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

12 December 1984

COMMISSION HEARING

IN THE MATTER OF:

Application of Doyle Hartman for hardship gas well classification, Eddy County, New Mexico. CASE 8226

BEFORE: Richard L. Stamets, Chairman
Commissioner Ed Kelley

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division:

For the Applicant:

MR. STAMETS: Call next Case 8226, being application of Doyle Hartman for a hardship gas well classification, Eddy County, New Mexico.

MR. CARR: May it please the Commission, Mr. Hartman requests that this case be dismissed.

MR. STAMETS: The case will be dismissed.

(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 CSR

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

31 October 1984

EXAMINER HEARING

IN THE MATTER OF:

Application of Doyle Hartman for hardship gas well classification, Eddy County, New Mexico. CASE 8226

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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

For the Applicant:

MR. STOGNER: Call next Case Number 8226.

MR. TAYLOR: Application of Doyle Hartman for hardship gas well classification, Eddy County, New Mexico.

The applicant has requested that this case be continued.

MR. STOGNER: Case Number 8226 will be continued at the discretion of the applicant.

(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 CSR

Oct. 31

8226
84

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

17 October 1984

EXAMINER HEARING

IN THE MATTER OF:

Application of Doyle Hartman for hardship gas well classification, Eddy County, New Mexico. CASE 8226

BEFORE: Gilbert P. Quintana, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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

For the Applicant:

MR. QUINTANA: We will call next Case 8226.

MR. TAYLOR: The application of Doyle Hartman for hardship gas well classification, Eddy County, New Mexico.

The applicant has requested that this case be continued.

MR. QUINTANA: Case 8226 will be so continued until October 31, 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 CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 8226, heard by me on OCT. 17 1984.

Gilbert P. Quintana Examiner
Oil Conservation Division

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

3 October 1984

EXAMINER HEARING

IN THE MATTER OF:

Application of Doyle Hartman for hardship gas well classification, Eddy County, New Mexico. CASE 8226

BEFORE: Gilbert P. Quintana, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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

For the Applicant:

MR. QUINTANA: We'll call next Case 8226.

MR. TAYLOR: The application of Doyle Hartman for hardship gas well classification, Eddy County, New Mexico.

The applicant has asked that this case be continued to October 17th.

MR. QUINTANA: Case 8226 will so be continued until October 17th, 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 CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 8226, heard by me on Oct. 3 1984.

Gilbert P. Quintana, Examiner
Oil Conservation Division

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

19 September 1984

EXAMINER HEARING

IN THE MATTER OF:

Application of Doyle Hartman for hardship gas well classification, Eddy County, New Mexico. CASE 8226

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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

For the Applicant:

MR. STOGNER: Call next Case Number 8226.

MR. TAYLOR: The application of Doyle Hartman for hardship gas well classification, Eddy County, New Mexico.

MR. CARR: May it please the Examiner, Mr. Hartman requests that this case be continued to the October 3rd hearing.

MR. STOGNER: Case Number 8226 will be so continued to the next Division Hearing scheduled for October 3rd, 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 CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 8226 heard by me on Sept. 19 84

Michael E. Stogner, Examiner
Oil Conservation Division

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

5 September 1984

EXAMINER HEARING

IN THE MATTER OF:

Application of Doyle Hartman for hardship gas well classification, Eddy County, New Mexico. CASE 8226

BEFORE: Gilbert P. Quintana, Examiner

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:

MR. QUINTANA: Call next Case 8226.

MR. ROYBAL: Case 8226. Application of Doyle Hartman for hardship gas well classification in Eddy County, New Mexico.

Mr. Hearing Examiner, the applicant has requested continuance of this matter until September 19th, 1984.

MR. QUINTANA: Case 8226 will so be continued until September 19th, 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 CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 8226 heard by me on SEPT. 5 84

Gilbert P. Quintana, Examiner
Oil Conservation Division

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

8 August 1984

EXAMINER HEARING

IN THE MATTER OF:

Application of Doyle Hartman for hardship gas well classification, Eddy County, New Mexico. CASE 8226

BEFORE: Richard L. Stamets, 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
Oil Conservation Commission
State Land Office Bldg.
Santa Fe, New Mexico 87501

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

A P P E A R A N C E S

For Amoco Production Co.: W. Thomas Kellahin
Attorney at Law
KELLAHIN & KELLAHIN
P. O. Box 2265
Santa Fe, New Mexico 87501

I N D E X

E X H I B I T S

MR. STAMETS: We'll call next Case 8226.

MR. PEARCE: That case is on the application of Doyle Hartman for hardship gas well classification, Eddy County, New Mexico.

