q Do you have a recommendation to the Commission if they adopt this alternative as their proposed

solution for the problem, what the compensation should be by Phillips to the McElvain/Trainer owners for participation in the completed well?

A We think it should be 1/4th of their recompletion costs but not to exceed 1/4th the cost of a new well, however, if you approach that --

Q And do you have a recommendation as to when Phillips would commence participation in the production?

A We would recommend it commence with our application to force pool the north half at the hearing in late May, I believe, or early June.

Q What's the basis upon which you have concluded that contribution of a quarter percent of the recompletion cost for the McElvain well in the Atoka is fair and equitable?

A Because at this point McElvain has recovered the 4-billion cubic feet, and some of that gas has already come from under the Phillips acreage, so we feel that productive acreage in Section 22 has already, you know, contributed to the McElvain income that he has, and that we should be assessed no greater penalty than that.

Q In terms of sharing in future production have you made an attempt to estimate what remains to be the remaining production from the McElvain well?

A Yes. I'd say that we forecasted it with no other wells in this section, they should recover about 3.6-billion cubic feet more.

Q Based upon that forecast, Mr. Mueller, will the sharing of remaining future production with Phillips on a three quarters/one quarter ratio still allow all parties to share equitably in the remaining future production?

A Yes.

Q Do you believe in your opinion that is fair and reasonable and does not violate the correlative rights of any of the participants?

A Yes.

Q Do you have a recommendation to the Commission as to what would be a reasonable election period for Phillips to tender its share of the cost of recompletion in order to participate, then, in future production on a voluntary basis?

A I would say 60 to 90 days.

Q In the event Phillips elects not to tender its share of those costs, do you have a recommendation to the Commission as to what the penalty factor ought to be against Phillips' interest?

A Yeah, we should not participate in production until we tender that cost if it's not incurred

within 60 to 90 days.

Q Let me direct your attention, Mr. Mueller simply to identify for us the balance of the exhibits.

We have marked correspondence and notifications Exhibits Nineteen through Twenty-eight.

A Yes, sir.

Q Is this correspondence with which you are familiar?

A Yes, I am. This is correspondence by our land people in Odessa to all the operators in Section 22, to have a meeting relative to the decision in developing Section 22 following the Commission's denial of our application in March, is what the letter dated June the 8th was.

Q That's Exhibit Nineteen?

A Yes. And Exhibit Twenty is the same letter to Mobil?

A Same -- same letter to Mobil.

Exhibit Twenty-one is the same letter to ARCO.

Exhibit Twenty-two is the same letter to McElvain Oil and gas property.

Q When we get to Exhibit Twenty-three, what is that?

A Exhibit Twenty-three is the attendance list at that meeting that was held June the 15th in Phillips' offices in Odessa, Texas.

All operators were present except McElvain.

Q Did you subsequently have meetings with Mr. McElvain or Mr. Trainer or their representatives concerning the operations and developments of Section 22?

A We had a meeting with Mr. C. W. Trainer.

Q As a result of all these meetings, Mr. Mueller, was Phillips able to resolve on a voluntary basis the further development of Section 22?

A No, sir.

Q What's Exhibit Twenty-four?

A Exhibit Twenty-four is our transmission of the AFE to the west half unit owners for the force pooled well in Unit NN.

Q Exhibit Twenty-four went to ARCO?

A Right.

Q Twenty-five is to Mr. Trainer?

A Yes.

Q Twenty-six is to Mr. McElvain?

A Right.

Q Twenty-seven is to Amerada Hess.

A Yes.

MR. KELLAHIN: Then, Mr. Chairman, after that Exhibit Twenty-eight is the notices that my office sent for the purposes of the hearing.

We would at this time, Mr. Chairman, move the introduction of Exhibits Five through Twenty-eight.

MR. LEMAY: Without objection those exhibits will be entered into the record.

MR. KELLAHIN: May I have just a moment?

Mr. Chairman, we pass the witness.

MR. LEMAY: Thank you, Mr. Kellahin. Mr. Carr.

CROSS EXAMINATION

BY MR. CARR:

Q Mr. Mueller, your first proposal is the approval of the previously proposed nonstandard proration unit comprised of 160 acres.

A That is right; that is our first proposal.

Q And it's your recommendation that production from a well on that unit would be restricted to 50 percent of the deliverability of a comparable well?

A Of a comparable well in the pool, yes, on 320 acres.

Q And who would administer that or determine what 50 percent of -- what that 50 percent --

A The pipeline company because they're forced by state law to take ratably.

Q Is there one purchaser in the pool at this time?

A No, there's one purchaser in this area. No, excuse me, there's not. There's even multiple purchasers in this area.

Q And so there would be perhaps a different purchaser connected to this new well than the one that would be connected to a comparable well with similar deliverability (unclear)?

A That's true.

Q Wouldn't it make more sense to restrict the production based on the individual well's deliverability, just to 50 percent of that deliverability, instead of tying it to some other well that might or might not have a comparable deliverability figure?

A I don't believe so. I think the penalty just -- it would be restricted to a well of comparable deliverability on 320 acres would be sufficient.

Q Now, your penalty restriction is keyed

to the well's deliverability, not the actual volume it's going to be authorized to produce, isn't that correct?

A Please state that again.

Q Well, let's suppose it is keyed to the Sun E & P well immediately to the north in the south half of Section 15, and that they have comparable deliverabilities.

A Yes.

Q And your well on a nonstandard proration unit would be entitled to produce 50 percent of what the Sun well to the north would be able to produce.

A That is true.

Q But what if, in fact, your purchasers are only taking 50 percent of deliverability that month? Would you in fact have any restriction at all?

A If my purchaser or their purchaser was only taking --

Q If the market is down and they're only taking 50 percent of the gas produced, by tying it to deliverability you don't have a penalty at all. You produce the same.

A Well, but if the market is down, my market is down, too, isn't it? Is that what you're saying? But in tying it to deliverability the converse is true. Suppose my well is twice as good as the Sun well, then I

would be -- if I'd had deliverability I could produce as much as they could produce and I only have 160 acres.

Or if our well was three times better, I could be able to produce in excess of what the Sun well produces on 320 acres, if you tie it to deliverability.

Q Don't you think it would, if we're going to start imposing penalties, that it would be more appropriate simply to prorated this pool?

A I think so. I think that's where we would end up.

Q Thank you, that's all.

MR. LEMAY: Thank you, Mr. Carr.

Additional questions?

MR. PEARCE: Yes.

MR. LEMAY: Mr. Pearce.

CROSS EXAMINATION

BY MR. PEARCE:

Q Mr. Mueller, during your testimony you indicated that you believe Section 22 would justify at least one and possibly two additional wells, is that correct?

A Yes.

Q Could you give me an idea of assumptions

or information which underlies that opinion, that the section might justify two additional wells?

A Okay, that was based on a reservoir forecast that we made assuming that this well encountered the pay it encountered and assuming that, as brought out by our geologist, the lack of control here, as I'm sure Mobil would possibly drill a well here and the assumption of about a 2-to-3-million a day well in this area; that those three wells would all recover about 1-1/2 to 2-billion cubic feet.

Q Clearly enough to pay out those wells?

A Yes.

Q And meet Phillips' normal return on investment?

A Yes, sir.

Q Do you believe two additional wells are necessary to drain Section 22?

A No, sir.

Q Do you believe one additional well is necessary to drain Section 22?

A I think to get the maximum recovery additional development is desirable, yes.

Q All right, sir. I'd like to have you look at what you marked as Exhibit Number Fifteen. That is the order of the Commission in the previous case and it

appears to me to be an order approving. Have you looked a the record of that proceeding? I can't tell from this order what the Commission did.

A Okay. Yes. The Commission said that because Pan Am at that time wanted to drill a well 990 from the north and east and dedicate the whole 320 acres in the east half of the section to that well, they imposed an acreage factor on the Pan Am unorthodox location.

Q Well, I certainly agree that the ordering portion says that no more than 260 acres shall be dedicated to the well.

A Right.

Q Was this well in a prorated pool?

A No.

Q Well, if it was in a nonprorated pool, what affect did this order have on the amount of gas that that well was able to produce?

A Because the common, in this pool there was only one common gas purchaser and that common gas purchaser then took proportionately from the Pan Am well and their acreage against the Phillips wells and their acreage.

Q I'd like for you, if you would, please, to look at your Exhibit Number Eight with me for a moment.

The red line which is the well in Unit 8 of Section 22, as I understand it, is the McElvain well?

A That is right.

Q And that well came on at above 4400 pounds?

A That data is shown on -- attached to Exhibit. It shows the initial shut-in pressure reported by the actual (unclear) was 4430.

Q Okay. And then in a subsequent exhibit, Exhibit Number Ten, your exhibit shows that during the year 1986 the McElvain "AC" State No. 1 Well produced 1.5 BCF and 21,759 barrels of oil, is that correct?

A That is correct, sir.

Q Now I understood you to testify when you were looking at this that because the pressures in 1987 between these two wells in the Shoe Bar and the wells reflected on your Exhibit Number Six were similar, that you believed all of those wells were in effective pressure communication, is that --

A That's right. The pressure data in 1987 indicates all the wells are in communication.

Their initial pressure data from the McElvain Well back in '86 was substantially higher than would have been anticipated had the -- would not have caused you to participate and would possibly not all be communicated at that time.

Now, the initial McElvain pressure looks

abnormal for some reason or other, because subsequent pressure in that well has shown a drastic drop-off at 44.

In other words, as you can see, he came on at 4430 initial shut-in tubing pressure right now, and he's down to 2190 and he's produced 3-billion cubic feet.

Q It is the coincidence of -- I apologize. I apologize, that's not my question.

It is the fact that pressures at 1987 levels were all very close to each other, which leads you to the conclusion that all of those wells are in pressure communication.

A I would like to state that the 1987 pressure data for the North Vacuum Atoka - Morrow older development wells and the 1987 shut-in pressure data for the McElvain Well in the Shoe Bar South Field were similar and then all of a sudden three new wells are drilled between those two pools and those pressures are identical to what is -- to what the McElvain well has now declined to and to what the North Vacuum Atoka - Morrow has declined to. They're all in the 1500 to 2000 pound range.

Q I guess, Mr. Mueller, I might as well go ahead and ask my real question. I don't understand how producing the McElvain well during the year 1986 got it effectively pressure communicated with the North Vacuum Field, which I think is what --

A I think what you're saying is that the McElvain well did not come in at the pressure that the North Vacuum Atoka - Morrow was at in 1986.

Q That -- I believe that's what your exhibit shows, yes, sir.

A That's right.

Q That would lead -- lead me to the conclusion that it was not in effective pressure communication with the North Vacuum.

A On that one piece of data, yes.

Q Did I understand you to say, and this was a hearing question, that you believe the present flowing tubing pressure in the McELvain well is about 700 pounds?

A Yes, sir.

Q Do you have data which indicates that to you?

A Mr. C. W. Trainer, I think, furnished that to me yesterday, day before yesterday.

MR. PEARCE: I have nothing further, Mr Chairman.

MR. LEMAY: Fine. Mr. Losee?

CROSS EXAMINATION

BY MR. LOSEE:

Q Mr. Mueller, is not the Sun well located in Section 15 closer to the Phillips acreage in the west half northwest than your proposed location and the McElvain well?

A Yes, sir, it is.

Q Isn't it more likely that that well is draining the Phillips acreage than the McElvain well?

A Yeah, since the Sun well came on it will contribute substantially to the Phillips acreage drainage. Up until the Sun well came on the McElvain well was.

Q But from this point forward there will be more drainage from the Sun well.

A Only if the Sun well produces at a higher rate than the McElvain well. If the McElvain well continues to produce at a rate double what the Sun well is, the -- I don't know how the drainage would do. You'd have to into a detailed study to --

Q Mr. Mueller, Phillips has three applications before this Commission, if I'm correct.

A That's right.

Q At one time Phillips asked for an 80-acre location of the west half northwest in its original Examiner hearing. Has that been abandoned?

A That was abandoned at the original Examiner hearing, that we withdrew our application for the

80-acre.

Q Now, which of these three applications would Phillips prefer that the Commission approve?

A The initial one, the 160-acre nonstandard unit with the unorthodox location in Unit D.

Q And that consists of the west half northwest and the north half of the southwest.

A Yes, sir.

Q Would you explain why?

A Because our reservoir forecasting shows that by obtaining the Amerada Hess farmout of the north half, and that Phillips would be the 100 percent working interest owner in that well, it would net Phillips a greater rate of return than any other operator, because that let's us have 80 acres in this productive section as against the -- I mean, excuse me, let's us have 160 acres as against 80.

Q Is also not that a location that you can make an orthodox location in the northwest northwest -- or an unorthodox, in a thicker section of the sand?

