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

8 June 1988

EXAMINER HEARING

IN THE MATTER OF:

Application of Northwest Pipeline Corporation for salt water disposal, Rio Arriba County, New Mexico. CASE 9401

BEFORE: David R. Catanach, Examiner

A P P E A R A N C E S

For the Division: Robert G. Stovall
Attorney at Law
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico

For the Applicant: Paul Cooter
Attorney at Law
RODEY, DICKASON, SLOAN,
AKIN & ROBB, P.A.
P.O. Box 1357
Santa Fe, New Mexico 87504

I N D E X

E X H I B I T S

MR. CATANACH: Call next Case Number 9401.

MR. STOVALL: Application of Northwest Pipeline Corporation for salt water disposal, Rio Arriba County, New Mexico.

MR. CATANACH: Are there appearances in this case?

MR. COOTER: Paul Cooter, with the Rodey Law Firm in Santa Fe, appearing for the applicant, Northwest Pipeline Corporation.

I have two witnesses that need to be sworn but before I do that I would like to point out, I believe in the third line of the docket that commences with words "injection pressure", the word "not" should appear at that point.

MR. CATANACH: That changes the whole meaning.

MR. COOTER: Well, I believe not in excess of the 0.2 psi per foot is the standard and anything in excess of this would only come after a step rate test and --

MR. STOVALL: My initial inclination would be that -- that the erroneous advertising would not give -- harm anybody's notice or right to be heard. They would be more inclined to come as it was ad-

vertised than they would be if it had been advertised correctly, I would think. That would be my initial impression.

MR. COOTER: I agree with you. I agree with you.

MR. CATANACH: I concur on that. I don't think we need to readvertise it, Paul, just go ahead and give your testimony.

MR. COOTER: We have two witnesses, as I mentioned, to be sworn, Paul Thompson and Mike Murphy.

MR. CATANACH: Will the witnesses please stand?

(Witnesses sworn.)

PAUL C. THOMPSON,

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

DIRECT EXAMINATION

BY MR. COOTER:

Q Would you state your name for the record, please, sir?

A My name is Paul Thompson.

Q And by whom are you employed, Mr. Thompson?

A I'm employed by Northwest Pipeline in Farmington, New Mexico.

Q What is your position with the company?

A I'm currently the Manager of Production and Drilling for Northwest.

Q Very briefly, would you relate your education and professional experience?

A I received a Bachelor of Science in Chemical Engineering from New Mexico State in 1976.

I worked for three years for Phillips Petroleum in Bartlesville, Oklahoma.

I started as a drilling engineer for Northwest Pipeline in 1979 and I'm a Registered Professional Engineer in the State of New Mexico.

Q What does Northwest Pipeline seek by its application in this case?

A Northwest Pipeline seeks authority to dispose of water produced in conjunction with Fruitland coal wells into the Mesaverde formation of our Rosa Unit No. 95 -- 94 Well.

We previously filed a C-108 asking for administrative approval in this case.

Q And then that was set for hearing today.

A That's correct.

Q That Rosa Unit No. 94 Well was drilled when, Mr. Thompson?

A It was spudded in October of 1982.

Q And was it completed as a producer?

A No, sir. We tested the Mesaverde formation and were unable to sustain production.

Q And then temporarily plugged?

A It's been temporarily abandoned, not plugged.

Q Let me direct your attention to what has been marked as Exhibit Number One in front of you. Would you locate the Rosa Unit No. 94 Well?

A Yes, sir, the 94 Well is at the center of the two concentric circles. This map outlines the entire Rosa Unit with Northwest's acreage shaded.

The smaller circle is the one-half radius circle evolving from the 94 Well. The larger circle is a 2-mile radius.

Q What other operators or working interest owners are -- are -- own interests within that one-half mile circle?

A Northwest Pipeline is the operator of all the formations within the Rosa Unit. In this particu-

lar drilling block, the west half of Section 16, Amoco Production and Northwest Pipeline own the mineral rights to the Mesaverde 50/50.

Q Who paid for the drilling of that Rosa Unit No. 94 Well?

A Due to a land mistake on Northwest Pipeline's part, Northwest Pipeline paid for 100 percent of the drilling and completion costs of the Rosa 94.

Q And that's even though Amoco has a half interest in -- in the Mesaverde formation.

A That's correct. Actually we invoiced Amoco for their 50 percent and they paid it and we reimbursed them for that -- their share of the monies by mistake.

Q Let me hand you what has been marked as Exhibit Number Two. That's the -- would you identify what has been marked as Exhibit Number Two, please sir?

