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

19 June 1986

COMMISSION HEARING

IN THE MATTER OF:

Application of Santa Fe Exploration Company for hardship gas well classification, Eddy County, New Mexico. CASE 8865

BEFORE: Richard L. Stamets, Chairman
Ed Kelley, Commissioner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Charles E. Roybal
Attorney at Law
Energy and Minerals Dept.
525 Camino de Los Marquez
Santa Fe, New Mexico 87501

For the Applicant: Ernest L. Padilla
Attorney at Law
PADILLA & SNYDER
P. O. Box 2523
Santa Fe, New Mexico 87504

I N D E X

E X H I B I T S

MR. STAMETS: We'll call next Case 8865.

MR. ROYBAL: Case 8865. Application of Santa Fe Exploration Company for hardship gas well classification, Eddy County, New Mexico.

MR. PADILLA: Mr. Examiner, Ernest L. Padilla, Santa Fe, New Mexico, for the applicant.

I have two witnesses to be sworn.

MR. STAMETS: Any other appearances?

MR. KENDRICK: H. L. Kendrick for El Paso Natural Gas Company.

MR. STAMETS: I'll ask all those who'll be witnesses to be sworn, please.

(Witnesses sworn.)

MR. PADILLA: Call Bill McCoy.

WILLIAM G. McCOY,

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

DIRECT EXAMINATION

BY MR. PADILLA:

Q Mr. McCoy, for the record would you please state your name and ask you where you reside.

A William G. McCoy and I reside in Santa Fe, New Mexico, and practice as a consulting engineer and geologist.

Q Are you -- what is your connection with the applicant today?

A I am a consultant for Santa Fe Exploration Company and supervised the drilling and completion of the well in question.

Q And which is the well in question today?

A Huh?

Q Which is the well in question today?

A The Santa Fe Exploration Company No. 1 Exxon Com in Section 2 of 20 South, 25 East.

Q Mr. McCoy, were you the witness in the previous case before the Division?

A I was.

Q Have you previously testified in other matters before the Oil Conservation Division and had your credentials accepted as a matter of record?

A I have.

MR. PADILLA: Mr. Chairman, we tender Mr. McCoy as an expert witness.

MR. STAMETS: He is considered qualified.

Q Mr. McCoy, would you briefly state what the purpose of the hearing is today?

A The purpose is to obtain a hardship gas well classification for the purpose of continuing production on the well and conserving the potential reserves that we have calculated on the well.

Q Okay. Let me start off with -- and hand you Exhibit Number One and have you identify that for the Commission.

A Exhibit One is a land plat showing in red the proration unit of Santa Fe Exploration Company's No. 1 Exxon Com.

In blue are the offsetting proration units. All five wells are Morrow producers.

The Santa Fe well in Section 2 and the three wells in Section 3 and the north half of 10 are connected to the same lateral of El Paso Natural Gas.

Q El Paso Natural Gas is the pipeline purchaser of this well?

A That's right.

Q Let me hand you Exhibit Number Two and

have you explain and identify that.

A Exhibit Number Two is a series of flow tests that were performed on the well to establish a minimum flow. The series indicated that an approximate rate of about 45 MCF per day was a minimum flow rate that would maintain removal of the water.

We also, on Tests 6 and 7 opened it up on a 2-inch flow to see what the potential would be in the event we were able to install a compressor to put the gas into El Paso's line, which has a pressure of 500 pounds at present.

All other tests were bucking the 500 pound pressure test.

Q Do you have a compressor on the well now?

A We do not.

Q Would it be economical to install a compressor on the well?

A Not at the present rate and the present market conditions and a month to month contract that we have. It would not be economical.

Q What conclusion do you draw from the log-off test that's shown on Exhibit Two?

A That if we're allowed to maintain current production at approximately 45 MCF, we can maintain wellbore clearance and await market conditions that might improve

that might allow us to spend additional sums of money on the well to improve production and recover more reserves.

Q All right, does Exhibit Two show or indicate that you have water content problems in the well?

A Only if we reduce the pressure on the well, say, 6 and 7, where we reduce the pressure, we did start accumulating more water production.

But if we maintain the current rate of 45 MCF per day we can maintain removal of the water.

Q In connection with the Morrow formation, what effect does water have on the formation if the formation is shut-in for continued periods of time?

A If water is not removed from the Morrow formation, once it's established and the wellbore is cleared up, if we shut in the well and water does accumulate, it has a tendency to swell the clay and minerals in the formation and the absorption rate is undetermined, to my knowledge, but we do know over a period of time that those clays will swell and eventually reduce the permeability and reduce the potential for recovering ultimate reserves.

Q Can a well like the Exxon State Com No. 1 overcome the swelling that would occur in the formation should the well be shut in?

A That's a decision I don't believe that I could make at this point, but we do know the well has con-

tinued to flow since completion without problem and what water has been produced has been removed and has not allowed accumulation in the formation.

So I would say that if it's shut-in, I don't believe you could forecast what damage might occur, but we do know it will occur to some degree.

Q You mentioned the natural gas market. Would the current natural gas market situation impact a decision as to whether or not continued production of the well would continue?

A I think this. I think that the well at present, Santa Fe Exploration's intentions are to continue to produce the well and await improvement in the market before commiting any further expenditures to improve the production.

Q Okay. Let's go on to what we have marked as Exhibit Number Three and have you tell the Commission what that is.