A It would have a higher productivity probably than a well in Unit E or F, yes.

Q Now, one of your other proposed applications is to space the west half of the section.

A Yes, sir.

Q Would you explain to me how you reconcile that application with your Mr. Halle's map which shows no pay sand in the south 80-acres of that unit?

A The only way I can reconcile that because with the denial of my 160-acre application I had the feeling that I have to go for 320 and there's no requirement by the Commission that acreage be productive to be in a gas proration unit.

Q Do you think that would contribute anything to your well, a west half well?

A Geology, the current geology by our geologist, it would appear it would not.

Q You would expect an allowable that would be prorated for that 80-acres, would you not?

A Yes, sir, I certainly would.

Q Even though it, in your geologist's opinion, would contribute no gas.

A That's right, because you know, like I say, productive acreage is not in the allowable formula of the Commission.

Q Where is that formula?

A No, I want normal -- the formula?

Q Yes, for allowable.

A It just says 320 acres, and any assigned acreage is -- is normally used in the allocation of the

allowable.

Q Surface acres.

A Right, surface acres.

Q A third request is that you be pooled into a north half spacing unit.

A Yes, sir.

Q When do you expect to start participation in production if the Commission would approve that kind of order?

A We think we should begin participating in that production the date of our application for that forced pooling and I believe that was late May. I don't have the exact -- well, it's probably in Mr. Kellahin's last exhibit. June 21st, 1988? Yes, was our request. It's Exhibit Number Twenty-eight. It's our request to Mr. Lemay to set for hearing the nonstandard forced pooling of the west half and an alternate of the north half. So we anticipate that the order would permit us to participate in production from that date forward.

Q Mr. Mueller, I'm trying to reconcile that statement with the application that Phillips filed with the Commission. Have you ever seen a copy of the application?

A That Phillips filed with this Commission?

Q Yes.
A Yes, I have it here.
Q For the north half spacing unit.
A Yes, sir.
Q Yes, sir.
A Could you turn to page 4 and paragraph 7 refers to the application for the north half of the section --
A Yes.
Q -- to be force pooled. Would you turn over to sub-part 7-E for that application and read it, please, sir, into the record?
A 6. To participate in the subject well from the date of first production from the well by paying its proportionate share of the actual original costs of the drilling, completing, and equipping the well.
Q That sounds to me like Phillips would like to participate in that 4 BCF that that well's already produced.
A We would like to but we don't think we would.
Q Okay, you don't feel like that would be quite fair, do you?
A No, I don't.
Q But if the Commission were to approve a

north half spacing unit, I think you have said that that would -- and your testimony was that would produce 3.6 BCF of gas.

A That is our estimate based on a P/z curve. That's without the Sun well producing. Now with the Sun well producing that reserves may be reduced to like 3-billion.

Q About 3-billion.

A Uh-huh.

Q And you know from conversations with Mr. Trainer at the meeting in Midland that a fourth of the costs of completing his well were about $125,000?

A At the meeting with Mr. Trainer in Midland, or Odessa, that day --

Q Okay.

A He said he did not remember the exact well costs but he estimated between 4 and 6.

Q Okay, and so at 400 $125,000 would be a quarter of the cost and at 600, $150,000.

A That's right, sir.

Q Okay. And you would have by virtue of the payment of between 125 and 150,000, you would have a quarter of 3 BCF of gas (unclear).

A Yes, sir.

Q At $1.50 per MCF wouldn't that be

pretty close to about 1.2-million?

A Very close.

Q That would be a 10-to-1 recovery on your money, would it not? Or 8-to-10 times your money?

A NTR, yeah.

Q Do you think with your decline curve you could go to the bank and borrow that 125 or 150,000?

A I think so.

Q Don't you think it would be fairer for Phillips to pay to McElvain and Trainer the market value of the reserves you would be receiving?

A No, sir.

Q Without any risk.

A No, sir, we're not -- we're not buying reserves, because a part of the reserves being produced by the McElvain well are my reserves.

We're not out purchasing reserves. We could do that without having acreage in this proration unit.

Q Mr. Mueller, would you be surprised to learn that State Lease B-2264, which covers the west half northwest is owned by Phillips; also covers the 240-acres that's in McElvain's tract, and that Phillips actually owned the whole north half at one time?

A Yeah, I'd be surprised. Well, no, I

don't -- no, I wouldn't be surprised, knowing --

Q We're going to offer the lease into evidence a little bit later.

A Okay.

Q But what my question really is, Phillips had all this at one time and they now want to let somebody else take the risk, which you said was a high risk --

MR. KELLAHIN: Objection, that's argumentative, Mr. Chairman.

MR. LEMAY: Well, let's see where he's going.

I'm not sure how the question will end up being phrased.

MR. LOSEE: Well, it's argumentative, Mr. Chairman, in fairness to Mr. Kellahin.

Q I guess my question has to do with equity and correlative rights, in which Phillips seeks by that request a forced pooling action (unclear(to get an 8 or 10 times return on its money from someone who took by Phillips' own statement, a high risk in re-entering the well and extending this (not clearly understood). Is that what Phillips actually seeks?

A No. Phillips actually wants the 160 acres. The forced pooling into your well is our third

choice and our poorest choice.

Q And that's really because Phillips doesn't think that's fair to the people who took the risk, is that not true?

A I can't answer that.

Q Well, do you think it's fair, not what Phillips thinks.

A I think it's fair if I don't get the other two. If I don't get either the first one or two, I've got to get three.

In other words, I don't -- I'm finished.

Q Mr. Mueller, I believe you testified on direct examination that at one time you thought there was a separation between the South Shoe Bar and the North Vacuum Atoka.

A I said that back in '85 that probably was anticipated, yes. I think even the Commission must have thought so since they called them separate fields. It wasn't until, really, the Marathon development here in '87 with the State Com 17 that you can see these start ballooning together.

Q Now that's your opinion. Who else sought -- expressed that opinion?

A Who else should?

Q Who else did?

A I don't -- I don't follow -- you mean in just general conversation --

Q Well, who else -- did anyone else express the opinion to you that the acreage down in Section 22 was in or was not in the same pool as the North Vacuum?

A I can't recall. I -- the operators being on Section 22 probably brought some of that out, yeah, that they thought they were all together. The pressure communication was showing them together.

Q Well, I -- maybe I'm confusing you with my question. You said that you thought at one time there was a separation between the South Shoe Bar and the North Vacuum, totally, and my question was did anyone express that opinion to you prior to 1985?

A I'm not sure I evaluated this in 1985.

Q Well, at any --

A Did I? It wasn't until the, like I say, the development of the Marathon well here coming into low pressure and the Sun well here, both in '87 and '88, that you can see the two starting to grow together.

Q Okay. But as far as any knowledge you had about the drainage area of the Atoka, it was the same in 1984 in the area of the North Vacuum as it is today. They're both good communication,

A Yeah, North Vacuum Atoka - Morrow is in good communication between wells, yes.

Q And the same is true of the South Shoe Bar.

A Yes.

Q And you didn't tell me it was learned by the McElvain well about that drainage area. It was known in the North Vacuum. Both of them are good drainage areas.

A Yes.

Q Now, you said Humble had -- took a drill stem test in this Atoka when they drilled in the New Mexico "AC" State in 1953.

A Yes, sir, I believe that's right.

Q What did you say that DST was, or do you remember?

A Well, I was thinking it was like a million or so, but I have the file here if you want me to look it up.

Q I think it's closer to 12.

You were working for Phillips in '85 when McElvain got this administrative order?

A Yes, sir.

Q Were you aware of his application?

A I can't recall right now that I was. I

know a copy of the application came to our office and it was signed in by our secretary and we did not execute a waiver and we are unable to locate the original application in our files.

Q You didn't offer any objection, did you?

A No, sir, we did not object.

Q Did you evaluate the application at that time?

A I can't recall that I did or did not. I -- that's three years ago and I don't remember it in particular because I think had I evaluated it, we would have done something with the waiver. That's --

Q Would you have signed it and sent it back?

A In all probability.

Q You want a second -- Phillips want a second look?

From an engineering standpoint what have you learned about the drainage pattern of the Atoka in this area since that -- you received that waiver?

A We found out that the drainage pattern is much greater than anticipated. We found out that these four wells essentially depleted about one-half the reserves in this whole area, were produced up in these four wells.

Q But if you had studied the North Vacuum at the time, wouldn't you have realized that the drainage between those wells was also very good?

A No, you wouldn't because you were still closing contours here at that time. You knew that they had good productivity but you didn't start to visualize that this field had to be bigger until you started seeing these cums going over 10-billion here and pressures holding up.

Q But the Vacuum, North Vacuum Atoka had been in for ten years. the oldest well was in 75 --

A Yes, sir, '73, I think.

Q Did you ever look at the drainage pattern in those wells? Did you ever study those prior to this hearing?

A Well, I -- I don't understand what you mean by drainage pattern. I mean, I don't think --

Q Did you ever reach any opinion as to whether they were draining a great, large area or not prior to this hearing?

A My experience with Morrow Atoka is they will drain large areas if they have high productivity.

Q And you didn't find out anything new by the McElvain or the Marathon wells about 00

A The Marathon, yes, that told me that, boy, this baby's got lots of sand and it's already been

depleted way on down.

Q But as far as the drainage, the Atoka-Morrow --

A Can do that, yeah.

Q -- generally has a large --

A Right.

Q -- good communication.

A Yes. Right.

Q And my question is, what did you learn by the McElvain well and the Marathon well as far as the drainage pattern in the Atoka - Morrow?

A They're both good producers and they both have high productivity and high drainage areas.

Q But that's frequently found --

A I already knew that before, yeah, that's correct.

Q That's frequently found in the Atoka - Morrow.

A Yes, sir.

Q So that really there was nothing new that was learned -- has been learned since that application was approved.

A That's right.

Q Thank you. That's all.

MR. LEMAY: Additional ques-

tions of the witness?

Mr. Brostuen.

QUESTIONS BY MR. BROSTUEN:

Q Mr. Mueller, I have a question just for clarification. I made this just little bit earlier. When you were discussing your Exhibits Six, Seven, Eight and Nine, I believe, you made -- I understood you to say that initially the two pools were not in communication but now they are in communication --

A No, I --

Q -- is that correct?

A What I meant to say, if I said that, that was a misnomer (sic). I said that the initial data from the McElvain well indicated there was a potential existence of two separate sand bodies. It did not say they were separate; it said the initial pressure data, that McElvain well coming in 4400, was a little abnormal and it would not have immediately led you to believe that the two pools were in communication at that time.

You could not take the McElvain well initial data and prove that it's in communication with the North Vacuum Atoka - Morrow.

Q To what would you attribute the increase in production in a well in Section -- Unit L in

Section 14 from 1985 to 1986 and back to 2190, approximately what it was in 1985, two years later?

A This is, excuse me, what exhibit?

Q On your Exhibit Eight, excuse me.

A Exhibit Eight? The well in Unit L?

Q That's correct.

A It shows a bottom hole shut-in tubing pressure decline to 21 and it increased to 27?

Q From 2204 --2204 to 2700 and back down to 2195.

A What the Commission requires from annual shut-in tubing pressures is at least a 24-hour shut-in and this is normally ample, valuable, good data for high productivity wells. In four producing wells, wells that probably produce less than 2 to 3-million a day, 24 hours is not ample to reach a good, static, shut-in pressure, and that's why when you have a well like this that only produces in the neighborhood of, like 200 MCF a day, it just did not stabilize as shut-in tubing pressure.

Q Okay, thank you, very much.

QUESTIONS BY MR. LEMAY:

Q Mr. Mueller, you've mentioned -- let's take the Sun well as a drainage factor, assuming that, which I think you said, that reduces the remaining recover-

able reserves for the McElvain at 3 BCF, did you say?

A Yes, I said it, right.

Q That was assuming no other wells were drilled?

A Right. The 3 BCF assumes no wells in Section 22 but it does assume the Sun well continues to produce at 3 to 5-million a day.

Q Did you testify, I think, that these wells had high productivity, high permeability?

A Yes.

Q So with two wells in Section 22, do you take that 3 BCF and divide it in half, giving 1-1/2 BCF to each well?

A No, because, you see, because of the excellent communication, the more straws that you put in here, you'll also -- all the productive acreage will contribute. In other words, there's no fence boundary at these section lines.

Q So something in excess of the remaining reserves if you drilled another well.

A That's right.

Q Any idea how much in excess?

A The second well in Section 22, our reservoiring engineering forecast shows about another 2.2-billion for it and about 2.4-billion for the McElvain

for a total of, like, 4.5-billion would then be produced out of Section 22.

Q 2.4 out of McElvain and yours would be 2.2 BCF.

A Yes.