A This is a letter that went to all the working interest owners of the Rosa Unit. It's a supplemental 1988 drilling program that was filed with the regulatory agencies which outlines our Rosa Unit development, which consisted of the three Fruitland coal wells; in addition outlines our plans to convert the Rosa Unit 94 into a water disposal well.

Q Now under your -- your unit arrangement,

the unit agreement, does Amoco have an interest in the Fruitland coal wells that will be drilled?

A In the first initial three coal wells, they do not have any working interest in those.

Q That's the ones that are mentioned in your plan of development?

A That's correct.

Q That also outlines your plan to convert the Rosa Unit No. 94 Well to a water disposal well.

A That is correct.

Q Is it necessary -- was -- was a copy of -- of this supplemental 1988 drilling program mailed to Amoco?

A That's correct. This letter was mailed to Amoco via certified return receipt requested mail, as it was to all the other working interest owners.

Q Was it -- did it receive a return receipt from Amoco?

A In this case we did not receive that. On verbal conversations with the Amoco people, they say that they received the letter on May 17th of this year.

Q And just from some post office foul up the return receipt has not been received.

A Evidently, if we received the return receipts from all the other working interest owners, with

the exception of Amoco.

Q Is this Federal land?

A That's correct. This is the -- the minerals here are owned by -- originally leased by the Federal Bureau.

Q Have you been in contact with the Bureau of Land Management to obtain its approval?

A That's correct. We filed an NCL-2-B application, which is their authorization to -- to inject water.

I received verbal notice that they have approved that and that should be signed off next Monday.

Q Has not yet been returned to Northwest.

A That's correct.

Q Let me then direct your attention to -- how about the surface owner?

A The surface owner of -- of land where the 94 is located is the U. S. Forest Service. We have taken them out to inspect the site and they've given us some surface stipulations, but they don't really have any problem at all with our surface facility.

Q Before this can be affected, you not only have to obtain the BLM approval but -- but also approval from the other working interest owners in the Rosa Unit.

A That's correct. Before we can inject actually, we need -- our authority to inject is contingent upon approval from the NMOCD, the BLM, the surface owners, and the other working interest owners involved in this 94 Well.

Q Let me now direct your attention to what has been marked as Exhibit Number Three, which is a wellbore diagram.

What are the future plans for the conversion of this Rosa Unit No. 94 Well if the application be granted?

A Let me first describe the wellbore diagram here.

Q All right, sir.

A And then I'll get into your question next.

The -- starting at the top we set 9-5/8ths casing in a 13-3/4-inch hole and circulated cement to surface. That should cover any potentially fresh water zones near the surface, even though there no fresh water wells in the area.

We then drilled an 8-3/4-inch hole, set 7-inch casing and cemented that and the top of cement by temperature survey is 2000 feet, which covers our estimated Ojo Alamo top.

We then drilled a 6-1/4-inch hole with gas to our -- our total depth and ran a 4-1/2-inch liner. Our perforation interval is from 5360 to 5681. We shot 22 holes.

We stimulated the Mesaverde well with 80,000 pounds of 20/40 sand and slick water and after extensive swabbing operations we were unable to sustain gas production and the well was never tied to the pipeline; subsequently temporarily abandoned.

What we propose to do to covert this well to an injection facility is to reperforate in the same interval, just more holes, just to decrease the pressure drop through the pipe and also to change our 2-3/8ths-inch tubing to 2-7/8ths, again just to reduce our pressure drop.

We plan on injecting under a packer; on the diagram I've shown a Geiberson Unit Packer of 6, which can hold pressure from either direction.

We plan on loading the back side with a packer fluid.

Based on Meridian's experience with their 30-N-6 112-Y, we plan on treating the water with a corrosion inhibitor and bactericide and for that reason we don't feel like the tubing will need to be plastic-lined.

Q How about treating the proposed -- the produced water to be disposed of?

A That's right, at each one of the proposed Fruitland wells we plan on injecting -- or treating the water with corrosion inhibitor and bactericide.

Q All right, what about the -- what are your future plans, the initial amounts and the pressures?

A We initially plan to drill 3 Fruitland wells and dispose of the water into the 94, and we're just estimating based on Meridian's experience in the 30-N-6 Unit that we may -- we need to expect possibly 1000 barrels of water per well, so our initial rate is estimated to be at 3000 barrels.

Based on, you know, several fracs in the area, I don't really anticipate exceeding our .2 psi per per foot injection limitation. If that should be come necessary, then we'll run a step rate injection test to determine what the maximum rates and/or pressure can be.

