STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

CASE NO. 14122

APPLICATION OF PECOS OPERATING COMPANY FOR APPROVAL OF A NON-COMMERCIAL SALTWATER DISPOSAL WELL, LEA COUNTY, NEW MEXICO

COPY

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID K. BROOKS, Legal Examiner
WILLIAM V. JONES, Technical Examiner
TERRY G. WARNELL, Technical Examiner

May 15, 2008

Santa Fe, New Mexico

This matter came for hearing before the New Mexico Oil Conservation Division, DAVID K. BROOKS, Legal Examiner, WILLIAM V. JONES, Technical Examiner, and TERRY G. WARNELL, Technical Examiner, on May 15, 2008, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South St. Francis Drive, Room 102, Santa Fe, New Mexico.

REPORTED BY: JOYCE D. CALVERT, P-03
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Examiner Hearing
CASE NO. 14122

A P P E A R A N C E S

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FOR THE PROTESTANT:

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MR. JONES: Okay. Let's go back on the record, and call Case No. 14122. It's in the matter of the Application of Pecos Operating Company for Approval of a Non-commercial Saltwater Disposal Well, Lea County, New Mexico.

Call for appearances.

MR. FELDEWERT: If it pleases the Examiner, Michael Feldewert with the Santa Fe office of Holland & Hart, for the applicant, Pecos Operating Company.

MR. JONES: Other appearances?

MR. HALL: Mr. Examiner, Scott Hall with Montgomery & Andrews appearing on behalf of H&M this morning. I have one witness.

MR. JONES: Will all the witnesses please stand to be sworn?

MR. BROOKS: Will you state your names for the record, please.

[Witnesses sworn.]

MR. FELDEWERT: Mr. Examiner, before I begin, we do have a motion I'd like to address. It was to dismiss the objections filed by H&M Disposal. As you know, this case was set for hearing only because they filed an objection. And we informed the Division both by letter and then by motion of the fact that this objection is untimely and fell well outside the 15-day period provided by Rule 701.

And I submit to you that if that 15-day period in

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Rule 701 has any real meaning, this objection should not be entertained or considered by the Division, and we should use this time, since we're here, to address whatever the questions the Division has about the application.

But I suggest that H&M really has no standing here to object, because they waived any objection by failing to respond in a timely manner under Rule 701. So we would move that the Division dismiss the objections filed by H&M Disposal so that we can just proceed here today and address whatever questions the Division may have about the application.

MR. JONES: Mr. Hall?

MR. HALL: Mr. Examiner, were I permitted to make an offer of proof, I would have Mr. Don Harrod, a principal of H&M Disposal, testify to you that on receipt of the administrative application from Pecos, he attempted to contact Pecos directly to discuss his objections with them. He never established contact with them. And it is correct, I believe, he indicated an objection to the Division. I believe it was one or more days after the 15-day deadline under the rules.

Notwithstanding, I think the Examiner has the discretion to hear H&M's objections in this hearing today. And the information, testimony, and exhibits that we could offer through H&M will be useful to the Division in its decision-making process. I would urge you to exercise your discretion and allow our testimony.

MR. JONES: I'm going to defer to Mr. Brooks here.

MR. BROOKS: I have always interpreted it as my view that the protest date under our administrative rules are similar to the answer date in litigation, that failure to observe it does not constitute a waiver unless an order is entered prior to the time that the objection is actually filed.

So I would advise that motion be overruled -- that Mr. Feldewert's motion be overruled.

MR. JONES: I'm going to go with my legal advice here, and we're going to deny the motion to cancel this, and we're going to go ahead and hear the case, Mr. Feldewert.

MR. FELDEWERT: Under those circumstances, Mr. Examiner, then, we call Mr. Steve Gray to the stand.

STEVEN D. GRAY

after having been first duly sworn under oath,

was questioned and testified as follows:

DIRECT EXAMINATION

BY MR. FELDEWERT:

Q. Mr. Gray, would you please state your full name for the record.

A. My name is Steven Gray.

Q. And by whom are you employed and in what capacity?

A. I'm a manager and part owner of Pecos Operating Company.

Q. And how long have you been with the company?

A. The company has only been in existence for about a year and-a-half now.

Q. What was the company's form prior to Pecos Operating Company?

A. I was also a partner in a previous company called Pecos Production Company for the last seven or eight years.

Q. Okay. Have you previously testified before this Division?

A. No, I have not.

Q. Have you testified before other regulatory agencies?

A. Yes, I have.

Q. What were those?

A. I had previously testified in front of Oil & Gas Commission hearings in Texas and in Louisiana and in Mississippi.

Q. Why don't you briefly describe your credentials -- well, let me ask you something: Were you certified as an expert witness by those commissions?

A. Yes, I was.

Q. In what field?

A. As a petroleum engineer.

Q. Why don't you briefly describe for the Examiner your credentials as a petroleum engineer.

A. Okay. I received my Bachelor's of Science degree in petroleum engineering at Texas Tech University in 1982. I was later registered as a professional engineer in the state of Louisiana in about 1986. I have been a practicing petroleum engineer for about 26 years now.

Q. Are you a member of any professional organization?

A. I'm not an active member at this time, but in the past, I've been a member of the Society of Petroleum Engineers.

Q. How long were you a member?

A. I was a member for over 20 years.

Q. Okay. Can you briefly outline your work experience as a petroleum engineer in Southeast New Mexico?

A. Yeah. Since about 1990, I've worked as both a reservoir engineer and a production engineer, almost exclusively in Permian Basin and predominantly in Southeastern New Mexico during that time.

