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

11 July 1984

EXAMINER HEARING

IN THE MATTER OF

Application of Doyle Hartman for hardship gas well classification, Lea County, New Mexico. CASE 8228

BEFORE: Richard L. Stamets, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division:

For the Applicant: William F. Carr
Attorney at Law
CAMPBELL & BLACK P.A.
P. O. Box 2208
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I N D E X

E X H I B I T S

MR. STAMETS: We'll call next Case 8228, on the application of Doyle Hartman for hardship gas well classification, Lea County, New Mexico.

MR. CARR: May it please the Examiner, my name if William F. Carr, with the law firm Campbell and Black, P. A., of Santa Fe, appearing on behalf of Mr. Hartman.

I would ask that the record reflect that William P. Aycock, the witness in this case, has previously been sworn and is qualified to testify and remains under oath.

MR. STAMETS: The record will so show.

WILLIAM P. AYCOCK,

being previously called and sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. CARR:

Q Mr. Aycock, would you briefly state what Mr. Hartman seeks with this application?

A Mr. Hartman seeks a hardship gas well classification in Case Number 8228 for the Langlie "A" State No. 3 Well, located in Unit I of Section 36, Township 24 South, Range 36 East, Lea County, New Mexico, to determine

this well is a hardship gas well which should be granted priority access to the pipeline takes in order to avoid waste.

Q Mr. Aycock, when did Doyle Hartman file his application for classification as a harship gas well?

A On May the 8th, 1984.

Q Was this application filed with the District Office as well as the Santa Fe Office of the Oil Conservation Commission?

A It was actually filed with the District Office and a copy was sent to the Santa Fe Office.

Q Was an emergency classification sought for this well?

A Yes, it was.

Q And was the request granted?

A Yes, it was granted on May the 17th, 1984.

Q And is a copy of those letters also included in the exhibits submitted in this case?

A They are.

Q And also as part of your exhibits are there letters to all offsetting opertors advising them of this application?

A That's correct.

Q Were the operators advised of the minimum sustainable producing rate requested by Mr. Hartman?

A Yes. They were furnished a copy of the

complete filing.

Q Will you refer to the application itself included in this packet of exhibits and state the minimum rate that is requested for the well?

A 132 Mcf a day. Oh, I beg your pardon, I have the wrong file. I'm sorry. I'm sorry. I'm sorry.

53 Mcf per day for the Langlie "A" State No. 3 is the emergency rate that's being requested.

Q Mr. Aycock, will you refer now to the plat which is included in this application and review that for the Examiner?

A There is a plat attached to the application which shows the wells that surround the lease on which the Langlie "A" State No. 3 is located.

The Langlie "A" State No. 3 is located in the northwest quarter southwest quarter of Section 36, Township 24 South, Range 36 East.

The well location on this plat is shown as an open hole and you'll also notice that surrounding this there are only two other wells of any note that produce anything at all. One of them offsets it to the northwest and that's the Hartman Shell State No. 1 and two locations to the southeast is the Sun -- I beg your pardon, that's also Hartman, that's the Hartman Custer State No. 1 in Unit G of 36, 24, 36, so the only two wells out of this group of eight that are shown on the map and are documented on the tabulation that goes with it that produce any substantial volumes

of gas at all are both operated by Doyle Hartman.

Q And the tabulation precedes the plat in this exhibit?

A Yes. No correlative rights by granting the hardship application would be injured -- granting the hardship application would not substantially injure anyone else's correlative rights.

Q Now this is also a Jalmat well?

A Yes, sir.

Q And that's a prorated pool?

A Yes, sir.

Q What's the status of this well?

A The status of this well is that it has no accumulated under or over production.

Q And there are 80 acres dedicated to the well?

A Yes.

Q So that would be half of a standard --

A Half of the proration unit that forms the basis for allocation.

Q Did you give notice to the offsetting operators setting out the minimum sustainable producing rate that you are seeking?

A Yes, sir.

Q Did you also provide notice to the purchaser of the gas?

A Yes, sir.

Q How was the minimum sustainable producing rate of 53 Mcf per day determined?

