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 8227

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
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MR. STAMETS: We'll call next Case 8227, application of Doyle Hartman for hardship gas well classification, Lea County, New Mexico.

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

I have one witness who needs to be sworn.

MR. STAMETS: Any other appearances in this case?

(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?

A By Doyle Hartman.

Q And in what capacity?

A As a consultant in connection with his applicaiton under Case Number 8227.

Q Have you previously testified before this Division and had your credentials as a petroleum engineer accepted and made a matter of record?

A I have.

Q Are you familiar with the application filed in this case and the subject well?

A Yes, I am.

MR. CARR: Are the witness' qualifications as a petroleum engineer acceptable?

MR. STAMETS: They are.

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

A Mr. Hartman seeks a determination that the -- his Gulf-Greer No. 1 Well, located in Unit L of Section 21, Township 22 South, Range 36 East, in the Jalmat Gas Pool, is a hardship gas well, which should be granted priority access to pipeline takes in order to avoid waste.

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

A On May the 16th, 1984.

Q And is the letter which accompanied that application included in the packet of exhibits as the --

A Yes, sir.

Q -- first page?

A It's the first page of the packet of ex

hibits that have been provided to the Examiner.

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

A It was 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 what -- was that request granted?

A It was granted on May the 23rd, 1984, by a letter from Mr. Sexton in the Hobbs Office, District One.

Q And is a copy of that letter also included in the exhibits?

A Yes, sir, it is, there is.

Q Now behind the letters, which are the intial documents in this packet of exhibits, is a copy of the application, is that correct?

A That's correct.

Q For this well what minimum producing rate was requested by Mr. Hartman?

A 120 Mcf per day.

Q Would you refer to the plat now, which is included with the application, identify the well for which the hardship classification is sought, and review the other information on that plat?

A There are two plats, the first of which

shows the Hartman Gulf-Greer lease and all of the surrounding leases and it shows that the Hartman Gulf-Greer Well, which is located in the northwest quarter of the southwest quarter of Section 2, Section 21, I beg your pardon, Township 22 South, Range 36 East, is the application well.

That well averaged producing during the calendar year 1983 184 Mcf per day. Systematically surrounding this well are shown all of the other Jalmat wells on the surrounding leases that are producing or have produced and the rates at which they do produce or have produced during the year 1983, and I would respectfully call the Examiner's attention to the fact that these rates range from two of them produced zero, one of them produced 2 Mcf per day, one produced 8 Mcf per day, one produced 13 Mcf per day, and one produced 35 Mcf per day, so as far as the immediate surrounding area of the Jalmat Gas Pool is concerned, this is the only well that has any substantial capacity to produce gas.

Q How many acres are dedicated to the well?

A 160 acres.

Q And is that a standard unit?

A Well, that's a standard unit for proration purposes. As the Commission is aware, the pool rules call 640 acres the spacing unit for the Jalmat Gas Pool.

Q Would you now refer to the second plat and review that for Mr. Stamets?

A The second plat gives more details for the Hartman Gulf-Greer lease, as well as shows in detail the

location of the Dalport Christmas "B" No. 1 Well, which -- about which we will have further testimony in this connection.

And it shows that the Hartman Gulf-Greer No. 1 is located in Unit L of Section 21, 22 South, 36 East, and was completed May the 20th, 1978 as an infill Jalmat producer.

And the other well on the lease is the Gulf-H. G. Greer No. 1, located in Unit K of Section 21, 22 South, 36 East, for whom the last production was in November of 1979 and is now an abandoned Jalmat producer.

And the Dalport Christmas "B" Well is located immediately to the east of the Hartman Gulf-Greer lease. The well is specifically located in Unit J of Section 21, 22 South, 36 East, and as indicated on this plat is a Jalmat producer with water problems.

Q Will you now review the table which immediately follows the plats?

A The table which immediately follows the two plats serves as further documentation of the location and status of the wells that, Jalmat wells, that are on the leases surrounding the Hartman Gulf-Greer lease. All of this information is -- has been shown previously, but it shows over in the far righthand column, it shows the production volumes which were previously enumerated on the plat. It shows who the operator, the lease well names, the locations, the unit descriptions, pardon me, and the number of

acres dedicated.