MR. CARR: May it please the Examiner, my name is William F. Carr, with the law firm Campbell and Black, appearing on behalf of Doyle Hartman.

I have one witness who needs to be sworn.

MR. KELLAHIN: If the Examiner please, I'm Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of Amoco Production Company.

MR. PEARCE: Do you expect to call any witnesses, Mr. Kellahin?

MR. KELLAHIN: No, sir.

(Witness sworn.)

WILLIAM P. AYCOCK,

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

DIRECT EXAMINATION

BY MR. CARR:

Q Will you state your full name and place

of residence?

A William P. Aycock, Midland, Texas.

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

A By Doyle Hartman in connection with his application in the Case Number 8226.

Q Have you previously testified before this Division or one of its Examiners and had your credentials accepted and made a matter of record?

A I have.

Q And how were you qualified at that time?

A As a petroleum engineer.

Q Are you familiar with the application filed in this case on behalf of Mr. Hartman?

A I am.

Q Are you familiar with the subject well?

A I am.

MR. CARR: Are the witness' qualifications acceptable?

MR. STAMETS: They are.

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

A Mr. Hartman is seeking a hardship well classification for his South Empire State No. 1, located in Unit M of Section 24, Township 17 South, Range 38 East, in the Empire Morrow South Pool, Eddy County, New Mexico.

Q Mr. Aycock, when was this application

filed?

A It was filed on May 21st, 1984, and was approved by the -- Mr. Clements, the District Supervisor, on May 29th, 1984.

Q Now that approval was an approval of an emergency classification?

A Yes, sir.

Q And copies were filed with both the District and Santa Fe office?

A Yes, sir. Included in Mr. Hartman's Exhibit One are copies of the original application, Mr. Clements' emergency approval, and the copies of the certified mail receipts showing that the notice was furnished to all interested parties.

Q In what pool is the subject well completed?

A The Empire Morrow South Gas Pool.

Q Is this a prorated pool?

A No, it is not.

Q Mr. Aycock, would you now refer to the plats that are contained in Exhibit One and identify the acreage that is dedicated to the subject well?

A The acreage that's dedicated to the subject well is the south half of Section 24, Township 17 South, Range 28 East.

Q Is this a standard spacing or proration unit?

A It is a standard proration unit, yes, sir.

Q Does this plat show the offsetting operators?

A Yes, sir.

Q And are the offsetting operators also set forth on a separate list?

A Yes, sir, they are; however, the Upper Morrow B-4 zone that produces in this well does not produce in any of the immediately offsetting tracts. It only produces in one other well that's in the vicinity and that well is the HEYCO No. 13, that's located in Unit M of Section 30, Township 17 South, Range 29 East, immediately to the southeast of the subject proration unit.

Q Mr. Aycock, has notice of this application been provided to the offsetting operators by certified mail?

A Yes, sir, it has. Those -- the documentation of that notice is included as a part of Exhibit One.

Q And did this notice contain the minimum sustainable producing rate which Mr. Hartman seeks for this well?

A Yes, sir, it did.

Q Was notice also given to the transporter and the purchaser of the gas?

A Yes, sir.

Q What minimum sustainable producing rate

are you seeking for this well?

A 420 Mcf per day.

Q And how was this rate determined?

A This rate was determined from a study of the well performance for the months of August through December, 1983.

Q Subsequent to establishing the rate, has Mr. Hartman run a logoff test on the well?

A Yes, sir, he has.

Q And is a copy of that test what's been marked as Hartman Exhibit Number Three?

A Yes, sir.

Q Now, what is Exhibit Number Two? Would you identify that?

A Exhibit Number Two is a complete daily production history of the -- of the well that's in -- of the application well, the Doyle Hartman South Empire State No. 1.

Q Does this show the producing rate prior to the time the logoff test was run?

A Yes, sir.

Q What did the logoff test show?

A The logoff test showed that as the rate was systematically reduced from an initial of 619 Mcf per day, the 511 Mcf per day and the 454 Mcf per day, that the -- there was still liquid produced and that there was no -- the well performance was regular as would be expected.

There were slight increases in casing pressure and however, the increases in tubing pressure were much less than would have been anticipated.

At that point fallback of liquids began to occur and the rate went down to 258 Mcf per day, then down to 170 Mcf per day, and the well was shut-in to prevent it dying, and left shut-in for a period of two hours and then re-opened.