Q Well, that's assuming that no third well would be drilled by Mobil to protect their rights if you got 160-acre spacing unit?

A If I -- if Mobil well is capable of producing 3-million a day, then the McElvain reserves would drop to more like 2.1, and Mobil would get around 2.

Q So your scenario in terms of the McElvain well remaining reserves is 2.1 with three wells in Section 22; 2.4 BCF with two wells in Section 22; and 3 BCF with no additional development in Section 22?

That's correct, that's right. That's what our reservoir engineering forecast is showing right now.

Q Thank you, very much.

MR. LEMAY: Additional questions of the witness?

Mr. Kellahin.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q Point of clarification, Mr. Mueller. Mr. Losee was asking you questions concerning the information available in 1985 and whether or not the information derived from the McElvain well caused you to learn anything different than you might otherwise know about Atoka producers.

Let me be very specific with you.

In 1985 when we have a McElvain well of 12 feet of thickness in the Atoka sand, and you see an initial shut-in or 4400 pounds, and at that time we do not have a Sun well and we do not have the well in 16 and we do not have the well in 17, do you have information from which you can conclude at that time that the McElvain well is going to be a typical Morrow Atoka producer that's going to be able to drain 320 acres?

A Only from its IP would indicate you could drain a good area.

Q Do you know at that point with that information without the subsequent data that this well in fact is going to drain and produce and deplete the Phillips 80-acre tract --

A No, sir.

Q -- in the northwest --

A If there's additional data by the Sun well to show the sand development in that direction.

Q And do we have that additional data now?

A Yes, we do.

Q And what does it tell you?

A It tells me that my acreage is productive and is being drained and depleted by the current producers in that field.

Q And could you have known that in October of '85 should you have made a reservoir study then?

A No, sir.

MR. KELLAHIN: No further questions.

MR. LEMAY: Additional questions?

Mr. Losee.

RECROSS EXAMINATION

BY MR. LOSEE:

Q My question had to do with not what you learned from the drilling of the McElvain well, but what you knew at the time the order was entered prior to the drilling of the well about the Atoka and the Morrow.

A I know that the Atoka - Morrow is normally a high producing --

Q Good communication reservoir.

A Good communication, right.

Q And that was confirmed by all the wells that were drilled in the South Shoe Bar.

A That's right.

Q And that was the same condition existing in the North vacuum.

A Well, excuse me, when you say by all the wells drilled in the South Shoe Bar, at that time there was only one, I think, the Enron well, and it was a very poor well.

As a matter of fact it's only producing like 200 MCF a day, I believe, since completion.

Q But the Atoka - Morrow is generally a a good producer and you knew that prior to the entry of that order.

A Yes, sir.

Q Thank you.

MR. LEMAY: Additional questions?

If not, the witness may be excused and let's take a fifteen minute break.

(Thereupon a recess was taken.)

MR. LEMAY: Mr. Pearce. Your

turn now.

MR. PEARCE: At this time I would like to call Mr. Dick McCann to the witness stand, please.

DICK McCANN,

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

DIRECT EXAMINATION

BY MR. PEARCE:

Q Sir, for the record would you please state your name and your employer?

A My name is Richard G. McCann. I'm employed by Mobil Exploration and Producing, U. S., Inc., which is an agent for Mobil Producing Texas and New Mexico, Inc..

Q Mr. McCann, have you testified before the New Mexico Oil Conservation Commission previously?

A No, sir, I have not.

Q All right, would you please review for us briefly your educational and work experience?

A I graduated with a Bachelor of Science in Russian and Spanish from Texas A & M in 1969.

After five years in the United States

Army Military Intelligence, I went to law school at Loyola University in New Orleans, graduated and passed the Louisiana Bar in 1980.

I then went to work for The Superior Oil Company as a landman in their Gulf Coast/Texas Division, worked there for five years.

In 1985, February, Superior was bought out and Mobil transferred me to Midland, Texas, where I worked as a landman for three years.

During that time I took and passed the Texas Bar and I've been working in Lea County, southern part of Lea County, New Mexico, and Andrews County, Texas, for the last six months.

Q Mr. McCann, are you familiar with the land matters relating to the application that Mobil has filed today?

A I am.

MR. PEARCE: Mr. Chairman, I would tender Mr. McCann as an expert in the field of petroleum land matters.

MR. LEMAY: His qualifications are acceptable.

Q Mr. McCann, if you'd turn, please, quickly to what we have marked as Mobil Exhibit Number One to this proceeding and could you describe for the Commis-

sioners what that exhibit reflects?

A This represents to the best of Mobil's knowledge from a research of our records the leasehold rights position from the base of the Abo down and all wells which penetrated below the base of the Abo in Section 22, Township 17 South, Range 35 East, Lea County.

Q And it is your understanding that the spacing in the Atoka formation in this area requires 320 acres to be dedicated to a well?

A Normally that is the case as I know it.

Q All right, let's turn, if you would, please, to Exhibit Number Two, and would you please describe for the Commission what that exhibit is?

A This is a letter which I wrote to T. H. McElvain Oil and Gas Properties and Mr. C. W. Trainer, requesting that Mobil be allowed to voluntarily form an east half proration unit for the participation in the Mobil State "AC" No. 1 Well.

Q Did you receive a reply to that letter?

A Not yet.

Q Let's look at Exhibit Three, please, if you would. Please tell us what that is.

A This is correspondence which I wrote to Amerada Hess and ARCO Oil & Gas, February 19th, 1988, requesting their participation in the south half proration

unit for the drilling of an Atoka - Morrow test.

Q All right.

A I provided an information copy of an Authority for Expenditure, which was then circulating for approval.

Q All right. As a response to that letter, let's please look at what we've marked as Exhibit Number Four.

A Yes, sir.

Q What is that exhibit?

A This was -- after I had -- on April 6th I had furnished to both Amerada and ARCO a formal copy of the AFE that I had previously furnished. This was Amerada's response telling me thanks, but no thanks.

Q And what action did you --

A Amerada, I'm sorry, I said ARCO. I meant Amerada.

Q And what action did you take in response to Amerada Hess declining to participate in a south half drilling and spacing unit?

A I then wrote ARCO and requested that they consider the original request in light of ARCO's -- of Amerada's rejection and that we would now be 2/3rds-1/3rd partners instead of the previously requested 50 percent/25 percent/25 percent.

Q Have you received a response to that letter?

A No, sir, I have not, although I did get a telephonic reply that they -- I would not be receiving a reply until the Commission decided this matter.

Q All right, sir. I would ask you to address what we've marked as Exhibit Number Six to this proceeding. Could you describe that for us, please?

A When I received word that Phillips' original application had been denied by the Commission, I requested that Amerada reconsider our original proposal and that they give us a decision one way or another accordingly.

Q Once again, did you receive a reply to that correspondence?

A No, sir, I have not.

Q I would ask you to review what we have marked as Exhibit Number Seven to this proceeding. Would you describe that for us?

A This was a letter written by Matthew E. Sweeney, who's the Environmental and Regulatory Manager for the Midland Division of Mobil, notifying Mr. McElvain Oil and Gas Properties of -- in fact, notifying all ownership, owners in the section of our intent to ask for an east half proration unit.

Q All right, sir, and attached to that letter I see return receipts from ARCO Oil and Gas Corporation, T. H. McElvain Oil and Gas Properties, C. W. Trainer, Phillips Petroleum, and Amerada Hess, is that correct?

A Yes, sir.

MR. PEARCE: At this time, Mr. Chairman, I would tender what we have marked as Mobil Exhibits One through Seven.

MR. LEMAY: One through Seven into the record without objection.

MR. PEARCE: Mr. Chairman, I think this is an appropriate time for me to admit a mistake I made.

In the application which we filed with the Division in this matter, if you look at the alternative requesting an east half spacing and proration unit, the application states that Mobil seeks to be named the operator of the east half well. That is not correct. We do not propose to have Mobil substituted for McElvain and I apologize to the Commission for that error, and I thank opposing counsel for pointing that out to me in a gentlemanly manner.

MR. LEMAY: Let the record reflect that.

Q Mr. McCann, do you have anything

further at this time?

A I -- not -- the documents pretty well say it all.

Q Thank you. The summary of the documents that we have discussed is that Mobil has been unable to reach voluntary agreement with other parties to form a spacing and proration unit?

A That's true.

Q Thank you.

MR. PEARCE: I have nothing further for the witness, Mr. Chairman.

MR. LEMAY: Additional questions of the witness? Any questions of the witness?

Mr. Kellahin?

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. McCann, do -- does Mobil take the position with regards to the formation of a north half/south half orientation to the spacing unit?

A We're requested it as alternative relief, I've believe.

Q What is your first preference?

A That we be allowed to participate in the east half proration unit with the well as it is cur-

rently drilled, I believe.

Q Do you have a position concerning the approval of a nonstandard proration unit for Phillips utilizing the west half of the northwest quarter and the north half of the southwest quarter?

A Well, one of our alternative reliefs was that if yours is granted we certainly would want the same relief. It's certainly low on our list of priorities.

MR. KELLAHIN: No further questions.

MR. LEMAY: Additional questions of the witness. Mr. Losee?

MR. LOSEE: No questions.

MR. LEMAY: Any additional questions?

If not, the witness may be excused.

MR. PEARCE; Thank you. At this time, Mr. Chairman, I would like to call Patrick Whelan to the stand.

PATRICK WHELAN,

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

DIRECT EXAMINATION

BY MR. PEARCE:

Q For the record, sir, would you please state your name and your employer?

A My name is Patrick Whelan. My employer is Mobil Oil, MPTNM, southeast New Mexico and Texas.

Q Mr. Whelan, have you testified before the New Mexico Oil Conservation Commission or one of its Division examiners previously?

A Yes, I have.

Q And at that time were your qualifications as a petroleum geologist accepted and made a matter of record?

A Yes, they were.

Q Are you familiar with the applications which Mobil Exploration and Producing, U. S., as agent for Mobil Producing Texas and New Mexico, Inc., filed in this matter?

A Yes, I am.

MR. PEARCE: Mr. Chairman, I would tender the witness as an expert in the field of petroleum geology.

MR. LEMAY: His qualifications are acceptable.

Q At this time, Mr. Whelan, I would like

for you to direct your attention to what we marked as Mobil's Exhibit Number to this proceeding.

It would be easier, perhaps, if we could borrow the backside of this board.

Q What is Exhibit Number Eight?

A Exhibit Number Eight is an Atoka net feet isopach map illustrating the Vacuum North Field and the associated wells, as well as the Shoe Bar South Field.

What I've done is to contour it on 10-foot contours, although the first two are zero, the next one if 5, to accommodate the (unclear) well to the south.

I've also colored this in yellow to indicate where there is yellow there is sand present.

To start off with, we don't have any major, major disagreements with Phillips map, but we do disagree with the fact that it comes directly across the north half of Section 22. We feel primarily there are two separate pods important in this matter, the Vacuum North and the South Shoe Bar. Based on our estimates we hope to prove that there is a separate one down here.

Also on here for illustration as I go along, I have seismic data that I'm going to be showing you. I have, on the Vacuum North Field I have Line 1. Going through the South Shoe Bar I have Line 2.

I will also show a cross section begin-

ning on the southern part of Section 22, continuing north, through Mr. McElvain's well, the Sun well, into the Vacuum North Field.

Again what we are trying to demonstrate is that these sands are generally continuous throughout this area but based on our pressure data from Mr. McElvain's well, when he first produced it in 1986, the pressure was approximately 4400 pounds.

At that time the pressure in the field was down to about 1700 pounds. Based on that, we felt that you had two, separate entities, sand entities, and that is what our contours attempt to represent, that you have a South Shoe Bar entity here and the Vacuum North here.

In doing this map, also, this way, we have tried to accommodate the reserves that have been produced and the reserves that are left to be produced.

This size roughly accommodates what has been produced and left to be produced in Vacuum North Field.

Based on the pressure data, we feel that even though the sands are continuous, which is what everyone has agreed on so far and we do, too, we feel there is a permeability barrier in here of some sort separating South Shoe Bar, Mr. McElvain's well, from the Vacuum North Field, making them two separate fields completely.

We also drew in another one in here, that's a third one, based on Sun's initial pressure data, shut-in pressure data, which is about 2200 pounds. That was comparing it to about 1700 pounds in the Vacuum North Field. We felt that disparity in pressure of another possible pod here.

So we feel they're in basically two, basically two separate, distinct pods here, possibly a third one out here, and there may be some communication in here.

Q At this time, Mr. Whelan, I'd like you, please, to direct your attention to what we have marked as Mobil Exhibit Number Nine. Mr. Whelan, would you please describe for us what's reflected on Exhibit Number Nine?

A Exhibit Number Nine is a seismic line, Line 2, going through the South Shoe Bar area from northeast at shot point 75, moving southwest to shot point 100.