A 53 Mcf per day is actually less than the minimum sustainable rate. 53 Mcf per day is approximately what would be allowed a capable well for this size proration unit. The actual number that I estimated when I studied the -- if you'll bear with me just a minute, let me see if I can't find it in my notes.

Actually, just so you'll know how we came about the numbers, I did a complete performance analysis on each well an to enable to estimate the original gas in place and the remaining recovery, as well as what the effect of the -- of the performance would be.

Actually, my original recommendation was in the vicinity of 120 to 130 Mcf per day based upon performance in October and November of 1983, was my original recommendation.

It was reduced to 53 because of the size of the proration unit.

So this is actually a lesser number than what I recommended that it be submitted, and Mr. Hartman felt it would not be -- that it would put him in a dubious position of asking for more than -- than the acreage would justify for a capable well, so it was cut back to 53.

Q Now, Mr. Aycock, the well is producing water, is that correct?

A Yes, it has produced water since initial

-- it's produced 40 to 60 barrels of water per day since initial completion, except for the months of October, November, and December, which is discussed at length in our subsequent -- in our narrative portion of our application here.

Q All right. Now, Mr. Aycock, in your opinion will underground waste occur if production from the well is curtailed below the recommended producing rate?

A Yes. As I stated before, the problem with it is obviously there's a difference in the shut-in of a few hours to maybe a day or two and shut-in periods of months, and one of the problems in requesting a hardship classification, it is -- it has been Mr. Hartman's experience that in attempting to satisfy all parties and provide equal market access, that El Paso is doing, they can't guarantee when your well will be allowed access.

If you could be allowed access on a regular basis, it might alleviate some of the necessity for the requesting of the hardship, but they don't know because of the constraints placed upon them when they're going to be able to allow your well to produce, and what this comes down to is that you frequently have periods of two weeks to a month on various wells that they will stay shut-in.

Now this well has not been in the past, I believe, because it's a new well and it had been requested, El Paso had -- I'm not sure that they had carried this as a hardship well, but it is a capable well and they had been requested because of the water production to give us -- give

Mr. Hartman all the help they could, so I'm simply pointing out that we got two problems here.

One is the physics of the well and the other is when you're going to be allowed to produce it. If you knew that you were only going to be shut in for maybe a day or two, the risk would obviously not be as great as if you're going to be shut in for thirty consecutive days.

That's part of the problem that you're faced with and that's why in formulating the recommendations for the hardship classification, I chose to stress the consistent performance on a continuous basis as -- as the basis for my recommendation rather than trying to pick out an isolated time during the production cycle of one of these wells, because they're not invariant. Most of them will change all the time. You can't -- you can't get an instantaneous answer that will match an average answer except under optimum conditions because you will find that the amount of fluid that you pump out for various reasons will vary and the amount of gas will probably -- will not be totally invariant. There will be some -- if you've looked at a gas chart, you know that the red hand is -- it writes a path. It writes a big path if the well is highly unstable and a smaller path if it's not.

But they're not totally invariant and so you can't pick out a point that -- in which an instantaneous observation would give an adequate answer and that's why I've chosen to use longer term averages being monthly pro-

duction as a basis for my study for the minimum recommended rate.

Q Now, Mr. Aycock, would you explain exactly how the underground waste will occur?

A Once again, this one, in order to catch up with the well, he has a 228 pumping unit, I believe. Yes, he has a 228 pumping unit with an inch and a quarter pump and an 86-inch stroke, and once again without the same provisions here or of any other gas well that's pumped, you can't pump, the well can't pump the water and produce the gas, the gas shut-in, eventually you're not going to be able to pump the water.

The other thing is that we have -- that there is no nearby indication of any water problems such as we had in the previous case.

The other well that you'll notice that we mentioned was Hartman's Custer State on the graph and the tabulation to back it up, and it does not have a water problem at all, and it produced, it can produce 335 Mcf a day when allowed to produce and produces it with a small amount of water. So obviously a well like that is not subject to a hardship type application. You can shut it in and leave it shut in and you're not -- there's no reason to expect that there's going to be any problem.