Q. Have you had an opportunity, Mr. Gray, to study the reservoir that is the subject of this application in the Devonian?

A. Yes, I have.

Q. And how long have you been engaged in the study of this reservoir?

A. We first got involved in studying this reservoir in about September of last year, so it has been over six months

now.

Q. And did you prepare the C-108 application for authorization to inject?

A. Yes, I did.

MR. FELDEWERT: Mr. Examiner, I would tender Mr. Gray as an expert in petroleum engineering and in reservoir engineering.

MR. JONES: Any objection?

MR. HALL: No objections.

MR. JONES: Mr. Gray, did you intend to get a professional engineering qualification in New Mexico? You said you had one in Louisiana, right?

THE WITNESS: Yeah. I had one in Louisiana. I have a partner that's registered in Texas, and neither one of us are yet registered in New Mexico.

MR. JONES: Do you intend to do that?

THE WITNESS: I have not intended to do that right now.

MR. JONES: Okay. We're going to qualify Mr. Gray as an expert in petroleum engineering.

Q. (By Mr. Feldewert): What I'd like you to do, Mr. Gray, is turn to Pecos Exhibit No. 1, and just briefly state what your company seeks to do under this application.

A. Okay. Exhibit No. 1 is just a well identification map of the area that we're going to be

discussing today. Pecos is seeking approval to re-enter an existing well that has been plugged. It's located in the Caudill Devonian Field in Lea County.

This well was marked with the red A-prime on the cross section that I'll show you later, to deepen it and to utilize it as a non-commercial saltwater disposal well. This disposal well will be utilized for Pecos' existing Devonian producer, the State GA No. 1, which is shown here. Near the center of the map is the red A -- which will also be on our cross section -- and also utilize it for other planned re-entries of existing wells on our lease.

Q. Is this going to be a non-commercial disposal well?

A. Yes, it is.

Q. Just for your produced water on your lease?

A. That's correct.

Q. Let's deal with a couple of preliminary matters real quick. Is Exhibit No. 2 the C-108 application that was filed with the district office?

A. Yes, it is.

Q. And what is the status of the land in which this disposal well is to be utilized?

A. The surface is private, and the minerals are owned by the State of New Mexico.

Q. Was a copy of this application and notice of this

hearing provided to the surface owner?

A. Yes, it was.

Q. And who is that?

A. Mrs. Wanda Alexander.

Q. And was a copy of this application and notice of this hearing mailed to all the Division-designated operators within a half mile?

A. Yes, it was.

Q. Is Pecos Exhibit No. 3 the affidavit with attached letters giving notice of this hearing?

A. Yes.

Q. Now, as I look through this, I note, Mr. Gray, that Cimarex had not filed a return receipt. Have you had any discussions with Cimarex about this project?

A. Yes, I have.

Q. And when did those take place?

A. Yesterday.

Q. And can you identify to the Examiner the nature of your discussions?

A. Yes. We noticed yesterday that we had not received a receipt from the notice that we sent to Cimarex. We did some checking and found out that they moved their office about the same exact time that we mailed our notice. So we don't know how it got lost or whether they actually received it, but we called Cimarex's office and spoke to their landman

in Midland yesterday and explained the nature of the case and the application, and he mailed us a signed waiver letter saying that they had no objection to this application.

Q. Has that been marked as Pecos Exhibit No. 4?

A. Yes, it has.

Q. During your conversation, did this individual indicate the nature of Cimarex's activity in this area?

A. He indicated that most of their activity is in the Wolfcamp Formation in this area. And, therefore, a Devonian disposal should not have any bearing or impact on their operations, in that the Devonian is deeper and below the depth of the wells that they are drilling.

Q. So they had no objection to your application?

A. That's correct.

Q. Is Pecos Exhibit No. 5 an affidavit of publication in the Lovington Leader of this hearing?

A. Yes.

Q. Okay. And let's -- why don't we turn to Pecos Exhibit No. 6. Why don't you identify that for the Examiner. And using this map, would you describe in more detail your proposed development of this area and, in particular, how you plan to use your proposed disposal well?

A. Okay. Yes. Exhibit 6 is a structure map of the Caudill field on top of the Devonian Formation. You can see that the field is a large anti-cline, and it's bounded on the

west by a large down to the west fault, and there are several smaller faults that run through that major fault that generally cut east/west or northeast -- northwest/southeast through the field.

The field originally had about a 300 oil column on top of a fairly large water aquifer. The initial wells that were drilled were very prolific. The GA No. 1 well, which is our current producer in the center of the map, for example, had an initial potential for over 2000 barrels of oil a day.

The field was developed in the 1950s by Shell Oil Company and others. By the late 1960s, the entire field had been plugged after making about 5.2 million barrels of oil. In 1976, the GA No. 1 well located in the southeast quarter of the northwest quarter of 16 was re-entered to test for bypassed attic oil on the top of Devonian. You can see from the structure map that the GA No. 1 is located near the highest structural point in the reservoir.

This well made a commercial completion that initially produced about 200 barrels of oil a day and about 50 barrels of water a day. So this re-completion proved that given enough time, some of these old water-dry reservoirs that had water coned into the old producers, there was some resegregation of the oil and water column in the field. And so based on that, we feel like that there are probably other wells in this field that would be candidates to do the same.