At the time the well was re-opened the pressure went down even further and it regurgitated a small amount of liquid. The amount is indeterminate because it was absorbed by the production system at the well and no fluid was produced into the tank, and this verifies that a very small amount of liquid, when accumulated in the tubing, can cause sufficient choking effect that it will tend to make the well die.

Q Was this logoff test run pursuant to a request from Amoco Production Company?

A Yes, it was.

Q Was it witnessed by Amoco or the Commission?

A No, sir, it was run by Mr. Larry Nermyr, who is the engineer that is employed by Mr. Hartman, after consultation with me and after verbal consultation with Mr. Clements.

Q Would Amoco be willing to have any order which results from this hearing to provide for an additional

logoff test to be witnessed by both Amoco and the Commission staff?

A Be no problem.

Q And have you discussed this with the District Office prior to this hearing?

A Mr. Nermyr told me he discussed it with Les in the Hobbs District office where he was in discussing some other logoff tests that are being run for the Hobbs District, and told him they would be willing to rerun it, do whatever was necessary.

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

A I expect that it will, yes.

Q Would you review the reasoning for this opinion?

A The reasoning is set out in some detail in the application, the original hardship well application.

We have a very -- a rather lengthy discussion that's included and it goes into the -- into the reasons that -- the fact that the well produces very little water or liquid hydrocarbons, but the -- because of the fact that this well was not a commercial producer until it had been heavily stimulated initially. When the well was initially completed an attempt was made to complete it with only an acid stimulation and it resulted in noncommercial flow rates and it had to be heavily stimulated with a very large

frac job in order to -- to achieve commercial production and -- well, we don't have that on here. I don't remember, except that it was -- the job cost approaching $200,000 was required to get the well into a commercial production status.

So the well has been -- has been a problem well from the beginning as compared to other nearby wells.

So up until the difficulties with gas takes have been experienced since May of 1982, El Paso cooperated and classified it as a hardship well, knowing that it had been difficult to get a commercial well in the beginning and that the well was very touchy and required -- if it was not allowed to continue to produce it would tend to accumulate liquids and of late it has been necessary to blow the well to the atmosphere to restore production on more than one occasion.

In addition to that, presented in this application is documentation in a Morrow well that is not nearby, but tends to demonstrate what can happen in low quality Morrow formations. That is the Dinero Operating Company Big Chief No. 3, which is located in the Dublin Ranch Field in Eddy County, New Mexico, in which Mr. Hartman is a partial working interest owner, and we have attached evidence from the well file, which is a Form C-102, dated -- was received in the Artesia office on October 27th, 1980, and was signed by the Field Superintendent for Dinero Oper-

ating Company on October 24th, 1980, which says, and I quote: The above mentioned well was closed in in July 3rd, 1980 by request from El Paso Natural Gas Company.

Their line was pressuring up due to market over a long weekend on the West Coast.

We opened well back up after the holiday and was unable to get production back.

Swabbed well and not able to recover production. Acidized well by Western Company, 7-23-80, with 3500 gallons of 7-1/2 percent acid and attempt to clean up.

Swabbed load back. Well is not commercial. Plans are to plug back to Atoka zone.

As is documented in some detail in the discussion that is attached to the original hardship application, there had never been any water production reported for this well. In fact, it appeared that the -- in June and July, or May and June, I beg your pardon, of 1980, it appeared that the well had stabilized, production had stabilized. It was between 1100 Mcf per day and 1200 Mcf per day, yet when it was shut in, they were never able to get anything like the initial rates and they only produced it for -- not initial rates, but the rates prior to shut-in, and they only produced it for three months and part of a fourth before the well was plugged, before this zone was plugged.

Because of Mr. Hartman's ownership in this well and his knowledge that low quality Morrow can be

irreversibly damaged by shut-ins, he has been -- has exerted every reasonable effort to keep the well from being shut in for any substantial period of time.

Q Mr. Aycock, will you review the wellbore sketch which is included in Exhibit Number One?

A There's a wellbore sketch included in Exhibit Number One, which shows that there is 13-3/8ths inch surface casing set at 504 feet and cemented with 500 sacks of cement.

There's 8-5/8ths inch intermediate casing set at 2502 feet and cemented with 1750 sacks.

There's 5-1/2 inch production casing set at 10,750 feet and cemented with 2190 sacks.

The perforated interval is from 10,481 feet to 10,507 feet and there's 2-7/8ths inch EUD tubing set at 10,433 feet, immediately above -- approximately 50 -- 48 feet above the top of the perforations.

The reason that the tubing is set there is because of the previously discussed very large stimulation job that was required to achieve commerciala production rates from the well.

Q Are you aware of anything mechanically that could be done to the well to eliminate this potential problem without seeking the hardship classification?