Q Now, Mr. Aycock, you've state this is a Jalmat well, I believe.

A Yes.

Q Is this a prorated pool?

A Yes, it is.

Q What is the status of this well?

A This is a nonmarginal well that does not -- is not carrying currently any underage or overage.

Q Does this exhibit contain a statement concerning the present under/over status of this well?

A That's correct, it does, located immediately behind the tabulation of well status.

Q Now the plats that you have offered us set forth the names of the offsetting operators. Is that correct?

A That's correct.

Q Has notice of this application been given to each of the offsetting operators?

A Yes, sir, you will notice in the -- with the letters that were our initial -- the initial portions of these exhibits, that we showed copies of the return receipts indicating that they had all been notified by certified mail.

Q Did the notice provide the minimum sustainable producing rate which you were seeking for this well?

A Yes.

Q And was this notice also given to the transporter and purchaser of the gas?

A Yes, sir, it was.

Q What was the minimum sustainable producing rate you were seeking for this well?

A 120 Mcf per day, I believe. Let me double check it before I so state.

Yes, 120 Mcf per day.

Q And how was this rate obtained?

A The rate that was obtained is -- was a result of an analysis that I did for Mr. Hartman and the analysis that I did for him is summarized in the three pages that iimmediately follow in written form, was a portion of the original hardship classification application, and follows immediately the statement of underage and overage.

Q Did you base this determination primarily on the productive history of the well?

A Yes, I did.

Q In your opinion will underground waste occur if production from the well is curtailed below this recommended producing rate?

A Yes, sir, I believe it will.

Q Would you refer to your narrative and using that describe to Mr. Stamets how this underground waste will occur?

A Okay. There is no way that the water

production can be eliminated by remedial measures because the well's completed in the Seven Rivers portion of the Jalmat interval between depths of 3479 and 3585 and no water was initially produced from any of these Seven Rivers sands, and therefore, the conclusion from that is that the indigenous water saturation was below the critical saturation for the wetting phase at the time the well was completed and therefore there was no observed water production.

If there were an attempt made to determine the source of water within the vertical section, the well would have to be killed and each of these intervals would have to be tested separately.

Killing the well would flood all of the zones with water that was extraneous to the producing zone and would probably completely negate the -- would cause the damage that the hardship classification seeks to negate.

So that's not a -- that is not a viable alternative, and even if the source of water were identified, there is substantial doubt that it could be squeeze cemented without squeeze cementing the entire well because this well has been heavily fractured and the probability is that there are substantial vertical fractures that interconnect perforated intervals and if you squeeze cemented one, you'd squeeze cement all of them. And that would entail reperforating and attempting to selectively restimulate the zones that were not found to be water bearing and that probably would be -- not be economically feasible and would

be physically difficult to impossible.

Q If you attempted that, would you be able to return the well to its original condition?

A Probably not..

Q Now the well is producing water.

A Yes, it's produced between 34 barrels a day to 45 barrels a day since December of 1979, when water production was originally observed.

Q And if the well is shut in what effect does that have on the permeability?

A Well, we have a couple of problems here. The first is that it is the experience of all operators in the Jalmat Pool with the low pressures that prevail, that long shut-in periods, when flooded with water, whether it's indigenous water or not, runs a substantial risk of not being able to get the well back, simply because there is insufficient reservoir energy available even if you had 100 percent drawdown of the -- at the wellbore, such as you would be able to substantially achieve with a pumping unit. If you get enough in there you don't have enough pressure to move it out of the way and you probably will not ever be able to get the well back.

Even if you can, and you engender a sufficient water saturation in the critical zone of high reservoir pressure drawdown that occurs in the vicinity of the wellbore for all producing cases, once you engender a high water saturation in an unnatural way, the probability is

that you would never be able to get the water saturation back to the level that it was even with the water production, and if that does occur, then the probability is that you will not be able to ever get the gas productivity that you have now from any of the zones.

Q What attempts could be made to correct this problem without seeking a hardship classification?