I'd also point out that there are other fields in the area that we're seeing redevelopment doing the exact same thing right now, like the Denton Field, for example. Since 1976, the GA No. 1 well has made about 400 -- I'm sorry -- about 340,000 barrels of oil. The well still currently produces about 30 barrels of oil a day with about a 40 percent oil cut.

So based on the successful re-entry of this well, we believe there are other wells on the lease that we would like to re-enter and test the Devonian.

Q. How does your proposed disposal well fit into this development project?

A. Well, obviously, the Devonian here is a fairly strong water drive. And our producing well, the GA No. 1, for example, produces with a very high water cut. So I'm sure the other wells that we re-complete will be similar. And so without adequate and inexpensive disposal capacity, this type of reservoir would not be economical to redevelop.

Our production is currently restricted due to lack of saltwater disposal capacity. Right now, our produced water goes to H&M's commercial disposal well. It's located at the top of this map. The well at the very top -- I think on Exhibit 1, it is identified as a water disposal well with a red circle around it. That is the commercial disposal well that our water goes to at this time. But due to their capacity constraints, they can only take about 700 to 800 barrels of

water a day. Our well tests indicate that we could produce additional oil and water if we had a place to go with the water.

Q. Let me stop you right there. How do you get your water from your producing well up to the disposal well?

A. It's piped.

Q. Okay. And are you restricted as to the time period in which you can pipe the water to the H&M disposal well?

A. Yes.

Q. When is that?

A. Well, we've worked out an arrangement with H&M where during the night when they don't have trucks coming in and unloading to their commercial disposal well, we're able to send them water. During the day when they're unloading trucks, they're limited on the capacity they can take. So we've worked out a schedule to accommodate everybody.

Q. Now, you mentioned you anticipate the development or re-entry of some of these other wells located on this map. Are you in the process of doing that, and is your proposed disposal well important to that effort?

A. Yes. We're currently re-entering, as we speak, the GA No. 6 well that's located up in the northwest corner of Section 16 to test the Devonian.

Q. What are your thoughts about the ability of the

Devonian reservoir to -- as a source of this disposed water?

A. Well, obviously, if our redevelopment is successful, we'll produce a large amount of water. And in looking at this area, we believe that the Devonian is really the obvious choice. It's really the only reservoir that makes sense for us to use to dispose of the water.

Q. What's the relationship of your proposed disposal well structurally to the other existing -- your existing producing well and your proposed well?

A. Well, we picked the No. 7 well, primarily because it's the lowest well structurally on our lease.

Q. Okay. Why don't we then turn to what's been marked as Pecos Exhibit No. 7. I'd like you, then, to address, Mr. Gray, the questions that were raised by the Division in this letter, starting with Paragraph 1.

A. Sure. Referenced in Paragraph 1, our legal advertisement correctly listed the proposed total depth of our well as 13,900 feet. It's a re-entry, but we would like to deepen it a little bit to expose more of the Devonian Formation. And if you turn to the cross section, it's labeled Exhibit A. I can sort of clarify that for you.

This stratographic cross section, A A-prime, shows the Devonian interval in your producing well, the GA No. 1, and then on the well that we're proposing to re-enter is an injector. You can see that in the GA No. 1. It topped the

Devonian Reservoir at about 13,360 feet. And when they TD'd the well at 14,000, they were still in the Devonian. So the Devonian section here is at least 700 feet thick. And the GA No. 7, our proposed injector, it topped the Devonian at about 13,450 feet. We'd like to deepen it. They TD'd it at about 13,006. We'd like to deepen it to about 13,900. We will have about 450 feet of Devonian exposed if we do that.

Q. Now, the Division's letter also references it wants to make sure that VF Petroleum and Cimarex Energy were notified of this application. Were both of those companies on your notice list?

A. That's right. They were.

Q. And we've already addressed Cimarex, and VF Petroleum received and returned a return receipt for the notice of this hearing, correct?

A. That's correct.

Q. All right. Why don't you, then, address the Division's other concern about a plugged well that's located within the half-mile area of the review here?

A. Okay.

Q. And maybe use Exhibit No. 6.

A. Yes. We did do a study. And I believe that the Commission was referring to the Mayme Graham #1 well that's located in the southwest/southwest of Section 9. If you look at Exhibit 6, which was the structure map, you can see a dry

hole symbol up there that has an estimated top for the Devonian for minus 9776 feet. That's because that well was on the down thrown side of a fault, and it never reached the Devonian. So it's similar depth to our Devonian wells, but the Devonian section was never penetrated.

So if you'll go on to Exhibit 10 for a minute, I can demonstrate that for you. The log on the left side of this little cross section is the old dry hole that we're referring to. And you can see the other two wells on the cross section. One is H&M's disposal well and the other --

Q. Is that the cross section in the middle?

A. That's the log in the middle, yes.

Q. Oh, the middle. I'm sorry.

A. The log on the right is the GA No. 7 which we're proposing, and it's evident from these logs that you can see the Woodford section and Devonian section in the two wells on the right. The well on the left, they were still in the Mississippian whenever they TD'd the well. And, obviously, the reason they stopped there was they were very low, and they were out of luck for the Devonian.

Additionally, if you look at our Exhibit No. 9, they came out of the Commission's well records for that particular well. And it was June of 1956 they had a notice to -- they filed for a notice of intention to temporarily abandon that well. The very first sentence states that they TD'd at 13,547

in the Mississippi line.