A No, not practically, because anything that could be done would require the well to be killed and killing the well, that would violate the reason for request-

ing the hardship application.

Q Mr. Aycock, if the hardship classification is not granted and the well is shut in for any period of time, what effect do you think this could have on the well?

A It could result in premature abandonment of the well.

Q Can you make an estimate of the reserves that could be lost if this application is not granted?

A Those figures are attached to the original hardship well application. As of April 1st, 1984 they were between 249-million and 171-million cubic feet.

Q In your opinion has Mr. Hartman acted in a responsible and prudent manner to eliminate any problem which would result from curtailing production from this well without seeking hardship classification?

A Yes, sir. I don't know of anything he can do. As will be shown, the delivery pressure is about 600 pounds and the well flows at about 800, so you don't have a lot of "room" to play with here, and whenever you cut the rate back low enough that you begin to have liquid fallback in the tubing, you lose enough capability that if that accelerates, and as the liquid fallback accelerates, the rate will go down to zero and sometimes the well may tend to pressure up enough to -- to regurgitate the fluid and start flowing again, and other times it has to be blown to the atmosphere.

Both things have occurred.

Q Does Exhibit One contain pressure and production data to support this statement?

A Yes, sir, it does.

Q In your opinion will granting the application prevent the underground waste of natural gas?

A Yes.

Q Would it be in -- granting the application be in the best interest of conservation?

A I believe it will, yes.

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

A I simply want to point out to the Commission that Exhibit Three contains, which is the logoff test, contains the actual charts that Mr. Nermyr took in the field, xeroxed copies of them, and on the top of it is an analysis that I've done of it, and I apologize for the correction of the figures on line 4 and 10 but it is my procedure when I am appearing as an expert witness to always double check everything before I appear, and I found that -- I don't know whether this was a typographical error or my fault, but nevertheless, there was a mistake on line 4 and it's corrected with pen.

I want to point out to the Commission that the -- that it shows the following: It shows the date, the time, choke size, flow rate, the tubing pressure, casing pressure, delivery pressure, the stock tank gauge, the cumu-

lative liquid production since the beginning of the test, the liquid production in the interval in barrels -- both in barrels per day and in barrels per million, and the calculated closed in wellhead pressure and calculated deliverability constant, and the reason those are shown between the lines is those numbers are computed between each of the in points that are listed here.

Q Mr. Aycock, were -- have you reviewed all of the material in Exhibits One through Three?

A Yes, sir.

Q Is it accurate to your own knowledge?

A Yes, sir.

MR. CARR: At this time, Mr. Stamets, we would offer Hartman Exhibits One through Three.

MR. STAMETS: These exhibits will be admitted.

MR. CARR: This concludes my direct examination of Mr. Aycock and I pass the witness for cross examination.

CROSS EXAMINATION

BY MR. STAMETS:

Q Mr. Aycock, now did I understand you to say that the reserves that would be lost if -- if this well were closed in and lost, from the zone it's currently completed in would be a maximum of 250-million --

A Yes, sir.

Q -- cubic feet?

A As of April lst, 1984.

Q Is that indicating that this well is very late in its productive life at this point?

A It's probably pretty late in its productive life, yes.

Q Okay.

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

MR. KELLAHIN: Yes, Mr. Examiner, thank you.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. Aycock, the written application for justification on page two in the last paragraph makes a comparison to the Dinero Operating Company Big Chief No. 3 Well, and you've also discussed that.

That well is in Township 22 South, Range 28 East, Eddy County?

A I believe so. I have the complete file here if you want me to refer to it.

Q How many miles away is that well from the well that's the subject of this application?

A It's a long way away.

Q About thirty miles, isn't it?

A Yes.

Q Have you -- can you tell me how many wells are in the South Empire Morrow Gas Pool?

A Not right off I can't because I haven't studied the field since 1980 when we had our large number of -- the several hearings that were required to achieve the pooling of the proration unit that's dedicated to this well. There are a number of them.

Q So you haven't studied to determine whether or not the concern about this well being fluid sensitive is characteristic of the other wells in this pool?

A As I stated, Mr. Kellahin, since there is only one other well in the pool that is completed in the same zone as this well, it would be specious to spend time studying wells in the Morrow that are completed in other zones so I did not do it, no.

Q I think my question was how many wells were in the South Empire Morrow Gas Pool.

A There is only one other that is completed in the same zone as the application well.

Q All right, sir, and which one is that?