Q Let me direct your attention to what has been marked as Exhibit Number Four. Would you identify that?

A Exhibit Number Four are three water samples, the first one being from the Rosa 94 Mesaverde formation, which is our proposed injection well, showing a total dissolved solids level of 45,664 milligrams per liter.

The second one is the Rosa Unit 45,

which is a Mesaverde offset to the north, which shows total dissolved solids of 31,477 milligrams per liter.

The third water analysis is a sample of Fruitland coal water, which we hope will be representative of the type of water we expect to produce with our Fruitland well. We obtained this from Meridian in the 30-N-6 Unit, which shows total dissolved solids of 17,500 milligrams per liter.

You'll notice that the bicarbonate level is rather high in this water sample, which is kind of typical of Fruitland coal water.

But in any case, the Fruitland coal water appears to be a better quality than the Mesaverde water.

Q One thing I'm not sure we covered, let me go back to Exhibit Number One and have you identify any other wells within this half mile circle.

A I'm sorry. There are only two wells listed in our half mile area of interest, the first one being the Rosa 941

The other one is a Penrose and Tatum No. 3 Well, which is called the Rosa No. 3 Well, which was drilled through the Pictured Cliff, tested in the PC, and subsequently plugged and abandoned. So it does not penetrate the Mesaverde formation. Those are the only two

wells drilled within our half mile radius.

Q Was that No. 3 Well a -- a Northwest Pipeline well?

A It was -- it was drilled by Penrose and Tatum. The name was changed after the unit was established.

Q Okay. Mr. Thompson, in your opinion would the granting of this application by the Commission prevent waste?

A Yes.

Q Protect correlative rights?

A Yes.

Q Anything else you want to add? Have we covered everything?

A I would think so.

MR. COOTER: That concludes our direct examination.

CROSS EXAMINATION

BY MR. CATANACH:

Q Mr. Thompson, you've identified the Ojo Alamo as being from approximately 2354 down to 2799, is that correct?

A Actually these figures here are just the formation tops.

Q And --

A We didn't --

Q -- to your knowledge there are no water wells within a half mile of your well?

A There is really no water wells within two miles of this area.

Q There are no water wells? Was the Well No. 94 tested in all three different zones in the Mesaverde, the Point Lookout, the Menefee, and the Cliff House?

A That's correct, it was.

Q And was found to be nonproductive in all three zones?

A Right.

Q Do you know of any -- any Mesaverde production in this general area that may be affected?

A Mr. Murphy is going to discuss the offset production in more detail later.

The Rosa 45 Well is a marginal, noncommercial producer to the north and the Rosa 85 off to the southwest is a Mesaverde producer. He'll discuss those issues with you.

Q Okay. The analysis that you provided from the Mesaverde formation, is there any way of knowing where that came from, or to your knowledge is the water quality in Cliff House, the Menefee, and Point Lookout

essentially the same?

A Be unable to tell since all three formations are open in both wells. This is just water that was produced to the surface or swabbed out of the well, so I'd be unable to tell each -- each different interval.

Q Mr. Thompson, is it your understanding that the produced water that's produced in conjunction with the coal, that the more you produce, the worst quality it becomes? Is that your understanding? And it deteriorates; the quality of the water deteriorates the more you produce out of the formation?

A I'm not aware of that, no.

Q I had heard that. I just wondered if you were familiar with it.

A These are our -- will be our first Fruitland wells, so we don't really have much experience other than what we've gleaned from other operators.

Q Okay. Tell me how your corrosion inhibitors will help you out and eliminate the need for coating the tubing.

A The main corrosion element in the water, well with the gas produced from Fruitland coal wells, makes a higher quantity of CO_2 than normal. The CO_2 when it mixes with water causes carbonic acid and when that's in the water it could cause some corrosion problems.

We plan on -- on pumping the water from the producing wells over to our water disposal so we plan on adding corrosion inhibitor at the Fruitland well sites with bactericide and keep this as a closed system all the way through our injection. That was we're going to protect our surface pipelines as well as the 94 Well casing.

By having a packer in the well here, we're going to be able to monitor the pressure on that annular space and so we'll be able to know right away for -- if our packer integrity or we have any kind of a leak from below, since we will be injecting under pressure.

Q Okay, even though you're going to add the corrosion inhibitor you're still going to solids in the water that cause some corrosion problems.

A Well, we're going to filter out the water at the -- at the location on each one of the Fruitland sites, plus filter it down to one or two microns before it goes downhole. I don't think that we'll have much solids problem.