What we have here is a line that was shot by -- originally by Superior. We have designated the important formations of interest, Strawn at the top, the Atoka and Morrow lime beneath.

Illustrating also the McElvain well, approximately shot point 8 in 3-84. We have identified what we consider a sand channel and that the sand channel is a continuation of this main system to the northwest.

It's been illustrated by Phillips on their structure map that structure doesn't impact this area that much. We feel that the Vacuum structure at that time was controlling deposition during the Pennsylvanian.

It's evident on this seismic line when you look at the southern part of it you see a rather prominent anticlinal structure. We feel that was probably present at that time and was controlling drainage.

We have an anomaly that represents that channel here between approximately 85 and 95, most prominent between about 87 and 95. We feel that anomaly represents an Atoka sand channel. That channel would have been a continuation of this system but, as I said, based on pressure data there has to be a separation of this from that. We're assuming that permeability barrier.

We also see above it a certain amount of drape over this channel. We think we've got some differential compaction in here, which the formations that were deposited later would have been draped over this. We think we see that today.

Also beneath it down at the top of the Morrow, there's slight depression there, indicating what we think is probably something that closely approximates the paleotography of that time which would have been helping control deposition.

So based on this seismic line feel that on the southeast corner of this section is represented an Atoka Sand channel that justifies us to ask for a stand-up 320 because where Mr. McElvain's well is located, is actually closer to this sand channel than anywhere else out here and we are the ones probably being most heavily affected.

Q All right, Mr. Whelan, I think most of the paper rattling is done that I caused. Why don't you go ahead and describe Exhibit Number Ten for us.

A Exhibit Number Ten is a cross section which closely approximates Phillips' cross section. On the map it begins on the southern half of Section 22, crosses the acreage of McElvain's well, then back up into the North Vacuum Atoka Field.

What we have done, as what Phillips has done, is to hang it on a marker that tries to approximate what the channel would look like at that time. In this case we hung it on top of the Strawn.

This is the Vacuum North Atoka Field here, beginning with the Marathon well, just recently completed late last year, moving north to again the Marathon well in Section 7, the Mobil well in Section 7, to the Shell well in Section 1 in 17, 34.

We feel this is -- hanging it this way

again as Phillips does, that we are revealing a channel.

Moving south we illustrate the Sun well and again the McElvain well with approximately 5 feet of pay in it.

And our -- just illustration of what we feel the sand pod looks like.

I've drawn the McElvain well sand continuing to the north adjacent to the Sun well. When we originally had this, there's been information indicating there may have been some pressure drops in the Sun well relating to production in the McElvain well. We feel that's certainly a possibility based on this sand isopach here, that there is some communication between their well and our well, but we do feel that the majority of the channel is in the south half of Section 22 and that we are probably being most heavily drained.

Q Mr. Whelan, on that exhibit you show the sand body pinching out between the Marathon and Sun wells. Could you tell me on what basis?

A Based on pressure data from the Sun well late last year the initial shut-in pressures for that well, which is in Section 15, were 2200 pounds. At that time the pressures within the Vacuum North Field were 1700 pounds. It's our opinion that the two formation pressures indicated two different sand bodies.

We've drawn this interpretation here and this tries to accommodate that here. Again there may -- there is continuous sand throughout this area and may be some communication but we feel that they are basically separate bodies.

Q Once again, looking at your display, Exhibit Number Ten, you show a pinchout or different sands between the Sun Oil Company well and the McElvain well. Could you address that for us, please?

A Based on this -- where we hung this well, if you look at this it appears as though McElvain's very thin sand of only 5 feet, Sun's well, 26 feet, approximately, net feet of sand, again, we have continuous sand throughout this area. There may be some communication in between them, I'm not sure.

But we feel the main body of the channel is moving southeast.

Q All right, Mr. Whelan, you've indicated that in your opinion the seismic display which we marked as Exhibit Nine to this proceeding, showed a sand channel which you discussed for us.

Do you have an exhibit of similar Atoka sand channels which have similar seismic signatures?

A I have another seismic line, Line 1, which transects the Vacuum North Field here from the north-

east to southwest.

Q All right, Mr. Whelan, Exhibit Eleven, please.

A Exhibit Eleven, as I said, is seismic line 1. In the northeast is shot point section 75 (sic). Moving southwest to shot point 100.

On that map I've drawn, if you would look at that map, also, on the north end of the sand channel, which we all agree on, is the Mobil well, the NN Well. It has 10 feet of pay.

On the south end is the Texaco DK Well. It has 15 feet of pay.

To the north of this seismic line you have thicker sands. I've mapped it up to 85 feet thick in the Mobil well, the UU; in the Marathon well, 56 feet; and to the southeast of that line you have sands thickening up to 50 feet.

We feel, therefore, there's a strong indication that the channel is transecting through here and that the deepest part of the channel ought to be approximately 85 to 90 on the seismic section. We feel we have that response here. I've identified the different horizons again and in yellow I've put the sand channel here.

We feel that this seismic is jiving with the geology that we're seeing there and that we're seeing

the deeper part of the channel in the middle. Where it thins to the east, you get normal resolution of seismic. Where it thins to the west, you get normal resolution of seismic.

Again, noticing to the west you're seeing a very high positive area, this is that Vacuum structure that I addressed before on this line. The Vacuum structure was controlling deposition at that time, with the thicker part of the channel being up in front of it.

Q You can return to your seat at this time, please, sir.

A Okay.

Q To summarize, Mr. Whelan, on the basis of the cross section which you constructed and the seismic data which you have reviewed, do you have an opinion upon whether or not there are recoverable reserves in the south-east quarter of Section 22?

A I believe there are.

Q Do you believe that those reserves are presently being drained by the McElvain well?

A Yes, I do.

Q Based upon your isopach, cross section, seismic data, is it your opinion that the majority of McElvain production is probably coming off the Mobil acreage?

A I believe that, yes.

Q Do you have an opinion upon whether or not all of Section 22 probably underlain by Atoka sand?

A It appears as though it's all underlain by sands.

MR. PEARCE: Mr. Chairman, at this time I would move the admission of Exhibits Eight, Nine, Ten and Eleven.

MR. LEMAY: The exhibits will be admitted into the record without objection.

MR. PEARCE: I have nothing further of the witness at this time, Mr. Chairman.

MR. LEMAY: Thank you, Mr. Pearce.

Cross examination, Mr. Kellahin?

MR. KELLAHIN: Just a few questions, Mr. Chairman.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q On your isopach map, Mr. Whelan, what did you use for your various cutoff values?

A I used approximately 50 API units.

Q Mr. Halle used 60 API units, I believe,

in his contouring of the Isopach. What is your opinion about using 60 versus 50?

A I don't think it makes a great deal of difference. It just -- it's a subjective thing for the explorationist looking at it.

Q In terms of defining the size of the area mapped with the isopach, which value will give you a wider spread to your reservoir?

A Probably 60 will give you a wider spread of data.

Q I believe you said you didn't have any basic disagreement with Mr. Halle's presentation of his geologic information, but you did highlight for us some differences of interpretation.

A Uh-huh.

Q You've integrated some seismic data. The seismic information utilized, will that tell you anything more than information by which to map the structure?

A It -- it tells us, it gives us a strong indication based on structure that we see there where the sands exist.

We can determine the channel geometries from the seismic.

Q In integrating the seismic and the structural interpretation with the isopach, how did that

affect the isopach and the way it's displayed?

A It -- certainly I used the seismic in constructing my isopach.

Q Does it change the shape and orientation and the thickness on the values demonstrated in the isopach?

A It doesn't change the orientation. Values may change a little bit.

Q When we look internally within portions of Sections 22 and, looking to the north, in Section 15 --

A Uh-huh.

Q -- you've interpreted what I'll characterize as three separate pods.

A Yes.

Q I believe you used that phrase also.

A I used that phrase.

Q And the basis for doing so was the pressure information that you analyzed from the Sun well and the McElvain well.

A That's correct.

Q There was no other information utilized by -- in relation to the North Vacuum pressure.

A Yes.

Q Using those three pieces of pressure puzzles, there was nothing else utilized by you to infer

the three pods.

A I used the seismic in infer the pod to the south and I've interpreted the one to the south -- to the north without it based on pressure data and geological reasons.

Q And the pressure information we have is the initial pressure in the McElvain well is about 4400 pounds.

A Correct.

Q And the subsequent Sun well comes in at some 2200 pounds less.

A That's correct.

Q And from that you've concluded they are in separate pods?

A When the Sun well came in they were both about 2200 pounds but the sands in the Sun well didn't exhibit the same performance for their thickness as the McElvain well. We concluded that there was a good chance they're in separate reservoirs.

Q Can you conclude based upon your geologic interpretation that the south half of Section 22 would support the drilling of its own well?

A I believe it would, yes.

MR. KELLAHIN: Thank you.

MR. LEMAY: Additional ques-

tions?

Mr. Losee?

CROSS EXAMINATION

BY MR. LOSEE:

Q Mr. Whelan, just so I'm clear, and I'm sure you've testified to it, when were these seismic lines run?

A 19 -- they were originally shot by The Superior Oil Company in 1982.

Q And they were available to Mobil in 1985 when Mr. McElvain and Mr. Trainer applied for the administrative approval of this unorthodox location and for the nonstandard unit, were they not?

A That is correct.

Q So the evaluation, the seismic data was available at that time.

A Uh-huh.

Q Were you working for Mobil then?

A I came to work for Mobil in 1985, yes.

Q Do you recall, were you in southeast New Mexico at that time?

A At that time I was working as the Regional Geologist and exploration for the entire Permian Basin.

Q Were you aware of the application by Mr. McElvain?

A Not at that time, no.

Q Did anybody bring it to your attention?

A No.

Q If you had it at this time would you have objected to the location?

A I would have sought legal counsel.

I would have probably asked the Land Department, to be honest, just what we should do, if it was made aware to me.

Q If I look at your Exhibit Eight, it appears to me that the highest structure is actually in the center of the southeast quarter of Section 22 on your pod, is that correct?

A You mean the pod itself being the highest?

Q Yes.

A Yes. I was calling that a drape over the sand pod.

Q And as far as that kind of location for (inaudible to reporter).

A Yes.

Q And I'm sure you would call it a (unclear)?

A Yes.

Q Would that not be a location in the area of the center of the southeast quarter the best location for a well?

A That would be correct.

Q And that would be true regardless of whether you had a south half or an east half proration unit, would it not?

A That is true.

Q Now Mobil has three alternative applications before the Commission, the east half, a south half, and the southeast south half southwest 240 acres.

A That is correct.

Q And which of those applications would Mobil prefer the Commission enter?

A We'd prefer the east half first.

Q Would you explain why?

A Economically it's our best alternative.

Q Explain --

A It would be a lot cheaper --

Q Explain that to me.

A It would be a lot more inexpensive for us to get into your well because of the cost involved than for us to drill a wildcat.

Q Okay. What would you propose that Mobil

do as far as paying its share?

A I would have to defer that. I've done the science and I'm not going to get into the particulars.

Q Have you calculated the reserves that you think might be obtained on these the east half basis?

A Our engineer has and he'd probably be better equipped to answer that.

Q Well, do you know what it is?

A Approximate. Based on what has been brought up in the hearing and based on our estimates, about 4 BCF would be left to be recovered from this.

Q And with an east half spacing unit, Mobil Oil would have -- be able to acquire two 2 BCF of that 4, would they not?

A That's correct.

Q By paying what, the cost of -- half of the cost of that re-entry?

A Anticipated so, yes.

Q At $1.50 an MCF a BCF would produce what, about $3-million?

A About $3-million.

Q And half would be 400 - $600,000 cost and would cost Mobil $2-to-300,000?

A That's correct.

Q About a 20-to-1 return on their money.

A At least.

Q No risk, either.

A A nice investment.

Q Did Mobil consider that when it didn't respond to McElvain's request for an unorthodox location?

Q When Mobil originally was aware, and I believe they were aware, of that application, it was our intent at that time to see what that well would prove up in terms of reserves. Based on that scenario we intended to drill one ourselves in the south half.

Q And as a matter of fact, the first letter that your landman introduced, the earliest date, was to request a south half spacing unit.

A That is correct.

Q And the only reason you're not in favor of a south half spacing unit is you could get in proven reserves and make 10 return -- 10 times the return on your money?

A We believe based on the geology that we're the ones being most heavily affected by your well and that would be our first choice, yes.

Q Well, the best location, though, in the whole section, based on your geology, is the southeast quarter, is it not?

A That would be correct.

Q Is there some reason you don't want to drill at that location?

A We've had a tough time trying to form that 320-acre unit, as was illustrated by the letters that Mr. McCann addressed.