With a well like this, you're going to have a lot of problems.

Q Mr. Aycock, if you are unable to remove

that water from the well, what does this do to the permeability?

A Well, it will, as Mr. Stamets is probably aware, but I think should be put in the record, as the reservoir pressure -- all gas in the natural state in the reservoir is saturated with water vapor, and as the reservoir pressure declines, the amount of water that is -- that is included in the vapor phase increases, and since that water is in the vapor phase, it does not have any solid constituents, no dissolved solids whatsoever, and when the pressure drawdown that it experiences in going from the statid condition in the reservoir through the flowing condition to the wellbore, in the wellbore and to the surface, and it is not possible to say with any degree of precision exactly where that will occur without having more data than is normally available, when that happens there is fresh water that precipitates. It is not salt water, it's fresh water, and if that fresh water stays in contact with the formation, you have the strong possibility that, depending upon the mineral constituency of the formation at the point at which it contacts the fresh water, that you can have permanent formation damage occur by ion exchange between certain of the clay minerals which are included as a natural constituent in all sandstones and the fresh water, and even if you do not, the long term high water saturations associated with shut-in will result in alteration of the relaltive permeability to gas and the question becomes is that a temporary alteration

of the relative permeability to gas or is that one that cannot be repaired once again because the low reservoir pressures simply precludes you from being able to have the flow velocity through the small pores high enough to sweep the water out, since the water is the wetting phase.

Q Mr. Aycock, does this exhibit also contain the historical production data for the well?

A Yes, it does.

Q And that's attached to the narrative you've just been reviewing?

A Yes.

Q Will you now refer to the graph which shows the gas and water production from the well?

A The gas production, the water production, and the pumping casinghead pressure on a monthly average basis are all shown on the attached graph. The life is much shorter because this is a relatively new well. Initial production was in March of 1983, so it's only been producing a little more than a year, a year and three months, a year and six months, excuse me.

Q And behind that --

A A year and three months.

Q And behind that in the exhibit in tabular form is the raw data from which you constructed that graph.

A Yes. Once again Mr. Hartman's proprietary computer printout that includes all fo the consequential data that's shown on the graph, as well as some

other information, including gas gravity and BTU.

Q Would you now refer to the three documents right behind the graph and the table?

A These documents are field transfer tickets documenting that originally there was an American 80-D unit on this well and it was -- did not have sufficient capacity to pump the water off of the well, and it was transferred to another well of Mr. Hartman's and an American 228 pumping unit was transferred to the well and the dates are not the dates on which the actual transfer took place. They are the dates on which the paper transfer took place.

Q Will you now review the wellbore sketch?

A The wellbore sketch shows that there's 9-5/8ths inch surface casing set a 401 feet, cemented with 250 sacks, and there's 7-inch production casing set at 3366 feet cemented with 675 sacks, and there are 20 perforations between the depths of 2785 and 2877 and a 2-inch insert pump set in 2-3/8ths EUE tubing, the bottom of which is at 2952 feet, so you can see that's 115 feet below the lowest perforation, which is more like the normal well configuration that experience has indicated is necessary when pumping a well and trying to keep it effectively pumped dry.

Q Mr. Aycock, behind the wellbore sketch are a series of logs. Would you review those for Mr. Stamets?

A The first one is for the application well, the Hartman Langlie "A" State No. 3. It shows that it

was spudded on December 18th, 1982 and completed on December 27th of 1982 through perforations in -- between depths of 2785 to 2877 feet in the Yates formation portion of the Jalmat interval.

It had an initial flowing test of 132 Mcf per day and 6 barrels of water per day a day, and it was fractured -- that was prior to it being stimulated. It was stimulated on January the 15th of '83 with 72,900 gallons and 179,000 pounds of sand and was tested, the latest -- later tests show that there is water production in May the 6th of '83, for instance, it tested 376 Mcf per day, no oil, 48 barrels of water, on a 23/64th inch choke with a flowing -- pumping casing pressure of 134 psi.