A If you could produce the water without any gas production, of course, if you could pump the water off with no gas production, then that would be possible, but it is not possible to do so for the simple reason that if you shut the gas in on the casing and attempt to pump the water on the tubing, you will quickly reach the point that gas will begin to channel downward through whatever liquid volumes are within the wellbore and they will destroy the -- or dramatically reduce the volumetric efficiency of the rod pump to the point you probably will not be able to lift any substantial quantities of fluid.

We have an additional problem here in that the water that's produced is extremely corrosive, which we'll document later in this testimony, and if you allow the stagnant water to sit there in contact with your tubular goods, you're going to substantially corrode them and there's already been a necessity to have replacement of downhole tubular goods, tubing and rods and pumps, that is at a rate that was unexpected.

You cannot treat the well properly unless

you can pump the fluid to the surface and return either a portion of it or some extraneous fluid and let it circulate around by pumping it and allowing it to run down the casing, and you simply can't do this with the well shut in.

If you allow it to sit there stagnant, then the probability is that you will accelerate the equipment failures due to the corrosive water being in contact with the rods and tubing for long periods of time.

Q Mr. Aycock, would you now identify the next document in the packet of exhibits?

A The next document in the package of exhibits is one, two, three, four, five, six pages from the original drilling reports and these are included to demonstrate the difficulties that were entailed in originally completing the well because of water production from the upper portion of the Jalmat interval and the Yates that had to be -- subsequently had to be squeezed off. This is documented in the drilling reports.

I won't bore the Examiner by going through it, but if he will look he will see each -- see that each zone was perforated individually, was broken down individually, and individual reservoir pressures were run.

And subsequently the Yates had to be squeezed off because it was found to be water-bearing.

Q Will you now refer to the C-103, which is the next exhibit?

A There's also a C-103 that's dated April

24th, 1978 that's included, and it points out that in the process of completing the well the Jalmat gas interval from 3286 to 3585 was perforated with 19 shots and then acidized with 5200 gallons of 15 percent mud cleanout acid.

Upon recovering load water, determined the well was producing South Eunice injection water plus a small quantity of gas, and after swabbing well for two additional days with the use of an RTTS packer and retrievable bridge plug, verified that injection water was being produced out of the Upper Jalmat gas perforations between 3286 and 3419, above the South Eunice Unit unitized interval.

Ran drillable bridge plug and set at 3448 feet, Kelly-bushing depth, and set cement retainer at 3227, Kelly-bushing depth, squeezed perforations 3286 to 3419, total of five holes, with 100 sacks of API Class C cement containing one percent halite, three followed by 50 sacks of API Class C cement containing five pounds of sand per sack. Final squeeze pressure, 3000 psi, no drop in pressure; now ready to drill out cement to the top of the drillable bridge plug and pressure test perforations, which -- all of which was done in completing the well.

Q Will you now review the portion of the log which is attached to it?

A It's a portion of the log of the application well that's included that shows the perforations which actually had to be squeezed off that are in the Yates formation portion of the Jalmat gas interval.

Q And will you now go on to the graph that's attached?

A There are also attached to this two separate or four separate graphs, the first two of which are for the interval 3286 to 3585, which is the entire perforated interval, and it shows the pressure buildup curve that was observed here and immediately behind that is a graph of pressure as a function of depth and it shows a fluid level at approximately 2500 feet and a pressure at 3450 foot well depth of 417 psi.

The next pressure measurement is in the interval 3479 to 34 -- 3585, and this shows the Lower Jalmat perfs isolated from the Upper Jalmat perfs, and once again the -- you have a depiction of the graph of pressure as a function of time, the build-up curve, and then you have at the end of the test a graphical depiction of pressure as a function of depth and it shows that the fluid level was at approximatelky 3000 feet and that the measured pressure at a depth of 3450 feet was only 237 psi, and I point this out so that the Examiner will specifically realize that it is the experience that when we have abnormally high pressures in the Jalmat, as old as this pool is and as long as it's been on production, this is usually accompanied by water production and it usually means that extraneous water by whatever means has found its way into the zone and that is the reason that the pressure is higher than normal.

In this case they are associated and al-

so, as we'll later point out in subsequent testimony, that was the case with the offsetting Dalport Christmas Well.