Q Are you having a tough time forming an east half unit?

A That's why we're here.

Q Mobil did get Trainer's request -- notice and signed a receipt and returned it back in 1985 that this is (not clearly understood).

A I believe so. I wasn't working at the time. I'll trust you.

MR. LOSEE: Nothing further.

MR. LEMAY: Additional questions of the witness?

MR. PEARCE: If I may get back into this very briefly, Mr. Chairman, I apologize.

REDIRECT EXAMINATION

BY MR. PEARCE:

Q I'm going to hand the witness what has previously been identified and admitted into this record as Mobil Exhibit Number Two, which is a letter dated June 23rd, 1988, from Mobil to McElvain Oil and Gas Properties

and C. W. Trainer.

I would ask the witness to please refer to paragraph number 3 at the bottom of that letter with regard to Mr. Losee's question about what Mobil proposes to do with regard to participating in the well and sharing.

Could you read that paragraph into the record, please, sir?

A Yes. Mobil would pay to McElvain an amount equal to 50 percent of the actual cost to complete the New Mexico "AC" State Well No. 1, plus interest at 12 percent from the date of completion but will participate for its 50 percent share of costs of operation and revenues generated from the well's production from July 1st, 1988, forward.

Q Thank you.

MR. PEARCE; I have nothing further at this time.

MR. LOSEE: I have one more question. I thought that's what I was asking him, Mr. Pearce.

RECROSS EXAMINATION

BY MR. LOSEE:

Q 50 percent would cost 2-300,000 plus 12% interest, and I didn't figure that --

A That's right.

Q -- but you would acquire half of 4-billion cubic feet of gas, is that correct?

A That's correct.

Q Don't you think it would be fair for Mobil to consider paying McElvain fair market value for that 2 BCF of gas (not clearly understood.)?

A I think I'm going to defer to the Commission for fairness here.

Q I'm just asking you personally. They'll get an opportunity (unclear).

A I feel that Mobil is being most heavily drained here by your well. I feel we are in the thicker pod. I feel it's fair, what we're asking right here.

Q Why did you initially ask for a south half proration unit then back in February when you wrote the other (unclear)?

A Why did we?

Q Yes.

A Because we had the intent of drilling a well.

Q In the south half.

A In the south half.

Q Thank you.

CROSS EXAMINATION

BY MR. LEMAY:

Q Mr. Whelan, wouldn't Mobil prefer like Phillips to share in production from the date of discovery?

A I think we would love to but I think Mobil's interested in fairness, too.

MR. LEMAY: Additional questions of the witness?

He may be excused.

Call your next witness.

MR. PEARCE: Thank you, Mr. Chairman. At this time I would call Mr. Mark Moshell.

MARK MOSHELL,

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

DIRECT EXAMINATION

BY MR. PEARCE:

Q Thank you, sir, for the record would you please state your name and your employer?

A My name is Mark Moshell. I'm employed by Mobil Exploration and Production, U. S., Inc.

Q Could you spell your last name for us, please, Mr. Moshell.

A M-O-S-H-E-L-L. Moshell.

Q And what are your duties for Mobil, Mr. Moshell?

A I'm a reservoir engineer.

Q Have you previously testified before the New Mexico Oil Conservation Commission and had your credentials as a petroleum engineer made a matter of record?

A No, sir.

Q Would you please briefly summarize for us your educational and work experience?

A Yes, sir. I have a Bachelor of Science degree from Auburn University in 1975.

Since that time I have been employed in the oil industry as a drilling engineer, a production engineer, a reservoir engineer, and various supervisory capacities for Exxon Company USA, Diamond Shamrock, myself, and Mobil.

Q Mr. Moshell, are you familiar with the application filed by Mobil in this proceeding today?

A Yes, sir.

MR. PEARCE: Mr. Chairman, at this time I would tender Mr. Moshell as an expert in the field of petroleum engineering.

MR. LEMAY: He is so qualified.

Q Mr. Moshell, let's begin with what we have marked as Mobil Exhibit Number Twelve to this proceeding. Could you tell us what that is?

A This is a 4-page exhibit which consists of the sheet one, which is a summary stating the legal description of the proposed well, the Mobil ownership of .5, which was estimated at the time of preparation, and a total estimated completed cost of $828,000.

The remaining three pages are simply details of the cost estimate consisting of, in this order, drilling costs, completion costs, and surface and related equipment costs.

Q Total drilling costs show to be $603,000, is that correct?

A Yes, sir.

Q Total completion costs, 160.

A Yes, sir.

Q And total surface equipment costs of $65,000. Is that what those figures are?

A Correct.

Q Mr. Moshell, do you have an opinion on the appropriate risk penalty which the Commission should assign to allow Mobil to collect, if Mobil is granted a proration unit in the total south half or a portion of the south half of Section 22?

A Yes, sir.

Q And what is that opinion?

A That Mobil is entitled to return of its investment plus 200 percent due to the high risk nature of this project.

Q Could you outline for us some of the risks that you see that enter into that analysis, please?

A Yes, sir, there's always a mechanical risk of drilling a well and not being able to physically attempt a completion. In these sands such as the Atoka there's a possibility that there will be either, one, no sand present at the drilling location; or, two, that there will be uneconomic thickness of sand present; or that there will be insufficient porosity developed in the sand found; or that sand with porosity but insufficient permeability to support economic production will be found.

Q Thank you, sir. Do you have an opinion on the appropriate overhead and administrative costs which should be allowed to Mobil in the drilling of the well in the south half of Section 22 during drilling and operation of this well?

A Yes, sir.

Q What figures do you believe are appropriate?

A During drilling, $6100 per month, and

during production, $610 per month.

Q And do you believe that those figures are generally in line with other figures used in this vicinity for wells of similar depth characteristics?

A Yes, sir.

Q Do you have anything further to discuss with us, Mr. Moshell?

A No, sir.

MR. PEARCE: Mr. Commissioner, I would like to move the admission of Mobil Exhibit Number Twelve to this proceeding.

MR. LEMAY: Without objection Exhibit Twelve will go into the record.

MR. PEARCE: And I'll pass the witness.

MR. LEMAY: Mr. Kellahin?

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. Moshell, have you done any reserve calculations for Section 22?

A Yes, sir.

Q And what do they show you, sir?

A Well, it depends upon the assumed porosity average throughout the entire pay area.

Q What have you assumed?

A Between 8 and 10 percent is reasonable for an average porosity.

Q What did you assume for a size and shape of the reservoir?

A Well, I have had several options presented to me by your company and by Mobil's geologist.

4 BCF remaining to be produced is certainly a minimum from the McElvain well, as demonstrated by the P/z and that is pressure over z versus cumulative production, and that is supported by the isopachs both presented by Phillips and by Mobil.

Q Have you made any drainage calculations in your reservoir study?

A Yes, sir.

Q And what have you concluded?

A That the McElvain well is definitely draining more than the 240 acres currently assigned to it and that most probably the acreage to the south of the McElvain well is experiencing the heaviest drainage to date.

Q Did you make an attempt to allocate the total original reserves in place to the McElvain original 240-acre nonstandard spacing unit?

A I'm not sure I understand the question

and I'll attempt to --

Q Well, don't answer it unless you understand it.

When you're looking at 4 BCF remaining reserves and you've looked at Mr. Mueller's P/z decline curve and he gets 7.6 total BCF, what did you use for total recovery, recoverable gas from the section? What did you get?

A I can agree that there's a minimum recoverable gas based on the pressure data. 7.6 BCF is a minimum.

Q When you analyze either the Mobil or the Phillips geologic information, it gives you the Phi-H map or whatever map you engineers use to determine the size, shape, and orientation of the reservoir, have you determined how much of that gas is attributable to the McElvain 240 acres?

A Yes, sir, and a minimum would be 5 feet average over the entire 240 acres, which results in about 1.2 BCF.

Now --

Q 1.2 BCF is what? Is that original gas in place or is that recoverable gas?

A That's original gas in place. Obviously, the -- one of the following is occurring, that it is

not only 5 feet or that it is both larger than 5 feet and draining a much larger area than 240 acres.

Q I want to understand what you -- can you assign a recoverable factor to the acreage underlying the 240-acre nonstandard unit?

A Can I assign a recovery factor?

Q Yes, sir, we've got 1.2 BCF in place underneath the McElvain 240-acre nonstandard unit.

A I said that's a minimum. If only 5 feet of pay is present throughout that.

Q How much of that can I attribute to ultimate recovery? What's going to be your --

A 100 percent of that has been drained plus considerably in excess of 1.2 BCF.

Q So when Mr. Losee talks about the value of the remaining 4 BCF of gas that's going to be produced out of the McElvain well, it's going to be gas coming from other than McElvain's tract?

A At least a large portion of it is, yes.

MR. KELLAHIN; Nothing further.

MR. LEMAY: Additional questions of the witness?

Mr. Losee.

CROSS EXAMINATION

BY MR. LOSEE:

Q You're assuming in response to calculations of 1.2, Mr. Moshell, that it's 5 feet throughout the 240 acres, are you not?

A Yes, sir, as I stipulated, that's my minimum estimate.

Q Now, how many feet are in the Sun well that's in Section 15 right north of it?

A Somewhere in the 24 to 28 feet range.

Q Wouldn't that indicate to you that there's more than 5 feet in the north part of the McElvain spacing unit?

A That's most probable.

Q Thank you. That's all.

MR. LEMAY: Additional questions?

If not, the witness may be excused.

MR. PEARCE: Nothing further, Mr. Chairman.

MR. LEMAY: Thank you, Mr. Pearce.

Mr. Losee.

JACK L. AHLEN,

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

DIRECT EXAMINATION

BY MR. LOSEE:

Q Would you state your name, residence, and occupation?

A My name is Jack Ahlen. I live in Roswell, New Mexico, address 2600 North Kentucky Avenue. I work in the Petroleum Building, Suite 533. I'm a consulting geologist.

Q Have you previously testified before this Commission and had your qualifications accepted as a petroleum geologist?

A Yes, sir.

MR. LOSEE: We tender Mr. Ahlen as a petroleum geologist expert.

MR. LEMAY: His qualifications are acceptable.

Q Behind you on the board and I think it would be better if you went to it if you have some pointer. Please refer to Exhibit One, which is the exhibit on the left side and explain what is shown by that map.

A This is a structure contour map on the

top of the Morrow lime in the vicinity of the North Vacuum and South Shoe Bar Fields.

It shows regional dip to the northeast through the area of interest. It is very similar to the exhibit that has been previously presented by Phillips.

Q What's the trapping mechanism in this South Shoe Bar and North Vacuum Field?

A Trapping mechanism is a stratigraphic trap, a sand which is totally encased in shale.

Q Does structure have a great deal to do with the completion of producing wells in the fields?

A Structure has no influence in locating this stratigraphic trap.

Q You saw Phillips' map, structure map, earlier. Do you -- does your map differ from the Phillips map in any particular manner?

A In no particular way, no significant manner.

Q Mobil did not have a structure map, did they?

A That is correct.

Q Okay. Would you please turn to what's been marked as Exhibit Two, the one on the right, your left, my right. Explain what is shown by that map.

A This is an isopach map of the producing

Atoka Sand. It shows the geometry of the producing sand body. The maximum thickness is 100 feet in Section 7 in the North Vacuum Atoka Pool and it diminishes to a very small thickness in the south -- to the southeast in the South Shoe Bar Pool.

Q How did you -- what was the basis for the preparation of that isopach?

A I used all of the electric logs that have been run on wells that have penetrated that particular reservoir. I looked at the electric logs, investigated the gamma ray log, the caliper log, the neutron density log if it was run, the resistivity logs, as well as one of the wells had a microlog.

Q Did you review the isopach prepared by Phillips and introduced earlier in this case. I forgot the number.

A Yes, sir, I did review their map.

Q Is your isopach similar to that of Phillips?

A Yes, it is. It is very similar.

Q Is there any differences, significant differences?

A In one instance there is a significant difference of about 50 percent of the value and that is in the McElvain well.

Q Okay, please explain.

A The McElvain well, located in Section 22, I have attributed 6 feet to that well on the basis of the microlog versus the 12 feet that was assigned by Phillips and I understand that Phillips utilized the gamma ray only in determining thickness of the sand.

Q Now, Mobil prepared and submitted an Isopach, which I think was Exhibit Eight. Does your map conform to the -- your isopach conform to the Mobil isopach?

A It more closely, it conforms to the Mobil isopach, yes, sir.

Q Okay. What is the difference between the two?

A Mobil or the Phillips?

Q Well, your isopach that you have prepared and that of Mobil. How does it compare with the Mobil isopach? (Not understood.)

A My exhibit compares quite favorably except that I do not show as many pods, separate pods, as Mobil does. I showed the sand as a single -- single unit, a single continuous reservoir.