So based on that, we believe the bottom of that well is 100 feet above the Woodford and probably 200 feet above the Devonian. So we don't think it would be an issue for this disposal well. And not only that, but I would note that if it were going to be an issue, it probably would have appeared by now. Because H&M's disposal well is closer to it than the well that we're proposing.

Q. Okay. Then let's turn to Pecos Exhibit No. 11, which is the untimely objection letter that was filed by H&M Disposal, and just address the concerns that they raise in this letter as we understand it.

A. Okay. First of all, I would like to point out that we're applying for a disposal well that's located 660 feet from the north lease line of our lease, which is the exact same distance that H&M's well was from their lease line.

In 1986, H&M -- or their predecessor -- re-entered the Mayme Graham No. 1 well located in the southeast quarter of the southwest quarter of Section 9 and made a commercial disposal well in the Devonian.

Q. It would be helpful, Mr. Gray, to direct the Division back to Exhibit 1.

A. Yeah. I think Exhibit 1 is probably the best place to focus your attention.

Later on, during the time that well was completed, it

was deepened, so you'll see an old TD and a new TD. And I believe they are injecting into an open hole interval similar to where our application is. This well is located about half a mile north of our producer, the State GA No. 1, and it's been an active injector and been in operation since 1986, to the best of my knowledge. In this 20-plus years that this well has been an active injector, we have not seen a noticeable change in reservoir pressure in our producer. In fact, last month we measured a static fluid level in our well at 1707 feet from the surface. Knowing the specific gravity of Devonian water, we can calculate the bottom hole pressure in our well to be 5288 psi at a datum of 9600 feet sea level.

According to the study published by Roswell Geological Society, marked as our Exhibit 12, the bottom hole pressure measured in the GA No. 6 well in 1955 was 5307 psi at this same datum. So even though that active injector well has been there for 20 years, the data I have indicates that there has been very little change in the bottom hole pressure in the last 50 years, even though that well has injected over 10 million barrels of water into the reservoir. This leads me to a conclusion that the Caudill Devonian field is a large reservoir, and it's a very permeable reservoir, that and other data like the initial potential of some of those wells.

So I'd like to also address their concerns about the maximum pressure that we applied for. In recent years, our

producing fluid level in the GA No. 1 well has been measured several times at approximately 2300 feet from surface while pumping at a rate of about 1200 barrels of water a day. Knowing that our static fluid level was about 1700 feet from surface, we can calculate that at 1200 barrels a day we only have a 600 foot drawdown in fluid level, which equates to 269 psi drawdown at the reservoir.

From these numbers, a productivity index for this well can be calculated at about four-and-a-half barrels of production per day per psi of drawdown in the reservoir. Now, this GA No. 1 well has 72 feet of perforations open. The well that we are applying for, the disposal well, will have over 300 feet of open hole.

So based on the relationship of those two numbers, we hope and we think that the GA No. 7 well will have over three times the injectivity, or conversely, the productivity that our GA No. 1 well does. So assuming for a minute that that's the case, then we should have a well that's capable of injecting about 13-and-a-half barrels per day per psi of reservoir injection pressure, which means we could inject 8000 barrels a day at a net bottom hole injection pressure of only 592 psi above the reservoir pressure.

Now, neglecting friction for a moment, we have a static fluid level at 1700 feet. A column of water to the surface would exert a head of 764 psi, which is greater than

the net injection pressure required to inject into this reservoir. So that means if we have a well with the kind of injectivity that we think we'll have, ignoring friction for a moment, we could inject 8000 barrels of water a day on a vacuum.

Now, if that's the case, then why did we ask for a maximum of injection pressure of 1500 psi? And the simple answer to that is friction pressure. For example, based on standard friction charts for oil field tubulars, and assuming nine pounds saltwater and 8000 barrels a day through 13-and-a-half thousand feet of 2 7/8-inch tubing, the friction pressure loss would be 2362 pounds per scare inch. However, under those exact same conditions with 3 1/2-inch tubing, the friction loss would only be 945 psi.

So that's why you see in our application we propose to use either 3 1/2-inch tubing or a combination of 3 1/2 and 2 7/8. Frankly, that's limited by the 5 1/2-inch casing that's in the well. So basically, my conclusion is the maximum pressure we're going to see with these high rates is more friction pressure than it is reservoir pressure.

Q. For guys like me who are not an engineer, your 1500 psi pressure rate in your application is really a surface pressure and not your anticipated reservoir; is that correct?

A. That's correct.

Q. All right. Mr. Gray, what conclusions have you

drawn with respect to H&M concerns about increased reservoir pressure from your proposed disposal well?

A. Well, I think that with the kind of reservoir we have here, even with the rate we're talking about, the net bottom hold pressure will only be a few hundred psi above the current reservoir pressure. And given the large size and high permeability of the Devonian, we should not affect any well a quarter mile away from our injector, including H&M's disposal well.

Additionally, I'd like to make the comment that, unlike H&M's well, what we plan to do is to reinject produced water from the Devonian. So during our operation, we're going to produce Devonian oil and water, we're going to extract and sell the oil, and we're going to reinject the water. So if anything, we're going to lower the bottom hole pressure, not increase the bottom hole pressure -- or the reservoir pressure -- in the reservoir.