A That is the HEYCO Unit, located in -- No. 13. It's located in Unit N of Section 17, Township -- I mean, pardon me, Section 30, Township 17 South, Range 29 East. It's a diagonal southwest offset, that section is, to the section in which the subject well is located.

It's close enough, that was the well that established that a Section 102 price was applicable to this

well. It had already been done at the time the Hartman well was drilled and so that all that was required to gain a Section 102 price was to demonstrate it was the same zone.

Q Have you compared the production characteristics of that well with your well?

A They are different. It's a higher quality well than this one. It did not have to be stimulated so severely to achieve commercial production.

Q Let's look at page three, which has the reserve calculation.

You have an entry that shows the cumulative gas recovery as of April 1st of '84. Am I correct in understanding that this well has produced approximately 76 percent of the recoverable reserves attributable to it?

A That's correct.

Q And you have tabulated that production on one of these graphs, I think.

A Yes, there are both graphs and tabulations of it.

Q All right, sir, let's look at the graph, if you please.

A On the graph is shown the tubing pressure, the liquid/gas ratio, the casing pressure, and the monthly gas production.

Q All right, sir, if you'll look at late 1982, I believe it's perhaps in November, if you'll look at the gas production and the corresponding rate, it looks to

me as if that rate is down to about 440 Mcf a day in probably November or December of '82, is that about right?

A Yes.

Q All right.

A It's in November of 1982.

Q And immediately after that production in the well does increase above that figure, doesn't it?

A That's correct.

Q Okay. And if you look into June of '83, you see that the gas production for perhaps is it May or June gets down to something between 420 and 440 Mcf a day?

A Yes, that's correct.

Q And immediately after that the well has a capacity to produce in excess of that daily rate?

A That's right.

Q All right, sir. And if we look at October of '83, I think that's about the lowest point in there. It shows production of about 420 Mcf a day, does it not?

A That's correct.

Q And immediately thereafter the well demonstrates a capacity to recover and produce in excess of that amount, does it not?

A That's correct, but it was not shut in during any of those periods.

Q In fact, has this well ever been shut in?

A Only for very limited periods of time.

Q And after any of those limited periods of shut-in has the well been able to return to the productivity demonstrated prior to that time?

A Well, it never returns completely to the productivity because of the depletion of reservoir pressure goes on monotonously with time and as is pointed out in the application -- in the discussion that's attached to the application, you can reach a point where you have insufficient reservoir pressure to move the accumulated liquids from the formation immediately surrounding the wellbore and when that happens, the well is effectively finished unless you can resort to mechanical means to increase the pressure differential between remaining lowered reservoir pressure in the wellbore in order to move the fluids out of the way.

Q Have -- has the operator had to swab this well in order to restore production?

A He's not had to swab it but it's had to be turned to the atmosphere on several occasions.

Q Has the operator made any mechanical attempts to reduce the water production in this well?

A The only water that's being produced is water that was originally in the vapor phase in the reservoir. As the Commission is aware, the amount of water vapor is measured in pounds per Mcf and as the reservoir pressure is reduced in order to maintain stability, physical stability, the amount of water that's contained in the remaining gas continues to increase, so that as production proceeds

with depleting reservoir pressure, more and more water will be contained in the gas that's produced. It will tend to condense in the wellbore and in the production string, and so the problem will be come ever greater.

Since this water is fresh, it is not in -- it is not in equilibrium with the formation, and if the formation contains any active sodium aluminum silicates, it will react with them in an ion exchange fashion and cause irretrievable loss of permeability due to the alteration of the rock fabric.

Whether it is or not, the fact that there are two phases present in the area that's immediately surrounding the wellbore, will result in the phenomenon that we call relative permeability in reservoir engineering, which simply means that the formation cannot conduct a combination of two or three fluids, for this discussion gas being considered a fluid, as efficiently as it could any one of the three were they at 100 percent saturation.

Q So the answer is the operator has not taken any mechanical attempts to rectify the problem.

A There is no mechanical attempt that could be taken without killing the well.

Q All right, sir, you could reduce the size of the tubing in the well, could you not?

A Not without killing the well, we couldn't.

Q All right, have you killed the well and

attempted to restore production to see what the impact is on the well?

A Certainly not. That would an imprudent business practice and if Mr. Hartman did it, since he's not the only working interest owner, and I happen to be one of the others, I might sue him myself, if anyone else didn't.

Q So we're simply speculating on whether or not if this well is killed, you can establish production again. You simply do not know.

A The only way to prove it would be to run a test that would in the opinion of Mr. Hartman and the joint working interest owners, would involve an imprudent risk.

We're not willing to lose a Million Dollars worth of future recovery in order to test a theory, unless somebody forces us to.