A Exhibit Three is an AFE that I prepared for Santa Fe Exploration. If, referring back to Exhibit Two, you can see the indication of casing pressure. This well has a packer set and based on the analysis of the rate, we see a casing pressure of about 600 pounds. This would indicate that the packer is not set and has a leak and Santa Fe asked that I prepare an AFE to see what it would cost to

reset the packer, and that's Exhibit Three; about $7,340. The decision at the time that this was presented is that, again, the economics of the well are such that we cannot justify that expenditure at this time.

Q Does the packer leak create waste or otherwise affect or impair formations in the wellbore?

A In this case it's my opinion it is not significant.

Q In your opinion should the packer leak be fixed?

A In the right economic conditions I would repair it, yes.

Q You have made that recommendation to Santa Fe Exploration?

A Yes.

Q Let's move on to what we have marked -- let me hand you Exhibit Number Four and have you identify that.

A Exhibit Number Four is a summary of the data used in preparing a volumetric analysis of the reserves for the No. 1 Exxon Com.

It shows that the recoverable reserves volumetrically are 1-billion 069 -- .069 MMCF. 1.069 MMCF. 1 BCF, BCF. 1.069 BCF.

That's using a recovery factor of 83 per-

cent.

Q Mr. McCoy, what is the significance of this exhibit? Does it show that these are the reserves that would not be recovered if the well is prematurely abandoned?

A Well, no, volumetric reserves are strictly for the purpose of estimating what the potential reserves are under a location based on the reservoir conditions that are summarized above.

It does not mean that you will recover that amount of reserves. It means that those are potentially recoverable reserves if the well performs properly.

Q At 40 MCF would you expect to recover these amount of reserves as shown on Exhibit Four?

A No, I think we have to refer to the next exhibit to see the different in what we're looking at on recoverable reserves due to well performance.

Q Let's go on to Exhibit Number Five, then, and have you identify what that is.

A Exhibit Five a P/z plot based on four data points accumulated so far.

The solid line is the actual line -- is a line connecting the actual points.

The leftmost line on the cumulative recovery, that would be B at the bottom just to the right of the 100, is the linear regression extension of those four data points.

And it would indicate that the recoverable reserves would be approximately 122,669 MCF.

Now there again we're dealing with a short data analysis and the significance would be determined on further data points and Line A is a linear regression extension of the last three data points, which show if we continue to produce at the last three years rate, we could accumulate probably 360,000 MCF.

Now, both of those figures that I have cited are below the original gas in place estimate and the explanation of that is that evidently the well is not draining the full 320-acre lease, which your volumetric reserves are based on your spacing. It would indicate that we have a limited drainage area at the present.

Q Let me ask you how this conclusion pertains to the water content in the well. Would the water content materially affect the reservoir or greater affect the reservoir given this type of situation?

A No, I don't believe that the reservoir performance indicated on the P/z plot has any relationship to the water content. I think it just shows that the well is not performing in a volumetric manner; that it's performing under a limited drainage radius --

Q Would you --

A -- and at the present time.

Q Given the water, would you reduce the drainage radius of the well should the formation swell?

A Well, if you had swelling of the clays, you reduce further your -- or you'd reduce the -- yes, it would probably reduce the drainage area, but I think the significance is that the well needs restimulation or retreatment to increase the drainage area. We may have had plugging already that has reduced the drainage area from the original completion.

The sharp drop-off on the first two points would indicate there has been a transition in the drainage area.

Q This -- doesn't this basically show that this is not a very good well?

A Essentially that's the picture.

Q Let's move on to Exhibit Number Six and have you tell the Commission and identify that as to what that is.

A Exhibit Six is a summary obtained from Santa Fe Exploration Company of the working interest revenue, expense, and net income for the period 7-85 through 1-86. It shows an estimated average net income of $1838 a month, which is submarginal in income for a well of this depth.

Q Mr. McCoy, are you aware of -- do you

have an update on these figures since January of 1986?

A I do not.

Q This was the same exhibit that you prepared in connection with the hearing before the Division, is that --

A Correct.

Q Do you have anything further to add concerning Exhibit Number Six?

A I don't believe so.

Q In your opinion would -- well, let me ask, in connection with Exhibit Number Six, do those figures reflect stripper prices with regard to this well?

A The qualification for a stripper price has been met by this well but their contract with El Paso does not allow stripper price; therefore they have no salvage value on stripper price, increased income due to stripper because of contract.

The well qualified for stripper price.

Q Has it ever been -- has an application for stripper price ever been made?

A No, it has not, because the contract prohibited payment of stripper price.

Q Therefore these figures do not reflect any stripper prices --

A No, market --

Q -- under the Natural Gas Policy Act.

A -- market conditions, market prices.

Q Mr. McCoy, in your opinion would approval of this application be in the best interest of prevention of waste?

A It would because of the potential reserves, volumetric, that could be under the location given the right market conditions to stimulate further production. I think it would allow us to recover more reserves in the future.

Q Given today's market condition would approval of the application prevent waste?

A It would, because if the well is shut in we can't forecast potential damage and we can see the marginal condition of the well. There would have to be significant improvement in the market to justify re-entering the well and re-establishing production.

Q Mr. McCoy, do you have anything further to add to your testimony?

A No, I do not.

MR. PADILLA: Mr. Chairman, we offer Exhibits One through Six and we pass the witness.