Q. Mr. Gray, in your opinion, will the granting of this application be in the best interests of conservation and prevention of waste and protection of correlative rights?

A. Yes. We need a disposal well to avoid the continued curtailing of our production, and this disposal well is essential to our plans to re-enter additional wells and try to recover additional bypassed oil in the Devonian.

Q. Okay. And is your disposal well, situated where

it is, the most preferable location for a disposal well in the Devonian?

A. Yes. On our lease, it's the lowest structurally located well.

Q. Were Pecos Exhibits 1 through 12 prepared by you or compiled under your direct supervision?

A. Yes, they were.

MR. FELDEWERT: Mr. Examiner, at this time, I would move the admission into evidence of Pecos Exhibits 1 through 12.

MR. JONES: Did you talk about 1 through 12? All of them.

MR. FELDEWERT: Yes.

MR. JONES: Okay. Any objections?

MR. HALL: No objections.

MR. JONES: Okay. We'll admit Exhibits 1 through 12. And before we get started --

MR. BROOKS: Well, let's see how long. Let's go to Mr. Hall for cross-examination. Then we'll talk about break for lunch.

MR. JONES: Okay.

MR. HALL: I don't think I'll be long.

CROSS-EXAMINATION

BY MR. HALL:

Q. Mr. Gray, looking at your Exhibit 1, Pecos is the

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owner of the State Lease L-214, is that right?

A. We are an owner of a portion of the lease, that's correct.

Q. Okay. Do you own the entire 240 acres that's shown on there?

A. The lease is currently owned by OXY as successor to City Service, and we own and operate a portion of that lease. We did a farmout from City Service.

Q. Is it something less than the 240 acres shown?

A. Yes. It's 120 acres.

Q. Can you identify that for us?

A. If you look at Exhibit 1, it's identified in a red hatcher outline.

Q. I see. Okay. So if I understand correctly, it's Pecos' proposal to ultimately re-enter all of those other Devonian wells shown in that northeast -- I'm sorry -- northwest quarter of 16?

A. Yes, sir.

Q. That acreage there. You'll agree with me, Mr. Gray, won't you, that since your proposal is for a non-commercial disposal facility, you're not an economic competitor with Mr. Harrod's operation.

A. That's correct.

Q. What is Pecos' right to inject? Is it limited to just its rights under its oil and gas lease on farmout?

A. I can't answer that question. I'm not sure. I'm not the legal expert. But I have had a conversation with OXY, who is the operator of record on the remaining lease, L-214, and they were noticed of this hearing. And they stated verbally they had no objection.

Q. Is there some prospect that Pecos will take water from other wells within that lease that are outside of your farmout acreage?

A. We have no plan for that right now.

Q. Have you discussed that possibility with OXY or any other interest owner?

A. No, we haven't.

Q. Would you be agreeable to a limitation in the Division's order that might result from this case that Pecos be restricted to taking water only from wells on its farmout acreage?

A. No, sir.

Q. Why not?

A. Well, I don't know what will happen out there, but if we spend the kind of capital that we spent to make this well and then say we don't do well in the producing wells, and we have excess capacity for that well, I can see a situation where OXY or someone else right there might want to use that well.

Q. So are you seeking to reserve the option to

Is This Waste?

preserve the well for commercial operations down the road?

A. There's a possibility that years down the road that that could happen, that's correct.

Q. Okay. Do you have a business lease from the State of New Mexico to offer a commercial disposal facility on Section 16?

A. No, we do not.

Q. Do you plan to apply for one?

A. We do not.

Q. Could you explain to the Hearing Examiner your physical layout, your well configuration, and then your surface facilities?

A. We have a surface facility located in the northwest quarter of Section 16 near the No. 1 well. And I believe that that will be the only battery that we will have in Section 16 to develop this lease with.

Q. How many tanks are on that battery?

A. Well, there are two. There's two oil tanks in operation. And there are two oil tanks that we recently set there that are inactive. And there is two active water tanks that are small for this type of project, like 200-barrel tanks. And we recently set two 500-barrel water tanks that we plan to utilize once we get this well complete -- the new well complete.

Q. And you'll have surface pump facilities as well?

A. Right.

Q. What horse power?

A. I don't know.

Q. Do you anticipate it'll be large?

A. I don't know anticipate it will be large.

Q. But right now, do you anticipate using those facilities only for the dis-positioning of water from your GA No. 1 well?

A. Yes, the GA No. 1 and, hopefully, the GA No. 6, which we're currently re-entering.

Q. What current daily rates are you -- what current daily volumes of water are you delivering from the GA No.1 to H&M?

A. I believe that it varies on the amount of time we run. But the average has probably been 700 barrels a day.

Q. Okay. And do you anticipate similar rates for the other well you seek to re-enter?

A. I think it will produce -- I think the No. 1 is capable of producing much more than that. We're producing with a producing fluid level 2300 feet from the surface at a 1200-barrel a day rate, but we're only producing 12 hours a day. So I believe that well is capable of producing as much as 3- to 4000 barrels of water a day if we have the proper pump installation in it. And I would assume that the No. 6 well would be a similar well to that.

Q. If your completion of the No. 6 well -- your re-entry and completion of the No. 6 well is not successful, can you make the economic justification for your disposal well and all of the surface facilities just to dispose of water from the GA No. 1 well?