Q Mr. Aycock, will you now refer to the document entitled Gulf-Greer No. 1 Well Service Jobs?

A The next page behind the second graph that shows pressure as a function of well depth at the end of the build-up test, shows that there have been ten well service jobs required on this well. The initial one was in October of 1980. There were three in 1980, three -- five in 1981, one in 1982, and one in 1983.

And all of these tubular goods were new that were put in this well and they were not -- this is seamless tubing. This is not lap-well tubing, non-normalized or something, this is seamless tubing because Mr. Hartman has found that it's not any saving to him to try to save money on tubular goods and run cheap tubular goods.

And you'll notice that there, there -- of the first six of them, five of those there was hole in the tubing that had to be repaired, and this was during the period that they were getting their corrosion mitigation program worked out and they also found that they have a recurring scale problem with this well that requires mitigation because they have -- you'll notice that they have a pump stuck here on the 19th of December, 1981. It says, "Change pump. Pump Stuck." Well, the pump was stuck because of scale.

One of the problems is that because of

the South Eunice Unit and the fear of the South Eunice Unit operator that Mr. Hartman would either inadvertently or on purpose engage in subsurface trespass, he was not allowed to drill any rathole for this well and his pump is sitting very near the bottom, whereas his normal procedure is to set the pump well below the gas producing perforations so that he can effectively pump the water off.

The pump is sitting right on the bottom and so to keep the perforations water free he has to pump the well off, and in pumping the well off, because of the reduction in pressure and the re-establishment of chemical equilibrium in the produced water, you get a scaling problem than is worse than it would otherwise be, and there's no way he can get around this. This is imposed on him by the geometry of the wellbore as it is and as it will, of course, obviously have to stay.

At the bottom of this page you'll notice that it's treated with chemical weekly and each treatment consists of three gallons of corrosion inhibitor and three gallons of scale inhibitor.

If the well is shut in, it will make it practically impossible to perform these treatments, because, as I stated, the normal procedure is to -- is to let them go down the back side and circulate them around while you're doing production. In other words, you open your casing valve and you allow the pump fluid as the pump pumps it up, rather than pumping it out to the surface facilities, it

runs down the back side again until you're certain that you've coated all the tubular goods and you've fairly commingled the inhibitor with the -- with the waters that are being produced at that point in time, and if the well is shut in, it's not possible to do this with any efficiency whatsoever.

Q Mr. Aycock, will you now refer to the graph depicting the gas and water production from the well?

A The next part of our exhibits, the next document, is a semilog graph of gas production, water production, water/gas ratio, and surface flowing casing pressure, or pumping casing pressure, all as functions of time from initial completion through March of 1984, and the most consequential things that I think need to be drawn from this is that the -- while the water production has varied, it has been relatively invariant for almost two years and, of course, the gas production has declined even at the peak periods when the well was producing, because of depletion of reservoir energy, and so therefore the water/gas ratio has increased continuously for the past two years and we anticipate that it will continue to increase.

The volume of water seems to be independent of depletion of reservoir energy and the volume of gas is dependent upon reservoir energy so therefore the ratio between the water and the gas, whether you do it -- I've done it in terms of water/gas ratio simply because it's -- they're easier numbers to manipulate and also the water/gas

ratio shows you directly a number that's reflective of what you're trying to analyze.

In any event, if this -- if this performance continues as it has, then the water volume is invariant and the gas volume is decreasing so the water/gas ratio will go up or the gas/water ratio will come down as depletion proceeds.

Q Behind this graph you have some tables that contain the raw data from which you've constructed the graph.

A Yes, these are Mr. Hartman's proprietary computer production reports that form the basis for the information that is shown on the accompanying graph, summarized in graphical form.

Q Would you now refer to the wellbore sketch and review that?

A There is an attached wellbore sketch which shows that there's 8-5/8ths surface casing set at 475 feet and cemented with 325 sacks of cement. There's 4-1/2 inch production casing, that says 365 feet but that's not correct; that's a typo. It's 3650 feet, and that is cemented with 950 sacks of cement. And it shows the perforations from which the well is producing and you will notice that the pump is sitting below the perforations but it's only sitting three feet below the bottom perforation. The bottom perforations are 3585 and the tubing is set at 3588, so essentially there's -- there's no offset, even though one is

shown on the schematic sketch, there's essentially no offset in depth between the -- where the pump is set and the lowest perforation.