MR. CATANACH: That's all I have of the witness.

MICHAEL J. MURPHY,

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

DIRECT EXAMINATION

BY MR. COOTER:

Q Would you state your name for the record, please, sir?

A Yes, sir. My name is Michael J. Murphy.

Q By whom are you employed, Mr. Murphy?

A I'm currently employed by Northwest Pipeline.

Q And what's your position with the company?

A As a reservoir engineer.

Q Would you please briefly relate your education and professional experience?

A Yes. I received a Bachelor of Science degree in geological engineering and a Bachelor of Science degree in civil engineering, both June, 1978, both from New Mexico State University.

I've worked -- I worked immediately after school for Texaco, Incorporated, for two years as a production engineer, two area offices in west Texas, both within the Midland District.

August of 1980 I went to work for Northwest Pipeline in their Drilling and Production Office in the San Juan Basin, Farmington, as a Production and Drilling Engineer, and which I was the net 4-1/2 years.

In January of 1985 I was transferred to Salt Lake City Office for Northwest Pipeline as a reservoir engineer. My responsibilities as a reservoir engineer are currently in -- are in the San Juan Basin, which includes the Rosa Unit.

Q You've heard the testimony of Mr. Thompson. Please identify the proposed injection zone, the formation and the depth.

A The proposed injection zone would be from 5360 to 5681, which are the current perforations -- perforated interval.

The injection zone will be the Lower Cliff House sandstone, the Menefee formation, the Point Lookout sandstone. All three of these are members of the Mesaverde Group.

The top of the Cliff House occurs at 5120; top of the Menefee formation occurs at 5386; the top of the Point Lookout formation occurs at approximately 5550. The total thickness of the entire Mesaverde Group in this area is approximately 800 feet.

Q The depth of the proposed injection zone would then be -- what would be the top and what would be the bottom?

A Yes, sir. The perforated interval is currently open, 5360 to 5681, which would include the Lover

Cliff House, Menefee, and Point Lookout.

Q Briefly explain the lithology of the -- of the zones.

A A brief overview of the lithology would be the Cliff House formation is primarily interbedded sandstones and transgressive marine sandstones.

The Menefee formation includes interbedded sandstones, shales and thin coals deposited with a -- or in a Continental environment.

The Point Lookout formation being primarily a regressive marine sandstone interbedded with some siltstones.

Q Let me direct your attention, if I may, Mr. Murphy, to the -- what we have marked as Exhibit Number Five in front of you. Would you identify that?

A Yes, sir. This is a structure of the C marker horizon which is a marker within the Lewis Shale within the Rosa Unit.

Because of the transgressive, regressive nature of the -- of the Mesaverde Group, it's a common geologic practice within our organization to use the C marker as a marker for the structure determination for the Mesaverde Group. It -- the Lewis Shale overlies the Mesaverde Cliff House.

Q Is there any evidence of any open faults between the injection zone and either the overlying or underlying aquifers?

A No, sir. According to this structure map, other structure maps, other formations, and surface geology maps, there are no indications of open faults between the Mesaverde injection zone and any overlying or underlying aquifers and no other type of hydrologic connections are known.

Q That is, hydrologic connections between the injection zone and the aquifers, either above or below?

A That's correct, sir.

Q What are the underground aquifers in this area?

A The known aquifers overlying the proposed injection zone include the -- the San Jose, the Naciomento, the Ojo Alamo formations, the Ojo Alamo being the -- some 2700 feet above the Cliff House, which would be the immediately above the Kirtland formation, I believe.

Q Do you have the depths of those?

A Yes, sir, it's approximately 2370 feet. The Naciomento, which would be overlying the Ojo Alamo, which would be from 1520 to approximately 2370, and the San Jose, which is the surface formation from zero to 1520

feet.

Q So the deepest underground aquifer overlaying the proposed injection zone would be the Ojo Alamo, which would have a depth of approximately what?

A Yes, sir, of 2370 feet, approximately.

Q Are there any known water wells in the area of review?

A No, no known water wells exist in the area of review.

Q Are there any aquifers underlying the proposed injection zone, to your knowledge?

A To my knowledge there are no aquifers immediately underlying the injection zone.

Q Okay. Let me hand you what has been marked as Exhibit Number Six for this hearing. Would you identify that?

A Yes, sir, this is a water analysis that we've obtained from Meridian Oil on their San Juan Unit, 30-6 Unit, Well No. 58-A, which is about the closest well we could find from our proposed Rosa Unit 94 injection well that has a test of the Ojo Alamo waters.