Q Have you made any calculations, P/z versus cumulative production calculations?

A Yes, those are referred to in the discussion. That's the basis for the -- there's two ways that production was estimated. I mean the reserves were estimated. One of them was by an extrapolation of production performance at rates that appeared to be showing capacity at the prevailing line pressures, and the other is called deliverability and that involves the determination of the original gas in place from P/z as a function of cumulative gas, yes.

Q All right, sir, do you have copies of those P/z versus cumulative production --

A They're not attached to the application, no. They were not required by the Commission and were not attached.

The numbers are referred to in the application but the graphs are not, no.

Q All right, sir, do you have those graphs with you today?

A I have the calculations.

Q Do you have the graphs with you?

A I didn't do it in a graphical form. I did it in a mathematical form.

Q All right, sir. Apart from the analogy to the Dinero Well some thirty miles away, Mr. Aycock, what evidence do you have that this well does not have the capacity to return to adequate production if it's killed?

A The fact that it requires from one to several days to get the well back to the rate, approaching the rate, that it had on the -- during the periods of time that it has been shut-in and the fact that it was, as I stated previously, we were barely able to make a commercial well in the beginning and it had not been for stringent stimulation procedures, would not have been able to make a commercial well initially.

Q Well, a graph of the production here shows that every time the production is curtailed, the well

has a demonstrated capacity to return to adequate production. I don't -- I don't see any problem on your graph to demonstrate that it doesn't --

A Well, let's look at Exhibit Three and maybe I can explain it to you.

Q All right.

A On Exhibit Three you'll notice in Column 7 we have delivery pressure that is a spot reading at the end of each of these periods of time on the logoff test, and you'll notice that it varies from 629.2 to 637.2, 637.2, 621.2, 637.2, 637.2.

So you'll notice if you'll look at the tubing pressure, we started off on an 11/64ths choke at 4:00 o'clock in the afternoon, 1600 hours, on the 12th of July, 1984.

We initially had a rate, a producing rate of 609 Mcf per day and the flowing tubing pressure was 833.2 psia.

At 22-1/2 hours later on the 13th of July, 1984, at 1430 hours, 2:30 in the afternoon, the well was still on an 11/64ths choke and the rate had fallen to 511 Mcf per day and the tubing pressure was essentially unchanged. So at that point in time for practical purposes as far as the tubing pressures are concerned, you could say that the well is stabilized. It is not actually stabilized because it has lost 108 Mcf per day in 24 hours in productive capacity, even though the tubing pressure has not

changed.

At that point the choke was reduced to a 9/64ths. Well, I say at that point, actually it was one hour later. On the 13th of July, 1984, the choke was -- the well was -- the choke was adjusted to 9/64ths and the flow rate that was initially observed was 454 Mcf per day.

You will notice that there's a very slight difference. In fact, it's about 4 psi higher in the tubing pressure even though the rate has continued to fall.

By the 14th of July, 1984, at 1300 hours, still on a 9/64ths choke, the production rate has fallen to 258 Mcf per day and the tubing pressure has fallen to 674.2 psia, as compared to a delivery pressure at that same point in time of 621.2 psia.

So there is 50, essentially 53 psi difference at that point between the flowing tubing pressure and the delivery pressure, whereas there was over -- there was about 204 psi difference in the tubing pressure and the delivery pressure when we started the test. So the difference in the tubing pressure and the -- and the delivery pressure is now one-fourth in two days, it is now one-fourth of what it was at the start of the test, and the flow rate is down a little over one-third what it was at the beginning of the test.

Q All right, sir.

A As we continue to flow the well on to the 15th of July, 1984, sitll on a 9/64ths choke, the rate drops

to 170 Mcf per day. The tubing pressure dropped slightly. It dropped down to 653 psia and the delivery pressure is still at 637.2. So you've got less than a -- you've got a 16 psi difference between the delivery pressure and the tubing pressure at that point.

So what is happening is if you leave it on the 9/64ths choke at this point in time. the flow rate is coming down and the reason it is is because the difference in flowing tubing pressure and the delivery pressure is systematically being reduced and if the well had been allowed to continue to flow for a shorter amount of time, enough liquid would have accumulated in the tubing string and in the wellbore that the well would have killed itself and it would have ceased to produce altogether.

Q All right, sir, that does not demonstrate, nor have you given us anything that demonstrates that this well does not have the capacity to have its production restored after it logs off.

A Well, if -- if we can -- if conditions --

Q This is a logoff test, Mr. Aycock, that's all it shows.

A Yeah.