The next log is that of the R. Olson originally and then Texas Pacific McKinney No. 1 Well, located in Unit A of Section 36, 24 South, 36 East, and I'll point out to the Examiner and well over 12-million barrels of water have been injected into the -- a portion of the Seven Rivers formation in this well and that, as you will see when you look at the drill stem test between depths of 3148 to 3500, which included all the way down through the Queen formation, that interval flowed 6-million cubic feet of gas per day on initial drill stem test back in '49.

So once again water is being injected into formations some of which originally contained gas and likely this is the source of the water that we see in the Jalmat intervals today, particularly in the Yates because

it's the most permeable and it's the one into which the water will preferentially go if it's normally given an option.

And you'll notice it was converted to water disposal, I'm talking about the McKinney Well now, was converted to water disposal on the 24th of January, '69 and in 1983, January of 1983, the cumulative water injection was 12,211,000 barrels.

And in 1982 the average water injection was 2372 barrels per day.

The next log that's included is the Hartman Custer State No. 1, located in Unit G of Section 36, 24, 36, which we previously discussed as a diagonal offset, which makes 335 Mcf per day when allowed to produce from the Yates formation and has no water problem; makes 10 barrels of water per day and is not a problem and is what Hartman expected he would get when he drilled the Langlie "A" State No. 3, a well of this type.

The next one is Hartman's Federal Jalmat Com No. 1, which is located in Unit D of Section 6 in 25 South, 37 East, and you'll notice once again it's completed basically in the Yates. It does have two perforated intervals down in the Seven Rivers and it makes 16 barrels of water per day and had -- does have a pumping unit on it; pumps 8-1/2 strokes per minute, a 64 inch stroke and 1-1/4 inch pump.

Q Now behind the graphs there are tables.

Would you identify those, please?

A Those are Mr. Hartman's proprietary computer printouts, histories for his Custer State 1, dating from initial production down to date, and that initial production starts in 1979.

And then behind that are the -- is the computer printout production history for his Federal Jalmat Com No. 1, which starts in 1980, I believe, yeah, it starts in 1980, and that's all the months of production for both wells during the entire period.

Q Now behind these tables is a letter from Mr. Burleson. Would you identify that, please?

A This is an application for -- by Mr. Burleson for a hardship classification for his Harrison No. 2 and the only reason that it's included, Mr. Hartman was notified as an offset operator. The only reason that it's included is because we wanted to point to the Commission that Mr. Burleson feels that he can substantiate a minimum rate of 110 Mcf per day in this area, so --

Q And is this well in close proximity to --

A Yes.

Q -- the subject well? If the hardship classification is not granted for this well could it result in premature abandonment of the well?

A Yes, it could.

Q Could you estimate the reserves that would be lost if the hardship classification is not granted?

A Yes.

Q And what would that be?

A Just a minute, let me get back here to my narrative exhibit which has all those numbers on it.

The remaining gas recovery, estimated remaining gas recovery as of April 1st, 1984 would be approximately a billion cubic feet if a decline curve projection is used, and between 411 and 537 million if a deliverability projection is used rather than decline projection.

Q Mr. Aycock, in your opinion is there anything Mr. Hartman could do to alleviate this problem without seeking a hardship well classification?

A No, he already has a pumping unit on it and he can't, once again, he's completed in the Yates, as we show on our log, and to attempt to separate those and determine the actual entry point of water and squeeze it off would first engender a lot of risk because you'd have to kill the well and leave it dead for a long time with all the zones being flooded with water. And second, even if you could identify which ones of it with the close proximity, it's doubtful whether you could squeeze only one interval without wholly or partially squeezing all the rest of the intervals due to the fact that the well has to be fractured to produce efficiently with the low reservoir pressures that are there in place at the time the well was completed.

Q Mr. Aycock, will granting this application prevent the underground waste of natural gas?

A In my opinion it will.

Q In your opinion will granting the application be in the best interest of conservation?

A I believe so.

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

A It was.

MR. CARR: At this time, Mr. Stamets, we would offer Hartman Exhibit One into evidence.