The -- the analysis shows that in this case, that the first test shows greater than 10,000 parts per million total dissolved solids. The second page to that exhibit is a later test on the same well and that

shows 12,850 total dissolved solids.

What we're trying to do here is point out that in this area the Ojo Alamo is greater than at 10,000 parts per million definition of fresh water.

Q I think we're ready to go to this, are we not?

A Yes.

Q Let me direct your attention, then, to what has been marked as Exhibit Number Seven. Would you identify that?

A Yes, sir. Exhibit Number Seven is a simple cross section we've put together showing the adjacent Mesaverde, well, actually it's the adjacent off-setting wells to this proposed water injection -- water disposal well, Rosa Unit No. 94. The small map at the bottom indicates the cross section from the Rosa Unit 94 in the southwest quarter of Section 9 of 31 North, 5 West. It includes the Rosa Unit 65 Well, which is not completed in the Mesaverde. It is a Dakota, deeper Dakota, Basin Dakota formation producer. It was logged across the Mesaverde interval.

The cross section also includes the Rosa Unit No. 94, the subject well, and also in Section 20, the northeast quarter, Rosa Unit No. 85, which is a Mesaverde producer.

Also this is our attempt to correlate -- correlate the sands within the Mesaverde Group to -- what we've tried to show here is the quality. Also, the shaded intervals are what we consider to be net pay within each individual well, the net pay basis being 80 percent water saturation or less.

Q Are the Mesaverde wells in the area productive?

A Okay, We might refer to one of the other larger maps, either Exhibit Five or Exhibit One, either one.

Q All right.

A Basically within the half mile radius area of concern there are no other productive intervals, the 95 being deemed noncommercial.

The Rosa 45 is an immediate offset, north and southwest quarter of Section 9. It is productive. It was deemed noncommercial. The pipeline was connected to the well.

The No. 94 would be the -- a southwest offset by some 3800 feet, would be the Rosa Unit No. 85 in the northeast corner of Section 20 of 31 North, 5 West. Its deliverability is currently about 100 MCF a day.

Q In your opinion, Mr. Murphy, might the injection water help maintain that reservoir pressure and

aid in the recovery of the current reserves assigned to the producing wells?

A Yes, sir, we believe it will. Let me state this, and you can refer to Exhibit Five. We have several dry holes which I believe would show that the -- we are at the edge of a productive to nonproductive area, the Mesaverde area of this Rosa Unit.

In Section 8 is a dry hole, the No. 46, which was drilled by El Paso Natural Gas. It was swabbed 100 percent water, tested 100 percent water, in the Mesaverde.

The Rosa Unit No. 94, which is Section 9 to the north, it was also tested 100 percent -- well, swabbed -- being noncommercial in the Mesaverde.

The Rosa Unit No. 40, which would be in Section No. 11 of the same township, that was also a Mesaverde deemed 100 percent water wet.

And, of course, the Rosa Unit No. 94.

Another thing I might point out is that the pressure, shut-in pressures within the Mesaverde reservoir currently are between 1400 and 1500 psi and around the Rosa No. 94, Rosa No. 95, and they're quite a bit lower to the east and around the Rosa Unit No. 85, which I believe is somewhere like 580 psi.

Therefore, we do believe that the in-

jection of the water into the Unit No. 94, because of the favorable mobility ratio between the water and gas, we expect a bank of the injection water radiating around from the 94 to displace any gas that there is there ahead of it towards the more productive area within the Mesaverde Rosa Unit, which would be towards the west.

It also should help the -- the injection water should help maintain reservoir pressure at those producing wells, hopefully, to increase the current deliverabilities or maintain the current deliverabilities in those producing wells.

Q Mr. Murphy, have you calculated the total amount of water that could be injected into the Mesaverde within the 1/2-mile radius shown on the Exhibit Five?

A Yes. The total voidage using volumetric calculations and just dealing with the gas saturation calculated out to be approximately 3.5-million barrels before fill-up. That's again using the 1/2-mile radius, and consequently, at our proposed estimated 3000 barrels of water a day would be somewhere in the neighborhood of 3.5 years.

Q Have you discussed these plans with Amoco?

A Yes, sir. As Mr. Thompson, I believe,

pointed out, the two reservoir engineers out of Amoco's Denver office talked with me over the telephone, I believe June 2nd, June 3rd, about the concern they had with the injection into the Mesaverde. They said they hadn't had a chance to evaluate the production in the offsetting acreage.