Q It does not demonstrate that after the well logs off, that it doesn't have the capacity to restore itself to production.

A It will not --

MR. CARR: Objection, the ques-

tion is argumentative.

A The test shows what the status of the well is at this time. As depletion proceeds, there'll be less available energy difference between the flowing tubing pressure and the delivery pressure at any rate, so the problem will become more and more severe to the point that the well won't produce at all.

Q All right, let's look at your opinion about lost reserves.

You're simply indicating the estimated remaining gas to be recovered and you equate that to lost reserves.

A That's correct.

Q All right. We don't know what would be lost if the well is logged off and if production is restored and if it continues to produce. We don't know what the difference will be.

A No, I'm not omniscient and I don't think your client is, nor the Commission, Mr. Kellahin. I don't believe any of us know. I believe that we would have to -- we would have to run an experiment that would cost me and my joint working interest owners approximately an anticipated Million Dollars, and we're not willing to take that risk.

Q Well, Mr. Aycock, I didn't make the rules on the hardship gas well classifications. I'm just asking you what you've done.

MR. CARR: Is that a question,

Mr. Kellahin?

MR. KELLAHIN: You're about to get one.

Q Have you determined whether or not you could put a plunger lift in this well?

A Not without killing the well, nothing can be done. You can't open up the well to the atmosphere and work with it.

Q What's the reason you didn't notify the Commission and Amoco of the logoff test, Mr. Aycock?

A We didn't realize that we were expected to.

Q You're familiar --

A We're quite willing to repeat it in the presence of any and all parties that care to view it.

For one thing, as you'll notice, it took a period of three days, day and night, to do it, so --

Q You're familiar with Order R-7453, are you not, Mr. Aycock?

A Yes.

Q All right, sir. Directing your attention to Exhibit A to paragraph numbered 4-10-B3, it says the Director of the Division on his own or upon the request of an affected party may require a minimum flow test.

MR. CARR: I object. I think this line of question's been already asked and answered. Mr. Aycock has stated they didn't know they were required

to.

MR. STAMETS: Objection is sustained.

Q I'm curious about your statement, Mr. Aycock, that this water is going to have some damage on the formation. Is not this water coming out of the formation from which the gas is produced?

A It's not coming out of the formation. It's coming out of the gas.

Q And the gas is in this formation.

A That's correct.

Q And it's a component of the gas.

A That's correct.

Q In that formation.

A Correct, however, it's in the vapor form, not in the liquid.

Q Does it require you to kill the well to put a compressor on the well?

A No.

MR. KELLAHIN: I have no further questions.

CROSS EXAMINATION

BY MR. STAMETS:

Q Mr. Aycock, looking at Exhibit Number Two, I don't see any place on there where you all reported water production. Is there an amount of water that's pro-

duced?

A Yes, sir. If you'll notice, we have it on the -- I believe it's on the production tabulation that's attached hereto as originally, you'll notice that we have the production, monthly production, starting in January of '81. The well was actually, the completion was attempted in December of 1980 --

MR. PEARCE: Excuse me, sir, I don't --

A That's attached. That's in this page, Perry, near the back of the original application.

MR. STAMETS: It's also on --

A Yes, sir, that's what I'm talking about. You'll notice it has barrels of oil produced, barrels of -- it says barrels H2O.

Q Okay, that's --

A And you'll see that it shows how much water has been produced since the beginning of time.

Q Okay. Then going to Exhibit Number Two, and I'm not sure what page this is, but there's a period of time of fifteen days in early April of this year when the well produced from 149,000 to 156,000 a day for better than two weeks, and it looks as though the well came right back from that without any difficulty.

And this is less than your reported minimum sustainable rate.

I'm surprised that you didn't use this as

a minimum figure.

A Well, the reason that I didn't do it, Mr. Stamets, was that information wasn't available to me at the time that I had to file the original hardship application.

All I had was the monthly production at that point.

There is no question but what for limited periods sometimes you can keep the well flowing and there's no question but what if the well is not killed, it's probably not a problem because the fluid comes irregularly, but it will come. The best information we have is the logoff test that was specifically run to demonstrate what the well would do by simply adjusting the choke size and not fooling with the well, just letting it do whatever it's going to do.

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

QUESTIONS BY MR. CLEMENTS:

Q Mr. Aycock, on your -- this Exhibit Two, of course this is some time ago, I notice that the first thing you start off there with wellhead flow line frozen off and you have some freeze off problems along there. It doesn't seem to have affected your production rate any at all.