MR. STAMETS: Exhibit One will be admitted.

MR. CARR: That concludes my direct examination of this witness.

CROSS EXAMINATION

BY MR. STAMETS:

Q Mr. Aycock, early on in Exhibit Number One there is a sheet that looks like this for the Langlie "A" State No. 3; gives production for 1984 and 1983?

A Yes.

Q Looking at 1983 I notice in December that that well was shut in for fifteen days and then in January, 1984 the production volume is fairly nearly as high as any other time in that period of two years.

Does that indicate that this well is really disadvantaged when it's shut in?

A Well, once again, you know, if it were a

fifteen day shut-in period that you were looking at the obvious answer is no, but I can't tell you how long the shut-in periods would be and we have to go on the fact that we've seen them shut in for a month or more on -- on many times when they don't have a hardship classification.

All of these water producing wells were -- El Paso was requested to consider them a hardship well prior to the -- to the necessity for this procedure that the Commission has seen fit to go through in requesting that those formal applications be made.

So obviously for fifteen days the answer is no, that there's no justifiable evidence that formation -- I would call your attention to the fact, though, that on fifteen days it produced 1100 barrels of water whereas on thirty days it produces roughly 1300 and that when -- after it was shut-in in December and produced 1096 barrels of water, in January it produced 1355 and then in February it, the water dropped down to 1173. It bounced back up, but the point I'm making is that when you shut them in you produce a small amount of water. You can see in April the well was produced for thirty days and only produced 8430 Mcf of gas. It was down, the production was down considerably and it was produced the whole month and the water production was down as well, and the pressures were down for that month, more than they should have been.

So you have to remember when you talk about any of these wells that once again that the perspec-

tive needs to be as long as you feel like you can honestly and accurately use in order to determine and analyze what you're talking about because you're in a situation with a lot of wells producing at various rates for various times and it's impossible to tell what the effects of intervell interference are at any given time.

Sometimes these things happen and the well will -- the pressure will jump back up and I can't -- I can't tell you, I can't explain exactly what's going on with the well at all times, but in answer to your question, for fifteen days there's no -- for a fifteen day shut-in there's certainly no indication that that would cause permanent damage.

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

A And if fifteen days were all we were looking at, we would not be here applying as a hardship classification.

MR. STAMETS: Any other questions of the witness?

MR. CARR: No other questions.

MR. STAMETS: He may be excused.

Anybody have anything further they wish to add in this case?

The case will be taken under advisement.

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 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 [illegible] is a complete record of [illegible] Examiner hearing of Case No. 8224 heard by me on 7-11 [illegible] 84.

Oil Conservation Division Examiner

El Paso
Natural Gas Company

P. O. BOX 1492
EL PASO, TEXAS 79978
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El Paso Natural Gas Company neither concurs with nor objects to this application. El Paso recognizes that some wells should definitely be recognized as "hardship" wells. El Paso believes it must express to the New Mexico Oil Conservation Division that anytime a well is declared a "hardship" well, then the extra production from that well must be taken from the total production from all other wells on our system. This increases the non-controllable gas taken into our system thereby reducing our flexibility of pipeline operations to take ratably and protect correlative rights.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
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20 June 1984

EXAMINER HEARING

IN THE MATTER OF

Application of Doyle Hartman for hardship gas well classification, Lea County, New Mexico. CASE 8228

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: W. Perry Pearce
Attorney at Law
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

MR. STOGNER: Next we'll call Cases Numbers 8226, 8227, 8228, and 8229.

MR. PEARCE: Each of those cases is on the application of Doyle Hartman for hardship gas well classification, in Eddy or Lea County, New Mexico.

Mr. Examiner, applicant has requested that each of those matters be continued until July the 11th, 1984.

MR. STOGNER: Thank you, Mr. Pearce.

Cases Numbers 8226, 8227, 8228, and 8229 will be so continued to the Division Hearing scheduled for July 11th, 1984.

(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 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 C.S.R.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 8228, heard by me on June 20 1984.

Michael E. Stogner, Examiner
Oil Conservation Division