Q During those conversations with the Amoco people in Denver, did they confirm receipt of the 1988 plan of development that was previously mentioned?

A Yes, sir. I asked one of the reservoir engineers, Jeff Elkin, who is responsible for the Mesaverde formations in this area, and he told me that he received it on the 17th of May.

Q That, so the record will be clear, that's what we have marked as Exhibit Number Two?

A Yes, sir, that's correct.

Okay, one more thing I would like to add, on the Exhibit Number Five, which is the structure map, it's plain to see that our Rosa No. 94 is down dip from the Rosa Unit No. 85, also in the offsetting acreage that's undeveloped, such as 17, Section 17, which is a textbook -- I think gravity would help us in that sense by pushing the gas up dip, which is where the producing wells are.

Also, on the cross section, I apologize

for going back and forth here, but the cross section, Exhibit Number Seven, clearly shows the difference of net pays between our proposed injection well; also, and the Rosa Unit No. 85, which would be the closest producing, current producer.

Also, in Section 17, the undeveloped acreage immediately west offsetting the No. 94, the Rosa Unit No. 65, the log clearly shows that by our calculations anyhow, that there's a very small amount of net pay; therefore probably it would be noncommercial in that area and therefore we don't feel like we would damage the reserves.

Q That take care of it?

A Yes.

MR. COOTER: We offer Exhibits One through Seven, which have been discussed by the two witnesses.

MR. CATANACH: Exhibits One through Seven will be admitted as evidence.

MR. COOTER: That concludes our direct examination of this witness.

CROSS EXAMINATION

BY MR. CATANACH:

Q About how long do you anticipate injecting into this well? You said it would take you 3-1/2

years to fill up.

A It's my understanding of corporate -- my immediate supervisors, supervisor has talked it over with me, I understand that this is an initial valuation of the Fruitland area. I believe he's satisfied with this time period, although I think it's his opinion that he would prefer not to set this in stone but if we can evaluate this area within this amount of time, I think we'll know which way we need to go from here, as far as other disposal areas or whatever we need to be done.

Q Couldn't it be possible that -- that in the 3-1/2 year period that you will inject this, that you -- you may deplete the Mesaverde around this area? Is that possible?

A By depleting I don't know --

Q Well, produce the wells to an economic limit.

A In the surrounding wells?

Q Yeah.

A The -- we project on the Rosa No. 85, it's produced somewhere in the neighborhood of 250 MM to date, and we project out over the next 20 years, approximately the same amount of recovery.

Q Okay.

A That's assuming we can deliver to our

pipeline.

The immediate offset to the north, the Rosa Unit No. 45, it's currently delivering approximately 10 to 12 MCF a day. It's produced 26 MMCF to date. We project an additional similar amount over the next 20 years, assuming we can deliver 5 MCF or less to the pipeline, which may or may not be realistic.

Our corporate -- well, another division within our corporation had determined that, although it's not a policy, current policy, they have determined just operating expenses, maintenance expenses, as far as a pipeline operation goes, somewhere in the neighborhood of 19 to 20 MCF a day is an economic limit; therefore, these additional recoveries, probably, in the case of the Rosa No. 45, already meets that criteria.

Like I said, currently they're not shutting the wells in, but that may be a possibility.

Also, on the Rosa 84 we may curtail the recovery of some of those reserves, additional reserves that we project over the next 20 years.

Q Okay, geologically it's your opinion that you won't by injection into the Rosa 94, you won't water out any gas reserves or cause any reserves to be permanently lost.

A Yes, I believe that to be the case. As

I stated, we expect to push some of those noncommercial reserves towards the producing area.

MR. STOVALL: Mr. Cooter, I'm not -- I can't say for sure, but I think I remember procedurally, and I'm not sure you offered this witness as an expert.

Just to clarify the record, if you don't mind. You -- you qualified him, I'm not sure that we have his record accepted, if you don't mind.

MR. COOTER: I would certainly tender him as an expert witness and ask that his qualifications be accepted.

MR. CATANACH: He is so qualified.

MR. STOVALL: That's it.

MR. COOTER: Thank you, Mr. Stovall.

MR. CATANACH: That's -- that's all the questions I have of the witness. He may be excused.

Is there anything else in this case?

MR. COOTER: No, sir, that concludes our case. We do thank the Commission for its courtesy in permitting us to present our case at this time.

MR. CATANACH: Case 9401 will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

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

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2404, heard by me on June 8 1984.

David R. Catanach, Examiner
Oil Conservation Division