Q Behind the schematic drawing is a section of the log from the well?

A Yes, there's a section from the log with the consequential completion information that's contained in Commission records summarized, showing the spud date, completion date, total depth, plug back total depth, casing setting depth, and cementing, the perforations, stimulation, the potential test, and the well test, and current pump arrangement, and current tubing depth, and then a portion of the log showing that the well is completed in the Seven Rivers and not completed in the Yates, as we've previously testified.

Q Now, Mr. Aycock, behind that are several documents concerning the offsetting Dalport Christmas "B" No. 1 Well.

A Yes, sir, that was mentioned in some detail in discussing the second plat, as you may remember. It immediately offsets this lease to the east.

Q Would you review these documents, please?

A Yes, sir.

The first thing is this log with summarized completion information and of course this well was spudded in the first of December, 1952 and completed the 18th of December, 1952, so it's an old -- it's over thirty

years old, the important thing being that in the Seven Rivers formations in which the Hartman well is completed and in the Yates as well, from which Hartman attempted completion, there was no water observed.

The differing amounts of gas production from the Seven Rivers, from which he's later completed in 1978, he got gas to surface in three minutes and produced 4.1 million cubic feet per day, and recovered 140 feet of gas-cut mud.

The pressures in the Yates even at that time were probably excessive because you'll notice on the drill stem test from 3134 to 3300 the flowing pressure, they got gas to surface at 27 minutes at 150 Mcf per day, but the flowing pressure was 510 pounds and the 25 minute shut-in pressure was 810 pounds, and as we'll later show you, those are associated with -- with water production almost universally at this stage in depletion life because that's just the way it is. The pressures won't be that high without extraneous fluid migration into the zone and, of course, that's always water.

Q Will you now review the production history on that well?

A The next is a production history from the New Mexico Engineering Committee records. It shows by years from 1965 through March of 1984 the annual gas production, the annual average gas rate in Mcf per month, the cumulative gas production at the end of the period indicated, the shut-

in surface pressure that was reported to the Oil Conservation Division, and that shut-in surface pressure approximately mathematically converted to bottom hole pressure divided by compressibility factor, which is, of course, the number that's considered consequential for gas wells and is used to project original gas in place and reserves.

Q And next you have a graph of that information.

A Next there's a graph of production information. The entire unit, of course, is graphed at the annual average rate in Mcf per month.

Q And behind that a P/z curve?

A The P/z curve shows the, with the exception of 1982, the -- and 1977, the P/z has actually gone up as a function of cumulative recovery rather than declined, as one would anticipate it normally would when there was consistent and ongoing depletion of reservoir energy, and this is once more a very excellent indirect indicator that there was -- there is water encroaching into this -- to the Jalmat zones and that problem is continuing and in fact probably becoming worse with time.

Q Would you now refer to the C-103 filed by Dalport for its well?

A Yes. It shows that on November the 1st, 1968 they ran a work well temperature survey and determined water was entering above the shoe joint of the casing.

On the 5th through the 18th of December, 1968 they moved in, pulled tubing, set bridging basket at 3169 feet and perforated with two shots at 3020 feet; set a drillable packer at 3100 feet and squeezed 50 sacks around the casing with a maximum pressure of 2500 pounds and a shut in pressure of 700 pounds; drilled out with reverse circulation unit and cleaned out to 3417 feet but could not clean out to bottom because of lost circulation; and ran the tubing with a packer and set at 3060 feet and swabbed the well four days before they could put it on the line.

Then they treated on the 21st of January, 1969. They treated with 500 gallons of 7-1/2 percent dolomite wash with additives and swabbed the well in and put it on the line.

So they don't -- they report zero water production after the work was completed, but it is -- it is apparent that the well has had a continuing water production problem.

Q Would you now refer to the letter from W. L. Todd, dated May 5, 1978?