A. Probably. There are a couple of scenarios that could happen. There are shower formations that are productive in that area. If the No. 6 is unsuccessful in the Devonian, we could possibly apply to re-complete it to the Wolfcamp, for example. Another option would be if the No. 6 well is unsuccessful in the Devonian and the Wolfcamp, then perhaps we could apply to use it as our disposal well rather than the No. 7 well.

Q. If I understand your testimony, if you utilize the 3 1/2-inch tubing you discussed, the well would be capable of taking significant volumes under gravity flow; is that right?

A. Yes, sir.

Q. Without pressure, what would those volumes be, do you estimate?

A. I don't have those calculations in front of me. I would imagine that we would be limited to somewhere in the neighborhood of 3000, possibly 4000 barrels a day. That's totally an estimate on my part.

Q. And -- I'm sorry. I didn't write down the figure

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you testified to, but you said with the 3 1/2-inch tubing, you would have minimal friction loss.

A. Correct.

Q. Can you recall what percentage that was?

A. I recall saying that at 8000 barrels a day, which is what the maximum rate we applied for was, the friction loss would be less than 600 psi utilizing 3 1/2-inch tubing.

Q. And under what pressure?

A. 592, I believe, was the number.

Q. Mr. Gray, would Pecos be agreeable to accepting a 4000-barrel of water per day limit for injection on this proposed well?

A. No, we wouldn't.

Q. Would Pecos be agreeable to notifying offset operators of any amendment proposal to amend its injection authority, provided the Division grants you injection authority pursuant to your application here today?

A. Yes, we would.

MR. HALL: Nothing further, Mr. Examiner.

MR. JONES: Okay. Let's break for lunch and return at 1:15.

[Noon recess was taken from 11:52 to 1:15.]

MR. JONES: Okay. Let's go back on the record. I forgot what we were talking about, but I think it's time for me to ask questions.

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MR. HALL: I finished my cross of Mr. Gray.

EXAMINATION

BY MR JONES:

Q. My turn. We'll try to all ask questions real similar here. Let's see here. I don't have these organized, but first of all, do you use a Nodal Analysis Program for your IPRs and all that?

A. No. I wish I did.

Q. Plot a couple of points and draw a straight line? And VF Petroleum was noticed, right?

A. Yes, they were.

Q. They were noticed. And 3000 foot is kind of a standard for the Devonian, isn't it? For standing water level?

A. Well, I think that the bottom hole pressure that was referenced in that Roswell Geologic Society publication was that they thought that the original reservoir pressure was about 5500. So it's never varied more than 2- or 300 pounds, to my knowledge.

Q. But you guys are skimming basically, right?

A. That's pretty much the case.

Q. What size of pumps are you using?

A. It's an electric submersible pump that's in the well right now. I don't know the exact horsepower of it, but it's set at 3000 feet.

Q. Okay.

A. It's probably about a 30 or 40 horse.

Q. You just try not to burn it up.

A. Right.

Q. Are you going -- if you get more capacity, are you going to lower your pump and increase the capacity, speed it up or something?

A. Yes. I think that's the plan. We've seen it pump at different rates with affecting the oil cut, so I think our plan would be to try and upsize the pumping equipment on that well.

Q. Are you going to stay vertical in all these wells?

A. Right now the plans are to stay vertical, although it probably is a pretty good horizontal candidate.

Q. This Devonian, speaking of permeability, obviously, it got decent permeability. Porosity is decent too?

A. You know, the 1950s vintage logs are not very good, so I can't really testify to exactly what porosity they have. I've seen a few cores. They're not real high. I know parts of it are in the order of 10 percent. There are probably some much higher streaks, though.

Q. Have you seen any vertical or horizontal permeability relationships?

A. No, I haven't.

Q. What can you say about that? Is it bottom water

drive or is it side water drive, or --

A. I believe it is bottom water drive, and I believe that the original wells were all coned water when they were produced. You know, they were produced at high rates, 4- or 500 barrels a day initially.

Q. Those hydraulic pumps?

A. Yeah. The old hydraulic pumps, primarily. And the production date that I've seen, a lot of them were abandoned producing around 5 percent.

Q. In the '50s?

A. In the '60s.

Q. And at oil prices of what?

A. Less than $3.

Q. $3 for lower tier?

A. The thing that's changed, I guess, the most is the electric submersible technology for one thing, and then just the economics of the price of oil is the other thing.

And then the evidence that we've seen -- well, in the GA No. 1 and then some of the other Devonian fields around there were wells -- like the GA No. 1 was producing at 5 percent oil cut when it was plugged. 10 years later they re-entered it, and it came in at a better than 50 percent oil cut. So there does seem to be some resegregation of the oil and water columns in these old fields if you give them enough time.

Q. So is this similar to what Hallidan is doing?

A. Yes.

Q. They're doing some horizontal work, though, right?

A. I don't know the details, but I think that's right.

Q. And the size of the casing you'd run?

A. Well, unfortunately, the casing is a 5 1/2 casing that was cut off that we're going to have to tie back together when we do these re-entries. So we'll be limited to 5 1/2 casing.

Q. That was 8 5/8 intermediate, right?

A. That's correct.

Q. That's the biggest you can go?

A. It would be pretty tough to go bigger than that, I think. 7 7/8 holes, probably.

Q. What's your odds of getting back in that casing?

A. Well, there's been a couple of wells in that field that have been re-entered successfully, the GA No. 1 being one. It was in the exact same mechanical condition when it was re-entered, and they were able to tie it back successfully.