Q Okay, so you do not have the pod that Mobil has to the southeast.

A That is correct.

Their interpretation is based, in addition to the subsurface data they used seismic information that was available to them.

Q Now, Administrative Order 1470, which was entered by the Commission in 1985 and approved the McElvain unorthodox location and nonstandard unit, was entered on October 4, 1985.

My question is do you know or have you heard of any change in geological conditions that have occurred in this area of the South Shoe Bar Field or the North Vacuum since this order was entered?

A I have not heard of no significant geologic changes other than the addition of control that verified Mr. Trainer and Mr. McElvain's interpretation of the area.

MR. LOSEE: I move the introduction of Exhibits One and Two.

MR. LEMAY: One and Two into the record without objection.

MR. LOSEE: That's all of Mr. Ahlen at this time.

MR. LEMAY: Cross examination?

MR. KELLAHIN: Yes, sir.

MR. LEMAY: Are you through?

MR. LOSEE: Yes.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. Ahlen, when you look at the log on the McElvain well and you say on the microlog you get 6 feet of thickness that you used on your isopach.

A Yes, sir.

Q Do you have a copy of that log so that you could give us the actual footage depths that make up that 6 feet?

A Yes, sir. This is a microlog of the Humble Oil and Refining Company State "AC" No. 1 Well, located in Section 22 of 17, 35. The -- there are three runs on the microlog beginning April 17th of '53 and ending August 24th of '53.

Q Okay, starting from the shallowest depth, then, on the log, take me down deeper and tell me how you picked the 6 feet. Give me the top and the bottom of each of those points where you picked -- is this one continuous 6-foot interval?

A No, it's actually two.

Q All right.

A I picked the -- the sand in question that has been completed is at an approximate depth of 12,000 feet.

Q That's the top of the sand pick at

12,000 feet?

A No, it's the middle of the sand pick.

Q All right, so I go above and below that by 3 feet and then I have that interval that you picked?

A Approximately, yes, sir.

Q What have you used for a common value?

A On a micro, the microlog is very susceptible to the presence of mudcakes and when mudcake is present, it shows a very distinct and diagnostic deviation from background. You -- may I show you on the log, rather than describe it?

Q Well, my question is did you use a similar method of analysis that Mr. Halle used to have a cutoff value?

A No, sir, I told you that previously.

Q All right. What was the perforated interval? What's the footage? Where did you start your perforations and stop your perforations?

A I do not have that information at hand.

Q It's not shown on the log?

A It's not shown on this microlog, no. this is --

Q Am I correct in understanding that McElvain perforated a 10-foot interval?

A I do not know. We have a later -- a

later witness that will testify to the actual perforated interval.

Q Did you work on the geology for this well, Mr. Ahlen?

A Prior to the inception of the well, you mean, the re-entry?

Q Well, prior to the re-entry did you work on that?

A I did not.

Q When did you become involved in the study of the geology for this area?

A I did original work in this area in '77 for a prospect of my own, but for this particular case I was engaged approximately three weeks ago.

MR. KELLAHIN: No further questions.

MR. LEMAY: Additional questions of the witness.

Mr. Pearce.

MR. PEARCE: If I may.

CROSS EXAMINATION

BY MR. PEARCE:

Q Mr. Ahlen, looking at your Exhibit Number Two, the zero line on the isopach --

A Yes, sir.

Q -- what information went into your interpretation of data for your drawing that line in the north half of the section? What makes you conclude that the south half of Section 22 does not have the sand?

A There is no direct evidence, no wells have been drilled in the south half of 22, obviously, nor has a well been drilled within two miles of the south half, so I drew that in by virtue of previous experience with Atoka sands.

Q Thank you.

MR. PEARCE: Nothing further, Mr. Chairman.

MR. LEMAY: Additional questions?

You may be excused.

HOYT GENE LEE,

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

DIRECT EXAMINATION

BY MR. LOSEE:

Q Would you state your name and residence, please?

A Hoyt Gene Lee, 1306 Meadow Lane, Roswell, New Mexico.

Q What is your occupation?

A Independent well site consultant.

Q You do not have degree in either petroleum engineering or geology.

A That is correct.

Q You did attend college in one of those fields. Would you explain which one and what college?

A Yes, at New -- I attended New Mexico State University from 1972 to 1976 and studied engineering.

Q Since your graduation from college what has been your occupation?

A As an employee of the Ard Drilling Company from floor hand position through driller, toolpusher, and rig manager positions.

Q Okay, after -- how long were you with Ard?

A Six years.

Q After that what was your occupation? Were you employed?

A I was employed by Mesa Petroleum as a drilling and completion engineer.

Q After that?

A After that for Yates Petroleum for 3-1/2

years and after that independently for various operators throughout southeast New Mexico.

Q Okay. Did you do any work for McElvain-Trainer on the AC State No. 1 Well?

A Yes, I did.

Q When did you first become acquainted with that well or first do any work on it?

A The first work that was done on it occurred in the early part of '85. I was contacted by Mr. C. W. Trainer about the possibility of re-entry on a well located in Section 22 that was originally drilled by Humble in 1953 and then plugged and abandoned.

Q Okay, what records did you look at initially?

A I copied all of the OCD files and all of the available scout tickets.

Q Did you have logs available to you?

A I contacted Exxon and their scout provided the logs and mud log and all the available well files on this well after a search through their archives.

Q Did those records indicate to you what -- the depth to which the well was originally drilled?

A Yes, it did. The well was originally drilled to the Devonian, 13,500 feet depth in Section 22 at an orthodox location.

Q For an oil well.

A For an oil well..

Q Did they obtain any production in the Devonian?

A No, they did not.

Q What other efforts, if any, did they make to complete the well?

A A completion attempt in the interval 11,990 to 12,010, with 80 shots. They acidized it with 2500 gallons of acid and obtained a maximum flow rate of 464 MCF with a tubing pressure of 60 pounds.

Q Had they run a drill stem test on this interval while they were drilling the well back then?

A Yes, they did.

Q Okay, what were the results of that test, or tests?

A There were two attempts to test this zone. The first test was invalid due to packer failure.

The second test had a valid test with a flowing rate at the surface of 13-million cubic feet per day and a shut-in pressure of 6310 pounds.

Q When they perforated the well at the intervals you've recently -- you've just recited, were they perforating through one string of pipe or two strings?

A No, they were perforating through two

strings of heavy pipe. They were perforating through 7-5/8ths 39-pound N-80 casing set at 12,101, and also a string of 5-1/2 23-pound N-80 set at 12,180 feet.

MR. LEMAY: Excuse me, Mr. Losee, is this witness to be qualified as an expert in this general --

MR. LOSEE: All he -- he's not -- he's testifying to what the records show that he took form Humble's --

MR. LEMAY: I didn't receive any request for qualification. I --

MR. LOSEE: No, I'm really not asking him to testify as an expert. He's had lots of experience, which I think -- in the area which I think he's talking about but it's not formal.

He's telling (not understood) what the records show here, isn't that correct?

A Yes, this is the facts as reported to the State.

Q Yes. Did you have anything to do with the effort of McElvain's to -- and Trainer to re-enter this well?

A Yes, I did.

Q When did a certain person commence -- or when did you first work on that effort to re-enter that

wel?

A As I said, in the early part of '85 Mr. Trainer contacted me to research this well and it was co-owned at that time by Mr. Trainer and Moose Trobaugh, and before a prospect, an investor could be put together on the deal, Mr. Trobaugh died and then the lease expired.

After that, on July 1st, 1985, Trainer and McElvain bought this 240-acre lease and then put together the deal for the re-entry.

Q Okay, would you explain what they encountered when they re-entered the well?

A Upon re-entering the well the 5-1/2 had been cut off and I had to splice the 5-1/2 together and it was successfully spliced and tested.

We encountered numerous tubing strings and packers that had been cemented in the hole, which we had to fish out and then when we got down to the productive -- they also tried another productive zone at 9570 to 9590. We circulated up 34 of the 40 bullets that were perforated in that -- in that interval, and then we cleaned it on out to 12,050 feet.

At that time the casing had all been tested and a (not understood) hole was established. I contacted Geo-Vann for a high performance perforating system to effectively penetrate both strings of pipe for this comple-

tion. Upon going over the data with their engineers we devised a 4-inch tubing conveyed gun capable of handling 5-inch casing gun charges and this is the system that we ran in the well and perforated with.

Q What was the -- what happened when you perforated, dropped the bar in the hole?

A At that, when we dropped the bar, we had gas to surface in 20 seconds at a rate of 12-million cubic feet per day on a half inch choke with 2000 pounds of flowing tubing pressure.

Q Mr. Lee, take two minutes and explain what you do when you perforate using the Van tool method.

A Using the Van tool system the perforating gun is correlated across the desired perforated interval with a gamma ray. A packer is set isolating the annulus between the casing and tubing.

The tubing is entirely dry at this -- at this point, creating no back pressure on the formation. A bar is dropped which detonates the firing head on the guns that shoots the perforations in the casing and the differential between the reservoir pressure and the tubing pressure creates a surge and cleans up the perforations very well.

Q Did you, when the well was completed, what was the bottom hole pressure on that well at that

time?

A When we completed this well and ran the bottom hole pressure test on it, the bottom hole pressure was 5469 pounds.

Q So from the time Humble had drilled the well and had found a 6310 pound pressure, bottom hole pressure, your 5469, that pressure had declined by approximately 50 pounds, bottom hole?

A Yes, There had been approximately 850 pounds of depletion from the test from 1953 until we completed in 1986.

MR. LOSEE: At this time I would ask the Commission to take administrative notice of the records in the State Land Office with respect to the ownership of the oil and gas leases in Section 22, the lessees and actually the ownership of these tracts, for the purpose of reflecting the correlative rights. I have a set of leases.

MR. LEMAY: Fine, we shall take administrative notice of them.

Q Mr. Lee, have you prior to this hearing examined the leases that exist in the State Land Office, the information?

A Yes, I have.

MR. LOSEE: With the Commis-

sion's permission I'd like to ask him the questions rather than make statements.

MR. LEMAY: That's fine.

Q Mr. Lee, would you go to the west half northwest quarter and explain who is the lessee of record, what was the date of the lease, and what is the royalty of it?

A In the west half of the northwest quarter of Section 22, Phillips Petroleum is the lessee, Lease No. B-2264, date of issue, 12-2-1933, with a 1/8th royalty.

Q Now go to the McElvain lease, which is the -- in Section 22 is the west half northwest and northeast quarter.

A Right. The east half of the northwest quarter and northeast quarter Lease, V-1520, T. H. McElvain, Jr., issued 7-1-85, 1/6th royalty.

Q Then go to the south half and recite the same thing for each of those leases, Mr. Lee.

A In the southeast quarter of Section 22, Mobil as lessee, Lease B-2735, dated of issue, 4-10-1934, 1/8th royalty.

The north half of the southwest quarter, Amerada as lessee, Lease B-1040, date of issue 7-11-1932, 1/8th royalty.

The south --

Q And that -- excuse me, go ahead.

A The south half shows ARCO as lessee, Lease B-1585, issued 1-5 of 1983, also 1/8th royalty.

Q Okay, what you are reciting is the present lessees --

A That is correct.

Q -- of the original lease. Is that correct?

A Yes, that's correct.

Q Why don't you look at that Phillips' lease, B-2264, and tell me whether or not it covers the lands that are in McElvain's spacing unit for the AC Well?

A When the lease was originally issued, it encompassed the entire north half of Section 22.

Q Okay.

MR. LOSEE: I have nothing further of this witness.

MR. LEMAY: Any questions of the witness?

MR. CARR: No questions.

CROSS EXAMINATION

BY MR. PEARCE;

Q Very briefly, Mr. Lee, if I may, you've

indicated earlier in your testimony that the report shows that the initial pressure in the Atoka, I believe, was 6310 pounds, is that correct?

A Yes, sir, that is correct.

Q How was that pressure measured, gauge or dead weight, or do you know?

A That was measured with a Amerada bomb bottom hole pressure from Halliburton test tools.

Q The same question with regard to the McElvain pressure that you took the 5469?

A Repeat that, please.

Q I understand McElvain measured the pressure in the Atoka at 5469 in 1986.

A Yes, that --

Q How was that pressure taken?

A The same, same way.

MR. PEARCE: Nothing further, Mr. Chairman. Thank you.

MR. LEMAY: Additional questions of the witness?

If there are none, he may be excused.

Call your next witness.

MR. LOSEE: That's all of Mr. Lee.

MR. LEMAY: Who are your witnesses, the next two? You have two more?

MR. LOSEE: I think just one.

MR. LEMAY: Just one? Okay.

I had some questions I wanted to ask and I didn't know who was going to be on.