MR. STAMETS: These exhibits will be admitted.

Are there questions of the wit-

ness?

QUESTIONS BY MR. LYON:

Q Mr. McCoy, Vic Lyon, Chief Engineer for the Division.

When was this well completed?

A In 1983, I -- I've probably got the form here. Yeah, I've got the 104. The date ready for completion, 4-13-85 -- no, that's not -- I would say, yeah, here it is, I knew I had it here someplace. 2-21-83.

Q Okay. Let's talk about Exhibit Two, Mr. McCoy.

These twelve test periods that you represent on there, were those conducted successively in a continuous manner or are these taken?

A Yes. Bennett-Cathey started with Test 1 and sequentially performed the other ones without stopping.

Q Right. So this, from the beginning of Test 1 to the completion of Test 12, this is a complete record of choke settings.

A We have the supporting data if you require it, the charts, and so forth.

Q Okay. You mentioned requiring the well to be unloaded. Your next to the last column on the -- your second column to the right --

A Liquid.

Q -- liquid, now in Test 4 you show 1.3-D, which I presume is distillate, or does that have some other significance?

A That's just a -- I don't know the significance of the D. I'm trying to remember back when they wrote that, but 1.3 barrels of water at that point.

Q And all of the liquid that you show in that column is water.

A Barrels of water, right.

Q And the only -- well, you show water production, liquid production, on Tests 4, 6, 7, and 8.

A Right.

Q And there is a considerable amount of liquids produced in Tests 6 and 7.

A Yeah, that was on the open 2-inch, atmosphere.

Q Do you think that the well was producing water at these other rates and it just wasn't being carried to the surface, or --

A No, the, like I say, we have the charts and they made actual measurements before and after (not clearly understood) the tanks, so if there were any production at all, it would have been -- shown up on their reports.

Q Does the water come from the completion interval, do you think, or might it be coming from -- from up the hole?

A No, the integrity of the casing is no problem. Formation -- Morrow typically will lower the porosity and permeability of the formation, which in this case, we have, typically has water production.

Generally the water saturation runs from 37 to 45 percent, so you're going to have water production in most Morrow wells at some degree and the tighter the well, the more water you will produce.

Q Could you explain to me why you feel that you need a hardship allowable because of the water production?

A I don't think that if we were talking about water production only that a hardship and water production are related. In this instance what we're trying to say is we've got a well that has a potential of, say, 1 BCF recovery. Right now, the reduced rate, it looks like we're going to make maybe 120 MCF, 1000 MCF, and if we're shut in and the water accumulates in the formation, it's moving, suddenly comes to a stop, and drops and the clays absorb this water, reduce the permeability, then, say, if we ever reach a point, if we don't lose the lease, for instance, that we come back in after six months or a year of shut-in,

the potential for re-establishing production would be marginal.

Q You don't have anything in here that would indicate that -- that actually has happened --

A No, we didn't --

Q -- and the well has been damaged by water.

A No, we -- we're strictly going on the basis of conservation of reserves.

Q Okay. Let's talk about Exhibit Five.

A Yeah, okay.

Q The -- on your solid line --

A Yeah.

Q -- you have brought that down from a pressure of about 3350 or 60 --

A About 1600.

Q Was that a measured pressure in that well?

A That's calculated from your shut-in tubing pressure requirement, shut-in tubing pressure. That's a calculated bottom hole.

Q And then your dashed line is -- starts out at about 2950.

A Well, that line B is the one you're talking about?

Q Right. Is there some significance to why you start those two lines differently?

A Yeah, because generally when you run a linear regression curve you get the data point and you use that as your data points to extend the line. In other words, we have to make a regression between those four points, so we can't start at the initial point and bring it down because it wouldn't fit the linear regression line.

Q So your dashed line is an extrapolation back to zero production.

A Right. That's just how linear regression would move. Each point in a linear regression you move points to that line, and so forth, like that, and that's how you come up with your linear regression line.

Q Right. Referring to Exhibit Six, the -- your working interest revenue column.

A Exhibit Six?

Q Right.

A This is a working interest income schedule.

Q Right.

A All right.

Q Is this a function of reduced production or reduced price or a combination?

A Well, the working interest revenue would

be an indication of a market price of gas paid during that month, and it would be the net revenue interest after all the royalty was taken out.

Q Yeah, but you've shown a decline from July '85 of 4000, roughly, and then in January '86 it goes down to 731.

A Oh, I see what you mean, a decline in production. I think -- I think it's a combination of takes on the well and actual production. There's no consistent rate of take on that well.

I think the average production, for instance, during the first four reported months we have of production in '85 would vary from 298 MCF per month up to 1553, back down to 884, so it's a fluctuating demand that causes that different in price.

Q Do you have your production for the month of January?

A Okay, I'll give you those. January '85, 298. February, 1553.

Q Well, could you just give me the ones for the months that are shown here?

A Oh, let's see, in '85, August of '85, 1340; then I'll just go down, 9-27, 1147; 1001, 881. And then we have January's there of 298.

Q Okay, thank you. I believe that's all I have.

CROSS EXAMINATION

BY MR. STAMETS:

Q Mr. McCoy, looking at Exhibit Number Five, I believe you indicated in your response to one of Mr. Lyon's questions that the well had indeed been shut-in. It would appear as though it was shut-in in '83 and '84 and '85 for a pressure test.

A Yes.