A This is a copy of a letter from W. L. Todd, President of Dalport Oil Corporation to Continental Oil Company in Hobbs, dated May the 5th, 1978, and he goes into the fact that he checked with Mr. Hartman as to outcome of his Gulf-Greer No. 1 Well in the southwest quarter of Section 21, and he said that he found that his well and our Christmas "B" 1 Well are producing considerable water from

the Yates and Upper Seven Rivers zones.

The second paragraph says, "We feel that there is a possibility of injected water escaping into these zones from your No. 18 Well in the northeast quarter southeast quarter of Section 21, or perhaps from another injection well in the close proximity. We enclose a copy of a letter dated May 2nd, 1978 giving Mr. Hartman's views."

And following this are water analyses that show that for various times that show the water and have formed the basis for Mr. Todd's assertion that some of it is obviously not formation water; some of it probably is but some of it probably is not.

Q Now, Mr. Aycock, there is a copy of a unit agreement in this packet of exhibits for the South Eunice Unit.

A Yes.

Q Would you point out the important portions of that unit agreement?

A Yes. The consequential portion of that unit agreement are found on page three and I believe have been highlighted on -- should have beenhighlighted on those copies that have been provided to the Commission.

Under Section F it states that the unitized formation is defined as the interval between the base of the Queen formation to a point 232 feet above the top of the Queen formation, provided that in no event shall the unitized formation extend below a depth of 4000 feet from

the surface of the ground.

And further it specifies that these formation correlation points are shown at specified depths on the log of the specified Continental Oil Company well, and of course, as you're aware, this is standard in a -- for defining unitized interval in a unit agreement.

Under Subsection G, the unitized substance is defined and shall mean all oil, gas, gaseous substances, sulphur contained in gas, condensate, and all associated and constituent liquid or liquifiable hydrocarbons produced the unitized formation of the unitized land.

However, it shall not include the dry gas and associated hydrocarbon produced from gas wells within the unit area which are completed in and produced from the vertical limits of the Jalmat Gas Pool as divined by Commission Order Number R-1670.

Q You mean as defined?

A Well --

Q All right.

A No comment.

Q Mr. Aycock, if a hardship classification is not granted for this well, could it result in the premature abandonment of the well?

A It could result in the premature abandonment of the well and in all likelihood will at least result in a -- in some waste occurring because the well will not be able to be produced with the deliverability on an intermit-

tent basis; that is, with which it can be produced on some sort of reasonable continuing basis.

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

A As of April 1st, 1984 the estimated remaining recovery from this well, if projected from decline curves alone, would be 425-million and if projected from deliverability calculations would be 419-million.

Q Mr. Aycock, in summary, has Mr. Hartman, in your opinion, acted as a responsible and prudent operator in attempting to eliminate the problems that could result from curtailing production from this well without requesting first a hardship well classification?

A I don't know of anything that Mr. Hartman could do to eliminate the water production that he wouldn't run a very substantial risk of losing his well. If the water that's being injected at the point at which it's being injected into the Jalmat gas interval could be found and that water injection could cease, then the necessity for the hardship request and all of these accompanying problems would, of course, be alleviated and it would not be necessary, but he does not have that in his power, so those are the only two ways that I know that it could be remedied.

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

A Yes, I believe that it will.

Q Will it be in the best interest of con-

servation and the protection of correlative rights?

A Yes, it will in my opinion.

Q Was Exhibit One compiled under your direction and supervision?

A Yes, it was.

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

MR. STAMETS: It is admitted.

MR. CARR: I have nothing further on direct.

CROSS EXAMINATION

BY MR. STAMETS:

Q Mr. Aycock, would you run over one more time where you think the source of the water in this well is?

A I think it's probably water that's being injected in the South Eunice Unit because the unit -- the unitized interval overlaps, if you'll notice, and I think it's water that's being injected into the South Eunice Unit, and whether it's being injected directly, as you're aware probably better than anyone because of your longstanding experience with the Commission, there are a lot of old wells that probably don't have integrity of the cement and the casing over the entire interval.