THOMAS E. HICKEY,

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

DIRECT EXAMINATION

BY MR. LOSEE:

Q Would you state your name and residence, please?

A Thomas E. Hickey, 624 Gomez Road, Santa Fe, New Mexico.

Q What is your profession?

A I'm a tax accountant. I'm currently comptroller for T. H. McElvain Oil and Gas Properties.

Q Do you have a degree in accounting and if so from where?

A I have a Bachelor of Business Administration from the University of New Mexico, concentration in accounting, 1968.

Q Since your graduation from school, what has been your positions?

A I worked for Peat, Marwick & Mitchell for 4-1/2 years. I was Senior Tax Specialist.

Then I worked for private practice for a little over 2 years, and the last 14 years I've been the comptroller for McElvain Oil & Gas.

Q Would you please refer to what has been marked as Respondents Exhibit Number Three and which is a 3-section exhibit, and turn to the first page and explain to the Commission what is shown by this exhibit?

A This exhibit shows the various costs involved in the New Mexico AC State No. 1 Well.

The first column is the expenses of surveying and installing the two different pipelines that are used to market the gas.

The second column is the equipment that has been added to the well since the initial workover.

The third column is the actual workover expenses themselves.

And the fourth column is the lease operating expenses during the 2+ years of operation of the well.

Q I'm going to repeat probably what you said, trying to find exhibits.

Over in your lefthand column you've got pipelines.

A Right.

Q Did McElvain incur some costs in laying pipelines?

A Yes, we did.

Q All right, and that's evidenced by that?

A That is correct.

Q Now what is your total expenditure of all these tabulations?

A From the initial work on the well beginning in November of 1985 through the billings for lease operating expenses through the end of May, 1988, $622,091.44.

Q Okay. Please turn to page two of this Exhibit Three and explain what is shown by these calculations, or numbers.

A All right. This is not a production history, it is a sales history from the well.

The first column shows the amount of gas sold using a 15.025 pressure base. It shows the cumulative sales from the well through May of 1988 of 4.329 BCF.

There have been 51,000+ barrels of condensate sold. That's the second column.

The third column shows the gross reve

nues from the wells during this period. Total is $8.683-million.

The fourth column shows the actual State royalty paid to the State of New Mexico on this well through May of 1988 is $1.447-million.

Since the McElvain acreage is subject to a 1/6th royalty, where the Phillips and Mobil acreage is subject to a 1/8th royalty, the fifth column shows what the State royalty would be if there was a 1/8th royalty.

And the sixth column shows what the difference is.

The seventh column shows the loss in State royalty to the State if Phillips would be awarded the forced pooling for their 80 acres for a north half unit, showing a loss to the State of over $90,000, just from the date of first production till the end of May.

And the final column shows what the loss in State royalty to the State of New Mexico would be if Mobil were awarded an east half forced pooling. That would be a loss to the State of over $180,000 just to date.

Q Turn to page three of your exhibit and explain what is shown by that exhibit.

A Page three is an attempt to show the potential past and future loss to the State and windfall to Phillips or Mobil should there be forced pooling of either

the north half or the east half.

For this we had to use various scenarios.

We chose 4 BCF of remaining reserves. I believe the Phillips engineer said we had 3.6 BCF remaining but with the Sun well probably only (unclear) that we could still get.

The engineer from Mobil generously gave us at least 4 BCF remaining so we did use 4, and we used commensurate condensate values, commensurate to the current level of condensate being produced.

The top half shows what the -- what the figures would be if forced pooling were given back to initial production

The bottom half of the page shows what the consequences would be if it were to go from the various forced pooling initiatives

Q Okay. You've used three gas prices.

A We used $1.50 per MMBTU, $2.00 per MMBTU and $3.00 per MMBTU.

Q In preparing this that's as far as from production this date to deplete the well, is that correct?

A Well, we have --

Q (unclear) those values. You've assigned actual values at this point.

A All right. The top line of the first tree scenarios shows the total actual production to date and the actual average figures to date are about $1.83 per MCF.

Q Okay.

A Is the average so far, and for the condensate the average has been $15.01 per barrel to date.

Q If you'll turn to page 4 of your exhibit, which I take it is a summary.

A Page 4 is a summary of the $2.00 scenario and if the State were to award a north half forced pooling, then the loss to the State in State royalties from inception to the depletion of the reserves in the well, using the 4 BCF estimate, would be about $186,000+.

If the forced pooling were to go only from June, 1988, onwards, the loss to the State would only be $96,000 in State royalty; however, the windfall to Phillips would be $4.3-million from inception and from -- if the forced pooling were only effective in June of this year; as they plead, it would be $2.1-million to Phillips.

The figures are exactly double that, of course, for Mobil because Mobil would have 160 acres of a 320-acre proration unit, so if the east half forced pooling occurred the loss to the State retroactive will be $373,000 and from June of '88 onwards the loss would be $192,000 in

State royalties, but the windfall to Mobil would be either #8.6-million or $4.3-million, depending on whether it would be retroactive to March of '86 or beginning of June of '88.

MR. LOSEE: No further questions.

MR. LEMAY: Additional questions of the witness? Cross examination, Mr. Kellahin.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. Hickey, when you look at the last page of your exhibit and we get Current to Depletion, do you see that entry, sir?

A Yes, sir.

Q Current starting from what time?

A June of '88.

Q Depletion is projected to be after what additional volume of hydrocarbons is produced?

A 4 BCF. It's a summary of the $2.00 scenario from page 3, Mr. Kellahin.

Q And the 4 BCF comes from what source, Mr. Hickey?

A We prepared this using the Phillips estimate and subtracting the production that had come to date.

Q Do you have a pocket calculator, Mr. Hickey?

A Not with me, sir.

Q The total gross proceeds derived from the well when we look at page 2, we can add up the $769,000 number for the oil and the almost $8-million for gas, and we get a total of $8.6-million?

A That is correct, sir.

Q And the total completed well costs, pipelines and equipment, is $622,000, approximately?

A That includes operating expenses, yes, sir.

Q And if I divide 622 into 8.2-million am I correct in understanding that's almost 14 times the return on the original investment?

A Less the million and a half State royalties and less over $1-million in State taxes, yes.

It has been a good investment for the McElvains and Mr. Trainer, yes, sir.

Q And Mr. Moshell from Mobil told us awhile ago that underlying the McElvain tract were 1.2 BCF of gas?

A He said at least that, yes, that's what he said.

Q That was a minimum number, wasn't it?

What has been reported to you as the current total production in gas from the well to date?

A Well, through May of 1988, 4.3 BCF.

Q 3-1/2 times the original producible gas underneath that spacing unit, isn't it?

A Those are your words.

Q Well, I don't know. If the numerator is 1.2 BCF and the denominator is 4.3 BCF, --

A I think you have them reversed mathematically.

Q All right.

A But if you choose to use 1.2 BCF, if you choose to use 1.2 BCF, yes, sir.

MR. KELLAHIN: No further questions.

MR. LEMAY: Are there questions of the witness?

MR. PEARCE: Very briefly, if I may, Mr. Chairman.

MR. LEMAY: Mr. Pearce.

CROSS EXAMINATION

BY MR. PEARCE:

Q Mr. Hickey, I'm a lawyer and I deal more with words than with numbers, and I'd like for you to

turn to the last page of your exhibit with me, please, and I notice you've used some -- used the word "windfall" for those two righthand columns, if Phillips or Mobil is allowed into the present McElvain well.

A Yes, sir.

Q Could you tell me the assumption underlying your use of the word "windfall"?

A We are dealing with more or less of a known factor now; the McElvains and Mr. Trainer were not. They took the risk.

If you get force pooled into this well with us, I think we could call it a windfall to either you or to Phillips, yes, sir.

Q Would you call it a windfall if Mr. McElvain re-entered a well and produced Mobil's reserves?

A Your geology shows that. Phillips' geology shows something else.

Q And if my geology was correct, under your use of the word "windfall", would you call that a windfall?

A You've held the lease for 55 years without drilling. I'm not sure that I would call that a windfall that Mr. McElvain and Mr. Trainer developed this well within a few months of the time they obtained their lease.

Q Because Mobil held the lease for 55 years, Mr. McElvain has a right to produce their reserves? Is that a summary of what you said, sir?

A I didn't say that at all. I said that Mobil had the opportunity for 55 years to develop their own reserves and to take reserves out from under the 240 acres that Mr. McElvain and Mr. Trainer wound up with.

MR. PEARCE: I don't think I have anything further. Thank you, Mr. Chairman.

MR. LEMAY: Additional questions for the witness?

MR. CARR: Just -- I have one.

MR. LEMAY: Mr. Carr.

CROSS EXAMINATION

BY MR. CARR:

Q Has Mr. McElvain taken any pressure data to confirm the 4 BCF figure that you've used?

A I'm not an engineer.

Q Are you going to be calling an engineer that might be able to answer that?

MR. LOSEE: No, I believe not. We have --

(Thereupon a discussion was had off the record.)

QUESTIONS BY MR. LEMAY:

Q I have a question, Mr. Hickey, only from a point of view of an operator.

I don't know if you can even answer this, but have you looked into the assumption that if Mobil and Phillips are allowed to develop their tract in some form or fashion, that those 4 BCF remaining reserves to the McElvain well will be reduced by some percentage, I assume?

A I believe the Phillips engineer testified to two different scenarios to that, sir, yes.

Q Well, would you agree with the Phillips engineer's scenario, then, as far as remaining reserves to McElvain with one additional well in Section 22 and two additional wells in Section 22?

A I'm not an engineer but I suspect his figures are in the right direction, yes, sir.

Q Then in terms of your preferences, and I don't even know if you can express the intent of the McElvains, but would they prefer to have three wells in Section 22 with two unorthodox -- two unorthodox spacing units being developed?

A Well, two free wells?

Q Well, you'd have three wells and then you --

A Oh, I thought you said two free wells.

Q No, no free wells.

A Although I'm sure they're thinking in terms of two different free wells.

Q We're looking in terms of developing Section 22.

A Yes.

Q The Commission must make the decision concerning spacing in that section. Right now there's one well. I'm assuming that there will either be two wells or three wells in Section 22 and McElvain, do they have a position as to whether they would like two wells in Section 22 with some forced pooling into your well, or three wells, another Strawn -- in the reservoir, so to speak, with -- without any forced pooling in Section 22, at least as far as McElvain is concerned.

A I don't know what the opinion is. Obviously the fewer wells the more it would be to our advantage, but whether that's equitable or not --

FROM AUDIENCE: I want three.

MR. LEMAY: You want three?

FROM AUDIENCE: You bet. Let them get their own well.

A It has been shown here that our well has been draining other people's acreage, and so we certainly shouldn't be adverse to other people getting a

chance to drill their wells to prove up what they say is under their acreage.

(Thereupon comments were made at random off the record.)

Q Is Mr.McElvain, to your knowledge, and Mr. Trainer, in agreement in this area?

Do you get along with C. W. and is it okay to speak for him?

A Well, I may get along with C. W. better than Mr. McElvain does.

Q I have no further questions. You may be excused.

MR. LEMAY: Mr. Carr.

MR. CARR: At this time Sun would like to call Greg Cielinski, C-I-E-L-I-N-S-K-I.

GREGORY D. CIELINSKI,

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 for the record, please?

A Gregory D. Cielinski.

Q Mr. Cielinski, where do you reside?
A In Midland, Texas.
Q By whom are you employed?
A Sun Exploration and Production Company.
Q And in what capacity?
A I'm a reservoir engineer.
Q Have you previously testified before the Oil Conservation Commission?
A No, I have not.
Q Will you briefly summarize your educational background?
A I received a Bachelor of Science degree in petroleum engineering n 1983 from Colorado School of Mines.
Q And following graduation where did you go to work?
A I went to work in Dallas for Sun as a reservoir simulation engineer.
Q And have you worked for Sun since that time?
A Yes, I have.
Q Are you familiar with the applications that have been filed in this case and the subject area?
A Yes, I am.
MR. CARR: We would tender

Mr. Cielinski as an expert witness --

MR. LEMAY: His qualifications are accepted.

MR. CARR; -- in reservoir engineering.

Q Will you briefly state what Sun seeks by appearing in this case?

A Sun seeks to form a 320-acre standard laydown proration unit in the north half of Section 3 -- of Section 22, I'm sorry.

Q And would you state what Sun's interest is in coming in and recommending that?

A Sun operates a well to the north, to the north of that section.

Q Will you refer to what has been marked as Exhibit Number One and go to the first page of that exhibit and first of all identify what that is and review the information contained on the exhibit.

A This is a pressure history in the immediate vicinity of the McElvain well, the subject well, in the Shoe Bar Atoka Field, and it shows cumulative volumes produced in the reservoir and static pressures and some shut-in tubing pressures in -- during the time since development of that reservoir.