Q Was there any problem getting that well back on after those tests?

A Not to my knowledge. I was not supervising the well at that time. I think that question might be asked of the next witness that was supervising the operations.

Q Okay. Looking at your Exhibit Number Five could you say that there was or was not any problem resulting from those shut-in tests?

A I don't believe if there were that it would be reflected in this exhibit.

Q You don't have any knowledge of what took place after those shut-in tests or if conditions are the same or different now than they were then?

A Well, I do know that the production history of the well is erratic and -- but whether you could say

that is due to shutting it in for bottom hole pressure, I mean for tubing pressure reading, I don't know that.

The well has never produced at a reasonable decline rate and we can see that on the Exhibit Five in that the sharp dropoff between the first two points, then the slackening of that dropoff in the last three points, so there has been a change in the well operating conditions.

Q Okay.

MR. STAMETS: Any other questions of this witness?

He may be excused.

MR. PADILLA: Mr. Chairman, I'd like to call Steve Simmons.

STEVE L. SIMMONS,

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

DIRECT EXAMINATION

BY MR. PADILLA:

Q Mr. Simmons, for the record will you please state your full name and where you reside?

A My name is Steven L. Simmons, and I live in Roswell, New Mexico.

Q What is your position with the applicant

in this case?

A We have a very small company. I am actually the treasurer but I do perform other duties, also.

Q Do your duties involve making decisions concerning production and decisions on whether a well is going to be shut or abandoned, or that sort of decision?

A Yes, in partial. The president of the company usually makes the final decision but I usually present the facts that I am responsible for watching the economics of each well.

Q Are you familiar with the economics of this particular well?

A Yes, I am.

MR. PADILLA: Mr. Examiner, we tender Mr. Simmons as -- not as an expert but as -- we offer him as qualified to testify concerning the economics of this well.

MR. STAMETS: We will qualify him in that respect.

Q Mr. Simmons, in the last month have you received a notice from your pipeline purchaser and in particular have you received a notice dated May 29th, 1986, concerning a notice to sellers which may affect this well?

A Yes, we did. We received a notice from El Paso Natural Gas dated May 29th, which has been termed a

force majeure letter.

Q What is the price that is going to be offered under that letter by El Paso Natural Gas for gas from this particular well?

A Well, I'm not sure. If -- if we do not have a hardship classification I'm not sure we would receive any price because I don't believe we would sell any gas under the contract, or under this new May 29 letter, because they're only going to take gas which they define as non-swing gas, which is from a number of categories, one of which is hardship gas wells.

So if we are classified as a hardship gas well we would receive $1.50 per MCF; otherwise I don't believe we would sell any gas.

Q Would that result in a -- what kind of a decision would you make if you could not sell gas from this well?

A Well, we would probably plug the well.

Q Are you considering plugging and abandoning the well anyway?

A Not under present conditions. We're still making enough money out of the operations to apply to the original cost of the well; to amortize that down and hope one day to recover all the money that we paid drilling it and completing it.

Q Have -- does that mean you have not paid out the well?

A No, it is not paid out.

Q At the current rate when do you estimate payout would occur?

A At the present rate?

Q Yes.

A About the year 2000.

Q In other words, you don't want to plug and abandon this well if you don't have to.

A No, we don't. We're a very small company. We operate eleven wells. This is the only gas well that we operate and we don't want to plug it. It provides some revenue to us to get back our costs and we would hope to continue to operate it.

Q Mr. Simmons, do you have anything further to add to your testimony?

A No, sir.

MR. PADILLA: Mr. Chairman, we tender the witness for cross examination.

MR. STAMETS: Any questions of the witness?

CROSS EXAMINATION

BY MR. STAMETS:

Q Mr. Simmons, what -- why would you plug the well under these conditions if you didn't get a hardship classification rather than letting it be shut in for some period of time with the prospect of a future market?

A Well, for economic purposes we would probably do that; wait until we knew for sure that we couldn't produce the well, but it is our understanding from the experts, quote experts, in the oil business that this Morrow formation is very water sensitive and this well is, as has been pointed out, less than a mediocre well, even.

We have seen over the past twelve months that we are producing a lot more water as the months go along because of the higher tubing pressure.

We're treating the well with putting soap down in the well to try to get that water out as much as we can, but the more pressure there is on that well the more water accumulates down in there, the more water we produce, and we produce about one load of water per month, which is about 180 barrels of water per month from this well, give or take, say, 150 to 180 barrels of water per month, and very little oil.

Since we -- since we completed the well in March of 1983 we have sold one load of oil to Navajo and

we just did that about three months ago, so in three years we've produced one load of oil, or 150 barrels of oil, approximately 150 barrels of oil, it was a little less. It wasn't quite a full load. We talked them into taking it so we could get a little more money.

MR. STAMETS: Are there any other questions of this witness?

He may be excused.

Mr. Padilla, do you have anything further?

MR. PADILLA: Nothing further, Mr. Chairman.

MR. STAMETS: Mr. Kendrick?

MR. H. L. KENDRICK: H. L. Kendrick with El Paso Natural Gas.

El Paso Natural Gas Company neither concurs with nor objects to this application.

El Paso recognizes that some wells should be definitely be recognized as hardship wells. El Paso believes it must express to the New Mexico Oil Conservation Commission that any time a well is declared a hardship well, if any extra volume of gas is taken from this well must be subtracted from the total production from all other wells on our system.