Q. Do you do that? Do you design that? Or do you set on it? Do you get a fishing company?

A. We've got a fishing and rental tool company that

will supervise us doing that. And then my partner is a drilling engineer. He will be there supervising.

Q. And you've got 700 feet of Devonian. So basically, not to talk about the other well in this case, but as an engineer, what would you -- did you ever talk to them about increasing their capacity in their well before you try to re-enter your own, spend the money to re-enter your own?

A. Yeah, we've talked off and on about them increasing their capacity, I think there's some -- they could do that to some extent and maybe enough for this one well we have, but not if we re-enter another well or two.

Q. Okay.

A. They may have the capacity. You can ask them that.

Q. You're definitely going to need some more capacity.

A. That's correct.

Q. How's the -- just quickly, how's the San Andres in this area? Has it ever been tried?

A. It's not productive in this area. I've seen a drill-stem test where it was wet. I think the San Andres in this area -- I don't know a lot about it. I've seen no production records of it. It would be normally pressured, and it probably would take a fair amount of water. My concern would be that over time you would pressure it up because you're

pumping into a closed system in the reservoir and not taking anything out of it.

Q. We've had several hearings here to do with that, and it was also highly corrosive in the lower San Andres.

A. That's correct. The Permian interval -- the upper Permian interval of the San Andres/Glorieta is all sour and corrosive. Everything from about 8- or 9000 feet down you get into the Wolfcamp or Pandy or Sweet, so the old casing that's in these wells should be in pretty good shape. But the interval from 4000 to 9000 feet that was pulled, we're going to replace with new casing and then cement it back to tie it back in.

Q. Okay. And that Permo-Penn or Wolfcamp -- or what they call Wolfcamp, has that been abandoned in a couple of these wells already?

A. Yes. If you can look at Exhibit 1, you can see that it actually produced in several of these wells. The green color, or what's called Permo-Penn on here, which is what Cimarex and others call the Wolfcamp, I believe, it produced in several wells in Section 16. So it's also perspective in the wells on our lease.

Q. What about the Morrow-Atoka?

A. There's been some production in the area from the Morrow-Atoka to the west and north of us. Again, we're dealing with 1950s logs, so we have possible Morrow-Atoka pay in our

wells, but it's really hard to tell from those old logs how good it is.

Q. So you're not worried at all about anything getting over to that ground well that's not cemented that's just right above the top of the Permo-Penn there, and it's got a plug there and nothing below it --

A. Right.

Q. -- because it's drilled into the Mississippian, and it's got a fault right there, right?

A. Yeah. Their well stopped drilling, about 100 feet above the Woodford shelf, which is already right above the Devonian. So the bottom of their well to the Devonian should be at least 200 feet.

Q. So in your opinion, neither one of these wells would threaten your well, or the H&M well --

A. Right.

Q. -- would threaten the Atoka production in that area?

A. Right.

Q. Not that it's very good production anyway.

A. Right, that's correct.

Q. Okay. This deal from OXY on this, they still control the minerals under this well, right?

A. They still have the base lease under this, so they had -- under a farmout to our predecessor, they had farmed

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out that 120 acres that's outlined in red on Exhibit 1 and retained an override in the lease.

Q. Okay. But they farmed it out to your predecessor, who is still -- your company still has valid farmout of it?

A. Right, that's correct. It's been in continuous -- No. 1 has produced continuously and maintained that farmout since it was re-entered in '76, I believe.

Q. Okay. And the State Land Office is the surface owner there?

A. No.

Q. Wanda --

A. Wanda Alexander is the surface owner.

Q. Where is this located?

A. It's about three or four miles north of Lovington.

Q. Oh, yeah. I think I might know those. I think her son might have been a summer engineer for us in Lovington one time.

A. Right.

Q. It's possible, but I'm not positive. So she definitely owns the surface. She's not a lessee from the State Land Office, right?

A. Right. I believe they are patent lands that at one time belonged to the State, and they sold the surface and

maintained -- retained the minerals, I believe.

Q. Okay. But you're an engineer, but you're still willing to say that, that it definitely is patented land?

A. I've read an abstract on it, and I'm relatively certain that that's the case.

Q. And why didn't you choose No. 7 instead of -- no, no -- No. 5 here instead of No. 7?

A. The --

Q. It looks like it's on the same structural location.

A. It's similar, and it's probably a second choice. It looked like the mechanical condition of No. 7 would have made it a little more advantageous or a little easier to re-enter. There's a little more going on down hole in No. 5 that might have created some problems as far as getting some old perfs that were squeezed that might have left -- the old records are kind of sketchy, but it looked like they might have left some more equipment in that well.

Q. How good is this -- how easy is it to separate the Devonian oil from the water? Do you have to put some soap in it or something?

A. No. Because the Devonian gravity is very high gravity. It's 50-plus gravity oil. It almost looks like diesel fuel, so it separates easily at ambient temperature. You don't even have to put heat on it to separate it. It'll

separate through a gun barrel.

Q. As long as your volume is okay in your gun barrel?

A. As long as you got the retention time in your gun barrel. We don't have any problems.

Q. So you don't have a carryover. Even if you did, you're injecting right back into the Devonian?

A. Correct.

MR. JONES: Okay.

Terry, do you have any questions?

MR. WARNELL: You pretty much covered it.

MR. JONES: Mr. Brooks?