The first well in this area was the

Shoe Bar 14 State Com No. 1 drilled in November of '84 and it showed a static bottom hole pressure of 5806 psi.

In January of 1986 the New Mexico AC State No. 1, McElvain's well, was drilled. At that time the reservoir cum was 132-million cubic feet and the statis bottom hole pressure had dropped somewhat, 5469, indicating a little bit of drainage.

Sun came in and drilled the Shoe Bar State Com No. 1 in December of '87 and at that time the reservoir cum was 30 -- or 3.6 BCF and the static bottom hole pressure had dropped all the way to 2879, less than half the initial pressure of the reservoir in that area, indicating severe drainage on our lease.

And at that time the shut-in tubing pressure was a little over 2000 psi.

Then in February our well still had not produced. The reservoir cum had gone up to 4.14 BCF and our tubing pressure had fallen about 170 psi to 1923, indicating drainage from McElvain's well.

And then further, in April of '88, still on our well, we ran a bottom hole pressure, statis bottom hole pressure with a bomb and that showed as the reservoir cum had increased to 4.32 BCF, the bottom hole pressure had fallen about 3 -- 300 psi from when we first completed our well even though we had not produced it at

all, indicating severe drainage from the McElvain well.

Q All right, will you go to the second page of Exhibit Number One and first identify this and then review the information contained on this exhibit? Mr. Cielinski, you might even want to refer to the isopach map on the wall and indicate the location of the wells that were drilled that would affect (not clearly understood.)

A This is Texaco's New Mexico DK State Com Well No. 1 and this is a P/z versus cum gas plot. The original four points there were prior to additional wells drilled.

Q The points on the left.

A This well is this well here, this Texaco Well. This well right here in Section 18 is the subject well on that P/z plot, and at the time the first four points were all from one well, and then two wells, one right here and one right here were drilled where it's indicated on the plot.

Q Now, can you identify those wells by name, the new wells that were drilled?

A I don't know the names offhand.

Q Can you give the section number in which they are located?

A Yes. One of them is in Section 7, I believe that's a Marathon well, the UU, I guess, and the

other one is in Section 8 and I believe that's the Mobil well.

Q And how close are they to the Texaco well that is a P/z curve --

A They're a little over a mile away.

Q All right. Would you like to go back to the stand?

What does this curve show you?

A Okay. This curve shows that prior to the drilling of those two wells this well would have cumed 57 BCF as shown on the next page. The P/z plot should show a straight line, as it does, prior to drilling those two wells, but once those two wells were drilled, really a textbook case of severe pressure depletion from these other two wells comes in and shows that these two wells were producing reserves that those -- that the first well would originally have produced.

Q Now are these wells in the same reservoir as the subject wells we've been talking about today?

A Yes, they are.

Q All right, would you go to the next page of this exhibit and review the calculations?

A Okay. A look at the calculations show that prior to drilling those two wells the cum gas from that one well would have been 57 BCF and that results in a

drainage acreage of 1776 acres.

And then after those two wells were drilled, the ultimate recovery from this well is expected to be 13.7 BCF, indicating a drainage area of 427 acres.

So those two wells took some of the reserves from that one well.

Q Now what does this tell you about this reservoir as a whole?

A It tells me that it will drain quite a bit in this area, 1770 acres.

Q Now would you go to the next page in this exhibit, which is an isopach map that you have placed some interpretation on.

First of all, explain what the base map is.

A Okay, the base map is a net pay map drawn by our geologist and I've taken some reserve calculations and superimposed them with drainage areas on this map as shown by the shading areas.

Q Now how does this map compare in Section 22 to the isopach map presented by Mr. McElvain?

A Geologically they're very similar.

Q All right. Now what have you done with this map?

A Okay, I've taken -- I've calculated re-

serves from the two wells, HNG well in Section 14 there and the McElvains well in Section 22, and superimposed those reserves using a recovery factor on this map to show -- to indicate the drainage area of those two wells.

Q Now you do -- have cut off these drainage areas on section lines. Is that in fact your interpretation of --

A No, that's just an approximation. In reality there would be a transition zone and it is just approximate.

Q All right, and what does this tell you about -- about the wells that are depicted on this map?

A Well, specifically that McElvain's well clearly drains quite a bit more than 320 acres and it will -- it will indeed drain the entire north half of Section 22.

Q Mr. Cielinski, the data that you used for the McElvain well was obtained at what point in time?

Is this prior to the time that you drilled your well to the north?

A Yeah, the data is off of a P/z plot showing two (not understood). It's the same one that Phillips presented and it comes up with -- I used reserves from it for the 7.4 BCF but it is prior to any other wells being drilled in the field, or prior to Sun's, but I be-

lieve that HNG's well was already there.

Q Okay. How would that fact, the date of this information affect what you've depicted on this particular map?

A It would decrease that drainage area slightly but I don't believe much because if you look at the pressure history on the first page, our well came in at such a low pressure relative to McElvain's well that they clearly had drained quite a bit of our acreage already, so I wouldn't expect that our well would have taken any of their reserves away, due to that wide difference n pressure.

Q Now are the remaining pages in this exhibit the calculations you used in --

A Yes, they are.

Q -- making that drainage area?

A Yes, they are.

Q What conclusion have you reached from your review of this area?

A I believe I'd say we'd reached three different conclusions. One is that McElvain's well will drain more than 320 acres and two is that any well drilled in the west half of the northwest quarter of Section 22 would represent waste of financial resources.

And three, if a well were drilled

there, it would significantly drain Sun's reserves even further.

Q Was Exhibit One prepared by you?

A Yes, it was.

MR. CARR: At this time we would offer into evidence Sun Exhibit Number One.

MR. LEMAY: Without objection Exhibit One goes into the record.

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

MR. LEMAY: Thank you, Mr. Carr.

Mr. Kellahin?

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. Cielinski, would you turn to that portion of your display that has this isopach on it where you've shown the drainage radiuses? (sic)

A Yes.

Q What is -- that's it. Those are isopach lines?

A Yes, they are.

Q And they were prepared by whom?

A By our geologist.

Q Which geologist?

A Shelly Main.

Q The isopach was prepared using what type of methodology for a cutoff on the values for the isopach?

A I wouldn't know the answer to that. Our geologist would.

Q You told us that isopach was very similar to the one Mr. Ahlen had in Exhibit Number Two?

A That's my opinion. I'm not a geologist. They appeared similar to me.

Q Well, I'm not either, but look at Section 14 and 23. Mr. Ahlen has closed his contour line on the isopach in honor of the 4 feet on the ARCO well, hasn't he?

A Yes, he has.

Q And what happens on her isopach? It continues on through Sections 13 and 24, doesn't it?

A Yeah, well, I was speaking more in the area of relevance to McElvain's well. I don't really consider that area (not understood).

Q Doesn't it call into question the relevance of this isopach when it in fact extends beyond the control of the contours?

A I don't believe that. I don't know

what control was out here when that map was constructed. As I said, I didn't construct it.

Q If we look at the shaded area that has the diagonal lines that run from northwest to southeast, that is the area that you have attributable -- attributed to the McElvain drainage area for their well?

A That's correct.

Q And when we see the overlap in that drainage area between that well and the Sun well, it follows the section line.

A Mr. Carr pointed that out, and we pointed it out that that's an arbitrary or somewhat of an approximation. It's not -- I'm not pointing that there's border along that section and that their drainage is that and we're draining just what's north of it. It's just an approximation.

Q Okay. When we look at the McElvain well in 22 and we follow the lined area to the east, we get to a point where the line stops in Section 23. What caused it to stop there?

A Well, basically all I did was take the total reserves and superimpose them over an area. The boundaries of that area are not, you know, meant to be exactly where I've drawn them. It just shows an approximate drainage area, which is clearly greater than 320 acres.

Q That area contained within the diagonal line, represents the volume of gas that we've got to apply to the McElvain well.

A The recoverable amount of gas that it would -- that it would appear to be able to drain.

Q Now the size, we know the size and to determine the shape you rely on the geologist to tell you the shape.

A Well, the geologist and the fact that the well's got to be somewhere centrally located. It's not going to drain, you know, things way out on one side and not on the other side, so --

Q In deciding the shape you rely upon the isopachs.

A Yes, and geometry.

Q But there's no question in your mind that you have done the correct calculation in terms of the size of the reservoir that's attributable to the gas produced or producible from the McElvain well.

A No, not within reasonable engineering accuracy.

Q We've got the right size and now we're worried about the shape, and you have matched that size to the shape that that your geologist has given you.

A This is correct.

Q Have you attempted to match that size with the shape for any of the other geologic displays?

A No, I have not.

Q Do you realize that the shape of a reservoir that you've put in here causes your drainage radius to extend through and include the ARCO dry hole in Section 23?

A Yes, I do, but there's -- there's, you know, clearly not much net pay there, only a couple feet.

MR. KELLAHIN: No further questions.

MR. LEMAY: Additional questions of the witness?

MR. LOSEE: Yes.

MR. LEMAY: Yes, sir, Mr. Losee.

CROSS EXAMINATION

BY MR. LOSEE:

Q Is the Sun well closer to the Phillips acreage in the west half northwest than the McElvain well?

A Yes, it is.

Q And at this point is Sun actually draining more gas out of Phillips than McElvain is?

A No, I don't believe so.

Q Well, why not?

A Well, McElvain's well has been producing for two years and Sun's well just came on production real recently, in the last couple months and if you refer to the first page, clearly the pressure has dropped; when our well was completed the pressure was less than half of what the initial well was.

That indicates that at our well's location significant gas lines had already had to have been depleted indicating it must be by McElvain, since it's the prolific producer in the area.

Q But that doesn't tell me about the west half northwest, the Phillips acreage --

A Well, they're in -- they're in the same general direction and I would expect similar tendencies between the two areas.

Q But you're in closer proximity to their acreage than the McElvain well is.

A That's correct.

Q When was the McElvain well completed?

A I believe it shows on the first page, in January of 1986 is when that pressure was obtained.

Q When was the Sun well completed?

A In December of 1987.

Q Nearly two years later before Sun

drilled it's well, at least two years? Is there some reason why they waited for that 2-year period?

A I wouldn't know the reason.

Q Wasn't the delay in drilling one of the factors that permitted the drainage to occur?

A Yes, it would be.

Q And, actually, if Sun had gone in and drilled that well at the same time as McElvain, there would have been counter-drainage, would there not?

A You'd have to define counter-drainage for me.

Q Well, you would have balanced the drainage out between the two wells or maybe it would add more to the Sun well because it had thicker pay.

A If -- if the rates were similar, I would agree with that.

MR. LOSEE: I think that's all.

MR. LEMAY: Additional questions of the witness?

MR. CARR: I just have one.

MR. LEMAY: Yes, sir, Mr. Carr.

REDIRECT EXAMINATION

BY MR. CARR:

Q Are you familiar, Mr. Cielinski, with producing rates at this time from the Sun well as contrasted with the McElvain well?

A Yes, I am.

Q And what are they?

A The McElvain well is producing around 5-million cubic feet of gas a day and the Sun well is about 3-million cubic feet a day.

MR. CARR: That's all I have.

QUESTIONS BY MR. LEMAY:

Q I have a question, Mr. Cielinski, concerning the -- I understand Sun's position is they would prefer 320 acres, two 320-acre units to the south to balance your 320-acre unit.

A Correct.

Q In the event of an alternative curse, the Commission chose to grant three wells in Section 22, would Sun be satisfied with some restriction to the allowable on those three wells in 22, either based on deliverability or based on prorationing of the pool.

A In my opinion it would be a -- we would not object strongly to a well with an 80-acre proration

unit in the west half of the northwest quarter drilled by Phillips. So, yes, we do believe that allowables of the two wells combined should not exceed the allowable of Sun's well.

Q Well, I wasn't so much -- I don't think there's been a proposal to grant a pay acre unit initially. Phillips had that and dropped it at the first hearing but what's been presented here is two 160-acre units, I think 240 and then smaller units than 320 but three wells down there and some way to balance that advantage over wells that had (not clearly audible.)

A Well, I feel my own personal opinion is that any 160-acre unit would -- would include nonproductive acreage and therefore really would not be equitable and would not protect Sun's correlative rights.

However, we do feel that if a well is drilled there the important thing is that it does have a reduced allowable, some form of penalty.

MR. LEMAY: Additional questions of the witness?

If not, he may be excused.

Considering the hour, we'd prefer to have closing arguments, written closing arguments or have you got some quick ones, five minutes?

Is that fine with all of you?

Are there any statements in this case?

Are there any additional witnesses or any positions to be stated?

If not, we'll leave the record open for closing arguments for seven days and take the case under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C. S. R. DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division (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