This increases the noncontrol-

lable gas taken into our system thereby reducing our flexibility of pipeline operations to take ratably.

MR. STAMETS: Does anyone else have anything they wish to say?

Mr. Kelley, in the Examiner Order Finding No. 3 says that the evidence presented by the applicant was insufficient or inconclusive to show that formation damage, waste, or other harm has or would occur if the well were not granted a hardship classification, and having worked in the Artesia District Office for a number of years, I'm well aware that there have been a lot of problems with the Morrow formation with water and I have seen other cases come up here where it has clearly been demonstrated that water has caused a problem in a well, but I think I've got to agree with the Examiner that we just don't have -- it was not presented as to this well today.

DR. KELLEY: I agree with you. I didn't hear any evidence saying they had been damaged (not clearly audible).

MR. STAMETS: And there is a history of the well having been shut in from time to time and none of that data was presented to day to show what happened at the time or after that time and we have just very limited water information.

It would be my recommendation,

then, that we simply affirm the Examiner Order which denied the application.

DR. KELLEY: I think I agree.

MR. PADILLA: Mr. Chairman, if I may respond to that, I believe we have presented expert testimony concerning the potential damage, while it may not have occurred in the past. You -- your statement here is additional evidence that indeed the Morrow formation could be damaged by water. The fact -- the regulation concerning hardship classification does not require a past damage due to water content. We are hypothesizing that should the well be shut-in that a hardship classification can appropriately be made.

We do not -- at the first hearing we presented testimony which may have been a little confusing as to the economics concerning the well and I would concede that maybe we presented too much testimony concerning economics, but the problem here is not so much what may occur or the problem here is exactly what may occur with the well. The fact that it's a known fact that the Morrow formation will have some damage is an indication enough that this well will probably not recover in the future should it be shut in for a long period of time.

We have deliberately today also not talked about adjoining wells and concerning correlative

rights from this particular well, and neither do we want to get involved in trying to figure out whether the pipeline purchaser which is also hooked up to this particular well and has taken gas from the adjoining wells has shut in or has given any indication of whether it's going to take gas from the adjoining wells.

We believe that as far as the hardship classification itself is concerned that we do not -- it may be immaterial as to whether or not the pipeline purchaser, El Paso, is going to take from -- from the other wells.

The fact of the matter is that we don't believe that it's an element of the case to show that damage will occur or has occurred, I should say has occurred in this well after shut-in periods.

So with that I would -- I would ask you to reconsider your decision as to whether or not a hardship application ought to be given in this case.

The fact that it has not occurred, again that should be immaterial, and certainly from the standpoint of expert testimony I think we have met the burden to indicate that at least as to Mr. McCoy's knowledge of the Morrow formation and the Morrow formation in this case, that damage may occur and it certainly could occur in this well and the hardship should be granted.

MR. STAMETS: Mr. Lyon, do you have an opinion?

MR. LYON: I have seen nothing presented here which indicates that there is an indication that waste will occur if this well is not given a hardship classification, and it isn't that I don't have sympathy for the operator. I have sympathy for this operator and all the operators in the State of New Mexico, who certainly might sell more gas and get more money for their gas but if we -- if we ask -- if we grant a hardship application for everybody who's hurting, then the market available to those wells, I think, is going to be below what their expectations are, and we must be very selective in granting hardship applications to make sure that -- that we don't have, we're not just absolutely flooded with such applications, and frankly, I'm not convinced that we need one here.

MR. STAMETS: And I would point out, too, that the rules that the Division operates under, the Commission operates under, were developed by a committee representing both the Oil Conservation Division and the industry and I believe that the record of the development of those rules will show that it was the intent of those members of the committee that the operator of this type of well bear a substantial burden of proof and it's my opinion that that burden has not been borne in this case.

DR. KELLEY: I agree with you.

MR. STAMETS: And we'll then affirm the Examiner's Order and express our sympathy. We have that.

I'm afraid we have to affirm the Examiner's Order in this case.

Case 8865 is concluded.

(Hearing concluded.)

C E R T I F I C A T E

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

Sally W. Boyd CSR

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

2 April 1986

DIVISION HEARING

IN THE MATTER OF:

Application of Santa Fe Exploration Company for hardship gas well classification, Eddy County, New Mexico.	CASE 8865

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division: Jeff Taylor
Attorney at Law
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant: Ernest L. Padilla
Attorney at Law
PADILLA & SNYDER
P. O. Box 2523
Santa Fe, New Mexico 87504

A P P E A R A N C E S

For Nearburg Producing Co.: William F. Carr
Attorney at Law
CAMPBELL & BLACK P. A.
P. O. Box 2208
Santa Fe, New Mexico 87501

I N D E X

E X H I B I T S

MR. TAYLOR: Application of Santa Fe Exploration Company for hardship gas well classification, Eddy County, New Mexico.

MR. STOGNER: Call for appearances.

MR. PADILLA: Mr. Examiner, Ernest L. Padilla, Santa Fe, New Mexico, for the applicant.

I have one witness to be sworn.

MR. CARR: May it please the Examiner, my name is William F. Carr with the law firm Campbell & Black, P. A., appearing on behalf of Nearburg Producing Company.

I do not intend to call a witness.

MR. STOGNER: Are there any other appearances?