A Oh, I don't think there's any question but what limited periods they're, you know, that's not the concern. The concern is days, weeks, and months of shut in,

which is what we're anticipating if we don't have some sort of protection, based on the way that El Paso has done the wells that don't have hardship, we've seen them shut in for periods of two weeks to two months.

Q Okay, on your -- you went through two chokes. You started out -- are you normally producing this well on 11/64th choke?

A Yes, sir, just about, that's right.

Q So actually what this test that you're showing us, that the well was in maybe a logging off condition when you started this test, is that not right?

A That's what -- that's right, Mr. Clements, that's what I've been saying. The well is on the verge of dying without any further restriction.

Q I don't think -- well, what I'm saying is how often do you blow this well down?

A Whenever they have to.

Q Like once a month, once every six months?

A Whatever it's required to get the well in configuration where it will produce. It's been more frequent. It's becoming every six weeks to two months minimum of late, since last fall.

Q In other words, if we had blowed this well down prior to starting this, we may not have (not understood.)

A Since I don't know exactly where the liquid was standing in the wellbore, there is every

possibility that you could get all kinds of logoff tests depending on how much is accumulated in the wellbore. My instructions to Mr. Nermyr when he did this were to start the test as he was producing the well and not to -- not to jiggle it. We were not trying to manipulate the test to show anything except what the well would do as the rate was systematically reduced.

Q Mr. Nermyr's been instructed to call us and notify us --

A Yes, sir.

Q -- if a new logoff test is prepared?

A Yes. He told me that he talked to you --

Q Yeah.

A -- in Jerry Sexton's office about it and that -- that he went ahead and did the test with the understanding that he would be required to repeat it in your presence or in the presence of your representative.

Q Well, I think about the time he done this it was almost a matter of after the fact, anyway.

MR. CLEMENTS: I don't have any more.

MR. STAMETS: Any other questions of the witness? I believe with all of the questions concerning the logoff test, the way it was done, that fifteen days of producton at lesser rates, that I believe Mr. Hartman will need to redo this test.

A No problem at all with that. We antici-

pated that.

MR. STAMETS: And we will be holding this case until we receive the information on that.

A Fine, we'll be in touch with Mr. Clements, Mr. Nermyr or Harold Swain, one, will be touch with Mr. Clements.

Q And I presume you will also be in touch with Amoco.

MR. CARR: We will.

A Oh, yes.

MR. KELLAHIN: Mr. Examiner, we request that this case be continued until such time as the properly authenticated logoff test is run and we'll come back to hearing at that point and finish this case.

MR. STAMETS: Any reason, Mr. Carr, why that should not be done? I'm very much inclined to do that.

MR. CARR: The only thing I would state is I think everything except the data on the logoff test is already before you and therefore questions springing from the maximum sustainable producing rate, I would have no objection to the case being opened to look at that at that time once a proper logoff test is before you.

MR. STAMETS: Okay, then --

MR. CARR: But I think it should be limited to that question, since that's the only thing the logoff test will show.

MR. STAMETS: The case, then, will be continued to the September 5th Examiner Hearing, and it won't be limited as to cross examination. I might think of something else.

(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 CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 8226 heard by me on 8-8, 1984.

Richard L. Stamets, Examiner
Oil Conservation Division

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

25 July 1984

EXAMINER HEARING

IN THE MATTER OF:

Application of Doyle Hartman for a hardship gas well classification, Eddy County, New Mexico. CASE 8226

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
Oil Conservation Commission
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

MR. STOGNER: Call next Case Number 8226.

MR. PEARCE: That case is on the application of Doyle Hartman for hardship gas well classification, Eddy County, New Mexico.

Mr. Examiner, that case is to be continued until August the 8th, 1984.

MR. STOGNER: Case Number 8226 will be so continued.

(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. 8226 heard by me on July 25, 1984.

Michael E. Stogner, Examiner
Oil Conservation Division

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 8226

BEFORE: Richard L. Stamets, 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. STAMETS: We'll call next Case 8226.

MR. PEARCE: That case is on the application of Doyle Hartman for hardship gas well classification, Eddy County, New Mexico.

Mr. Examiner, that case is to be continued until July 25th, 1984.

MR. STAMETS: The case will be so continued.

(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 CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 8226 heard by me on 7-5 1984.

Richard L. Stamets Examiner
Oil Conservation Division

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

20 June 1984

EXAMINER HEARING

IN THE MATTER OF

Application of Doyle Hartman for hardship gas well classification, ~~Lea~~ Eddy County, New Mexico.

CASE 8226

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 CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 8224 heard by me on June 20 1985.

Michael E. Stogner, Examiner
Oil Conservation Division