And of course, when you waterflood a por-

tion of the zone with time the reconstruction of the fluid saturation within the zone that's being flooded, the energy to do that and to conduct a successful waterflood required that energy be expended and that energy shows up in the form of increasing injection pressure, and you have to repressure the formation, in other words, to creat a flood and in doing so any of these exit points, whether they're within the formation itself or within wellbores of old wells where there's not adequate isolation, when the pressure differential exists the water is going to flow, and obviously, there's no way of knowing which, but the probability is that one or both are occurring at some point remote from Hartman's lease and are showing up there in these volumes.

Fortunately, he's able to handle them with a -- with a reasonable size pumping unit and is able to pump them off.

Q What did you say the daily water volume was?

A It's running between 36 and 45 barrels per day.

Q Does that pump operate 24 hours a day or is it -- does it cycle on and off?

A They pump it enough to pump the water off and I cannot -- that is -- that is less than pump capacity if the fluid is standing at any level at all, and I can't specifically tell you, probably it's most of the time with a 57 pumping unit, but that is, that is less than, of course,

if the fluid was standing high in the hole, it would be much less, but obviously what you want to do is pump it off to keep the fluid off of the formation, so you'll probably pump it most of the time.

Q Would it be possible to do a logoff test on this well?

A Well, I don't know how you could do it because the well won't -- if you pull the -- if you don't produce the water the well won't produce. In fact the reason that they put a pumping unit on it in the first place is that it wouldn't buck the line pressures.

Q Does it produce through the tubing or through the casing?

A It produces up the casing/tubing annulus and the fluid is pumped up the tubing.

Q Could you restrict the volume being sold from the casing, I presume until you got gas locking of the pump?

A Well, you -- yes, you probably could, and that would -- those -- it would be difficult to conduct a test on a basis that would have reproducability because if you shut it in and let the -- and let the fluid build up to some degree, you wouldn't be able to get, without pumping the well, you wouldn't be able to get flow at all.

You would have to pump the well to start it, you know, to start it producing at all.

Q I presume the well's on production now.

A Oh, yes.

Q And that sort of test would be done currently.

A Yes, you could -- you could restrict -- just sit and crank the choke shut until you got the well to quit producing.

The point I'm making is that -- that the normal connotation of a logoff test is that it's carrying fluids with it and you're attempting to restrict the flow velocity to the point that fallback occurs and in this case it won't produce at all unless -- unless it's pumped, so we would need, if we're required to do that, we would need guidance from the Commission on how they want it done so we are not put in a position of conducting a test that shows what we want it to show without the Commission getting the information that they want.

Q Okay. I would assume that what we're talking about is just the well being out there under normal operation conditions and then slowly cranking back the sales valve.

A You mean with the tubing pumping?

Q Yes.

A Of course as long as the tubing is pumping it will just -- it won't -- it won't log off, as long as it continues pumping.

Q That's true, but it will gas lock, right?

A Well, it will gas lock at some point when

you build up the pressure enough to get -- to get the gas coming in the tubing and that's my point, that the important parameter won't be when gas production ceases but when liquid production ceases.

Q Wouldn't that, though, give us the absolute minimum rate that well could be produced at to keep the water off?

A Yes, it probably would.

Q Okay. I would like to see such a test done and contact Mr. Sexton at the Hobbs Office and arrange for it.

A Okay, fine and dandy.

Q And incorporate that information into the record.

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

Anything -- he may be excused. Anything further in this case?

MR. CARR: Nothing further except we do want it on the record that as we go into these testing procedures we want to be certain that the Commission concurs as we go into them as to how they're to be conducted because with other people I have represented in a case of this nature there's been some question as to how the test should be conducted and also there's been concern that at the end of the test the results will not show what you wanted them to show or what another operator in the area

might want, and therefore we are willing to certainly take the test but we do need your input as we go forward with it.

And I have nothing further.

MR. STAMETS: Okay, with supplemental information to be submitted, the case will be taken under advisement.

(Hearing concluded.)

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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. 8027 heard by me on July 19 84.

Richard L. Stamets Examiner
Oil Conservation Division

El Paso
Natural Gas Company

P. O. BOX 1492
EL PASO, TEXAS 79978
PHONE: 915-541-2600

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
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 County, New Mexico. CASE 8227

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 ycu, 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. 8237, heard by me on June 20, 1984.

Michael E. Stogner, Examiner
Oil Conservation Division