MR. BURCHELL: Mr. Examiner, my name is Paul W. Burchell. I'd like to make an appearance for El Paso Natural Gas Company.

MR. STOGNER: What is your function, Mr. Burchell, with --

MR. BURCHELL: El Paso Natural Gas Company is the purchaser of gas in this particular well that the applicant is seeking a hardship status.

MR. STOGNER: And what is your affiliation?

MR. BURCHELL: I'm a petroleum engineer in the Conservation Department of the company.

MR. STOGNER: Thank you, sir.

Are there any other appearances?

If not, will the witness stand and be sworn?

(Witness sworn.)

WILLIAM G. McCOY,

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

DIRECT EXAMINATION

BY MR. PADILLA:

Q Mr. McCoy, for the record would you please state your name and what your connection is with the applicant, Santa Fe Energy Company? Or Santa Fe Corporation -- Santa Fe Exploration, I'm sorry.

A William G. McCoy. I'm a consulting engineer and geologist employed by Santa Fe to present their case.

Q Mr. McCoy, have you previously testified before the Oil Conservation Division and had your credentials accepted as a matter of record?

A I have.

Q As a petroleum engineer?

A I have.

Q And as a geologist?

A I have.

Q Are you familiar with, and have you prepared certain exhibits for introduction in today's hearing concerning this hardship application?

A I have.

MR. PADILLA: Mr. Examiner, we tender Mr. McCoy as an expert in this case.

MR. STOGNER: Are there any objections?

There appear there is not. Mr. McCoy is so qualified.

Q Mr. McCoy, would you please refer to what we have marked as Exhibit Number One and have you explain that and its contents to the hearing examiner, please.

A Exhibit Number One is an area plat showing in red the Santa Fe Exploration proration unit and offsetting Morrow proration units.

Beginning in Section 35, 19, 25, Unit M,

we have the Nearburg No. 1 Gulf, which was completed in May, 1984, for 788 mcf. It has an accumulative of 24,794 mcf. January, 1986 production for 31 days amounted to 1,787 mcf for an average of 57 mcf per day.

Unit L of 2, the applicant's well, was completed in Februar, 1983, for an initial potential of 2,375 mcf. It has an accumulative, and all these accumulative figures are of -- as of 12-1-85 -- it has an accumulative of 86,286 mcf. January's production amounted to an average of 9.6 mcf per day.

Going to Section 3, Unit G, is the Nearburg No. 2 Huber, also completed from the Morrow in April, 1983, for an initial potential of 550 mcf per day. The cumulative is 430,868 mcf. January '86 production averaged 411 mcf per day.

Unit J is the Nearburg No. 1 Huber, completed in July of 1982 for 2,100,000 mcf per day. It has an accumulative of 2,474,469 mcf, approximately 2-1/2 mcf. January's production for 31 days averaged 3,212 mcf per day.

And the last well, Unit B of Section 10 is the Nearburg and Ingram No. -- Nearburg, rather, Anderson Federal completed in October, 1985, for 1,656 mcf per day; has an accumulative of 77,839 mcf. January's production for 31 days averaged 2564 mcf per day.

The pipeline connecting these wells, with

the exception of M in 35, is El Paso Natural Gas.

Q Does that include the Exxon State No. 1?

A Yes, it does.

Q Okay. Why? Have you received some notification concerning possible curtailment of the Exxon No. 1 Well?

A We have the original contract was terminated January 31st, 1986, and we were notified we're on a sixty day, thirty day, month-to-month renewal at 220 per mcf.

Q Do you know whether that applies to the wells in Section 3 and 10?

A I do not.

Q Why do you mention the cumulative production concerning the wells in Section -- Sections 3 and 10?

A For the purpose of showing the qualify of production, the Santa Fe well probably being the most marginal well in the area.

Q Do you have anything further concerning Exhibit Number One?

A No.

Q Let's move on now to what we have marked as Exhibit Number Two and have you tell us what that is and what it contains.

A Exhibit Two is a test performed to

determine what the potentials for logoff would be on the well, and in summation, the columns are self-explanatory, but we see when we open it up to atmosphere we pick up about 23-1/2 barrels of fluid in eight hours.

Based on a continuation it appears that with a tubing pressure of approximately 500 pounds we should flow around 40 to 45 mcf per day with a minimum amount of fluid.

Q Does that exhibit show as far as pressure data certain incongruity with respect to the casing pressure and the tubing pressure?

A The appearance of the casing pressure with a packer in the hole is an indication of a packer leak.

Q How does that affect the validity of the test?

A I don't feel that it would affect the test at all. It's just that -- it just shows that once the gas accumulated in the backside it's going to stay there. It's not going to go any place.

Q Does it affect or impair the well's ability to produce in any manner?

A No, it doesn't.

Q Does it cause waste as far as having a packer leak?

A No.

Q Does it impair anyone's correlative rights?

A No.

Q Let's move on to what we have marked as Exhibit Number Three and have you tell us what that is.

A Exhibit Three is an AFE that I prepared for Santa Fe to inform them of approximate cost to repair a packer leak.

Q Why is it necessary to repair the packer leak?

A Well, it's just that that's normal for operation where you have a packer. It should be set and not leak.

Q Does this AFE affect the economics of the well?

A It does because, as we'll see later in an exhibit, the income from the well is at a marginal level now and any expenditure is a burden on the operator.

Q Let me go back and ask you what your connection has been with this well from -- well, what has your connection been with this well throughout its existence?

A Well, I had drilled and completed the well for Santa Fe Exploration.

Q And you advised them and consulted them concerning this well --

A Yes, sir.

Q -- since that time.

A I have.

Q And in that connection you prepared this -- or prepared this AFE.

A Yes, sir.

Q Okay. Do you have anything further with respect to Exhibit Number Three?

A No, I do not.

Q Okay, let's go on to Exhibit Number Four and have you tell the examiner that is.

A Exhibit Four is a volumetric calculation of the original gas in place and the recoverable gas based on electric log analysis and gas analysis.

It shows the estimated volumetric original gas in place of 1.279 bcf and a recoverable gas with a recovery factor of 83 percent of 1.069 bcf.

Q Does that still -- at what time was this calculation made?

A This is based on original conditions, original bottom hole pressure.

Q Is it your opinion that the story on the well has changed since that time?

A It has. We'll see that on the next exhibit.

Q Okay, let's go on to that and have you tell us what that is.

A Exhibit Five is a P/z plot based on the actual performance of the well using the shut-in tubing pressure test required and from that calculating the bottom hole pressure, the z factor, and plotting that on a P/z curve.

The solid line connecting the points are actual data. The dashed lines, the nearest to the origin unit curve for straight line B is a linear regression least squares analysis, regression plot of the actual data and using that you come up with approximately 100,000 -- 100 and -- 150,000 cumulative gas recovery -- well, that should be actual oil in place.

Assuming that a potential might be that the last three points are more reflective of actual performance, you could use a straight line on curve -- I mean on straight line A and come up with approximately 360,000 mcf, both of those figures being considerably reduced from the actual volumetric figures. That would indicate to me that it's performing under a limited drainage area at the present time.

Q Is that a limited reservoir, in other words?

A Yes.

Q In comparing Exhibits Four and Five your conclusion is then that the original calculation and the current picture is not the same.

A It's not what?

Q It's not the same.

A Yeah, right, it shows that the actual performance of the well is below the original estimate of gas in place, and probably due to a limited reservoir.

Q Let's go on to Exhibit Number Six and have you tell us what that is.

A Exhibit Six is a data sheet prepared from data furnished by Santa Fe regarding the last seven months working interest revenue income from gas sold, the expenses and the net income.

In summation it shows the average seven month income would be $1838 per month, which is below an economic level, in my opinion.

Q What is the average daily production in mcf? Have you an idea of what that is? Roughly?

A On an average it's, I think -- I think we're working on a 40 mcf per day basis, without going back and actually calculating it.

Q Is there any chance that this kind of production is going to increase?

A It's a hard questions to answer but at

this time under the present operating conditions, without added expense, I don't feel that the production will increase without remedial action on the well.

Q Does Santa Fe Exploration intend or propose any remedial action on this well, to your knowledge?

A Under present economic conditions, no.

Q In other words, you simply wish to fix the packer leak and continue producing the well at approximately mcf a day.

A Right.

Q Do you have anything further concerning Exhibit Number Six?

A Well, based on the figures that we see here, Santa Fe Exploration Company is advised that, I think in the following exhibit, the well cost and the estimate at approximately half of the well cost has been recovered to date.

If were to apply the average seven months income to the remaining balance of $497,290, it would take approximately 22 years to pay the well out.

Q Are you saying that you're simply on a salvage operation at this point concerning this well?

A Yes.

Q Let me ask you, sir, is this well currently qualified as a Section 108 stripper well, NGPA Sec-

tion 108?

A Productionwise it qualifies, but contractwise (sic) it's prohibited from payment of that, so they have no enhanced value to -- to the stripper classification.

Q Does Santa Fe Energy -- or Santa Fe Exploration propose to install a compressor on this well?

A At the present economic conditions, no.

Q Let me see if I can summarize your testimony.

It's your testimony that based upon Exhibit Number Two, if the well is shut in for some time you're going to have some kind of water encroachment, is that correct?

A Possibly have some water -- well, a lack of water movement, which would mean the water would stay in the formation and probably be absorbed by the clay, minerals.

Q What -- what does that do to a gas well?

A Well, that will cause swelling of the clays and reduction of the permeability.

Q Okay. Let me ask you concerning the adjoining wells, would those wells have a tendency to be -- or have their ability to produce impaired should they be shut in also?

A Well, I don't know that I could answer that but I do know that it would seem that 40 mcf per day should not be critical to the pipeline or the trunkline that comes up for these four wells, but the capacity of the other three wells are such that they could absorb the 40 mcf loss.

Q You have, basically, a drastic economic situation with regard to this well, is that --

A That's true.

Q -- your testimony?

A Right.

Q First of all, you have to fix the packer leak, correct?

A Correct.

Q And you're not going to do any additional remedial work in order to continue producing the well.

A Correct.

Q Do you have anything further to add to your -- well, let me ask this. Is this -- would approval of this application be to the best interest of conservation of natural gas that could be produced from this well?

A In my opinion it is because of the unaccounted for potential of one bcf of reserves that we might be able to produce due to enhanced methods later on in improved economic conditions, a re-treatment of the well. I think those reserves would be at risk.

Santa Fe has advised that they're seriously considering plugging the well if forced to shut-down for any length of time.

Q Do you have anything further to add to your testimony?

A I do not.

MR. PADILLA: Mr. Examiner, we tender -- move the introduction of Exhibits One through Seven.

MR. STOGNER: Any objections? Exhibits One through Seven will be admitted in evidence.

Mr. Carr, your witness.

MR. CARR: I have no questions.

MR. STOGNER: Thank you, Mr. Carr.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. McCoy.

A Yes, sir.

Q This well is producing presently from he Cemetery Morrow?

A Affirmative.

Q At what depth?

A 90 -- mid-perforation depth is 9450.

Q And what size of tubing pressure in the hole?

A Average 500 pounds tubing pressure against the line pressure at the time we ran our test of approxiamtely 520 pounds.

Q And what size of tubing is in the hole?

A 2-3/8ths.

Q Has Santa Fe explored the possibility of running a smaller string of tubing?

A We have looked at that but there again, any of that expense is just something that they just back off of any time you recommend that they consider any alternatives, compressor, or something. $1800 a month is not adequate to support any remedial action at this time.

Q Okay. Now you said that this well was closed down for a certain length of time, or some length of time, that water encroachment could possibly occur harming the production, is that right?

A Possibly, yes, sir.

Q Okay, where would that water come from?

A From the formation. The water saturation in that area is 37 percent, and the water is indigenous to the Morrow formation, and we're dealing in our particular instance with a very low permeability as opposed to the wells to the west.

Q Okay.

A The capacity of the wells, Huber, I mean Nearburg wells are exceptional, really.

Q Well, where is that water already, in the Morrow formation?

A It is, yes, sir.

Q Is it in certain stringers in the Morrow or --

A I would -- we have in this well probably one, two, three, four zones open, and the water saturation within those zones will vary, but we tested those zones halfway. We acidized and swabbed the lower zones; we acidized and swabbed the upper zones, and we had water in both cases, but to delineate any particular zone as being water only, I don't think that's true. I think it's gas with water.

Q Okay. If for some reasons some marvelous miracle happened where you were gettng $5.00 to $7.00 an mcf, would it be economically feasible then to consider a smaller tubing, (not clearly understood) on the well?

A Well, in my opinion, number one, I don't think smaller tubing -- mathematically it looks like it's a good idea. I think in cases where you run into marginal wells, I would think that gas lift would be a better proposition. Pumping the well were another one if the water vol-

ume increases significantly.

But I think it in this particular instance what I would consider first in my advice to Santa Fe would be, if the economic conditions are such, I'd go in and recommend refracturing the well.

Number one, when we originally completed the well and began our frac job on the Morrow, approximately half the volume pumped into the formation, we -- our pop off broke and evidently had a split collar, so we lost our original fract treatment of the well, and in going back in the hole and testing the tubing we found subsequently eleven collar leaks in the tubing.

So we did have a problem in replacing that tubing and going back and refracing again.

And so I think, essentially, when you start a frac job and all of a sudden have something like that interrupt it, I think you lose the potential value of the frac job and based on my opinion, like I say, I would recommend that they re-treat the well.

I did calculate the minimum flow on that tubing and it would take about 233 mcf minimum flow to keep water removed from the formation, but here we're only producing 40 mcf, so it was of no consequence.

Q Are you proposing that the well be limited at 233 mcf or 40 mcf?

A I think our application we filed for maintenance of our current production without compression, at 40 -- 45 mcf.

That's all we're asking. We're not asking for anything, that if the economic conditions do increase and we can afford to put a compressor on there, then we would request an increase in the minimum.

Q Are you familiar with General Rule 408, which is the hardship gas well?

A Yes, I am.

Q Okay, what -- what does the term "sustainable flow rate" mean?

A Sustainable means without shutdown, at the minimum rate that you flow without any shutdown or interruption of production.

Q Does economics enter into that?

A In the actual definition in a harship case, no, it doesn't. But I think the key point to me is the potential for waste of reserves.

Q Has -- since this well, as you stated, could keep the water flowing, or keep the water out of the wellbore at 233 mcf a day, it's conceivable that water is encroaching into the other zones, since it's only flowing 45 mcf a day, is that right?

A Approximately, yes, sir.

Q Has -- can we see possible water encroachment damage already done?

A I don't -- I'm trying to think of a -- possibly the decrease in production during the -- January, I think we dropped down, as I mentioned, to 9.6 mcf per day and that was for 31 days, so we are reaching a marginal position and I wonder if possibly that could be due to some accumulation of water.

But it could be -- I was talking to El Paso and the possibility that they had an increase in line pressure at that time, too, but the drop in January did indicate something had happened.

Q Has there been any kind of deliverability test done on this well at any time?

A No, I think since we treated it there's been no deliverability test run. I think there again that shutting the well down for any of these tests is still questionable to Santa Fe that they may not get the well back. That's what they're living in deathly fear of.

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

Do you have any other questions, Mr. Padilla?

MR. PADILLA: No questions.

MR. STOGNER: Does anybody else

have any further questions of this witness?

If not, he may be excused.

Are there any statements to be made at this point?

MR. BURCHELL: Yes, Mr. Examiner.

If the Division finds that this well justifies the hardship classification, El Paso Natural Gas is able to continue to take this gas. We are taking it right now on a sustained basis until the outcome of this hearing.

MR. STOGNER: Thank you.

Is there anything else further in Case 8865?

If not, this case will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

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

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 8865, heard by me on 2 April 1986.

Michael E. Stogner, Examiner
Oil Conservation Division