EXAMINATION

BY MR. BROOKS:

Q. Wanda Alexander is the surface owner at the location of the No. 7 well, the proposed injector?

A. Yes, she is.

Q. Do you have any kind of lease or license from her to utilize this well?

A. We have a surface use agreement in place that was negotiated with her that incorporates all of our operations including surface damages, use of the disposal well, et cetera. And it's been negotiated, and I believe it's been signed.

Q. Okay. Now, this well is not on your farmout acreage?

A. That's correct.

Q. It's on the acreage that's retained by OXY?

A. That's correct.

Q. Now, did you testify that you had oral authorization from OXY?

A. I testified that I had spoken to OXY and explained to them what our situation was. And keep in mind, they have an economic interest in us producing this well because it holds their lease. So they had no objections. In fact, they have an economic interest through and via an override; and secondly, this well is what maintains that lease.

Q. You mean the No. 1 well?

A. Right. Our No. 1 well.

Q. Right.

A. Because it's all one state lease.

Q. And none of the other wells on this lease are producing at this time?

A. That's correct.

Q. Don't you suppose your lawyers would feel a little more comfortable if you had written authorization from OXY?

A. Perhaps.

Q. Now, you had indicated that you were not willing to have -- you were not willing to agree to having a license for this well or permit for this well limited to use for water

produced on this lease; is that correct?

A. I believe that's correct.

Q. And, of course, you would understand that in order to inject water that did not come from this lease, you would have to get approval to do that from the surface owner?

A. Yeah. My understanding is we'd also probably have to get an agreement from the surface owner, and probably, a new application for a commercial disposal well would be in order.

MR. BROOKS: Okay. I believe that's all my questions.

MR. JONES: You guys want to ask him some more questions?

MR. FELDEWERT: I do not.

MR. JONES: Okay. Thanks a lot, Mr. Gray.

Does that conclude the Applicant's case?

MR. FELDEWERT: We admitted the exhibits into evidence, I believe.

MR. JONES: 1 through 12.

MR. FELDEWERT: Yes. And that concludes our presentation.

MR. JONES: Mr. Hall?

MR. HALL: Mr. Examiner, at this time we will call Don Harrod to the witness stand.

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DONALD M. HARROD

after having been first duly sworn under oath,
was questioned and testified as follows:

DIRECT EXAMINATION

BY MR. HALL:

Q. For the record, please state your name.

A. Donald M. Harrod.

Q. Mr. Harrod, where do you live, and by whom are you employed?

A. I live in Lovington, New Mexico. I am the president of Erico, Incorporated, which operates H&M Disposal.

Q. All right. Do you have a set of the Pecos Operating exhibits in front of you?

A. I do. It's Exhibit 4. Oh, no, not their entire exhibits. No, I do not.

Q. Okay. Let me put one in front of you.

Mr. Harrod, are you familiar with the lands that are the subject of the Pecos Operating application here today?

A. I am.

Q. And are you familiar with the well they propose to convert to an injection operation?

A. I am.

Q. Does H&M Disposal operate the Mayme Graham No. 1 SWD well in Section 9?

A. It does.

Q. And if you look at the Pecos Operating Exhibit No. 1, there are two M Graham 1s reflected on there. Which one is yours?

A. It would be the Mayme Graham No. 1, which would be in Section 9 of the adjoining township.

Q. Right. And what is the approximate distance of the H&M Disposal well from the Pecos Graham No. 7?

A. 1320 feet.

Q. All right. Mr. Harrod, are you familiar with the construction and operation of saltwater disposal systems?

A. Having operated H&M and installed several disposal systems in the last 20 years, to that degree that I am familiar in that respect of disposals, yes.

Q. You're not a petroleum engineer, are you?

A. I am not a petroleum engineer.

Q. Would you give the Hearing Examiner a brief summary of your educational background and work experience?

A. I am a graduate of Texas Tech University as a range management major, which is the management of semiarid grazing lands. I operate a ranch in Lea County. I've operated H&M Disposal for 20 years. I have a small rental tool company that does most of its business in Texas, in Seminole.

Q. And you're familiar with the characteristics of the injection interval for the Devonian Formation for both your well and Pecos' proposed well?

A. I believe I am. After 20 years I'm familiar with those. Plus I have some land west of Lovington, which has had some Devonian exploration on it also.

MR. HALL: At this point, Mr. Examiner, we would offer Mr. Harrod's testimony as an expert on saltwater disposal systems and operations by virtue of his background and experience.

MR. JONES: Objection?

MR. FELDEWERT: Let me ask a few questions, if I may.

EXPERT EXAMINATION

BY MR. FELDEWERT:

Q. Mr. Harrod, you mentioned you have been operating your disposal system for 20 years.

A. Yes.

Q. Have you operated any other disposal systems?

A. Yes.

Q. Where?

A. State AJ in Arkansas Junction, which is a Devonian system.

Q. Do you still operate that?

A. No.

Q. How long ago was that?

A. Actually, I sold out of that in '91.

Q. And how long did you operate that State AJ system?

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A. Two years.

Q. And were you actually -- when you say "operate," what do you mean by operate the system?

A. We drilled and developed the well.

Q. Did you personally oversee the drilling?

A. Yes.

Q. And did you oversee the injection operations?

A. I did.

Q. You did? I'm sorry?

A. I did.

Q. Okay. Any other disposal facility?

A. I have one that is currently permitted and under construction and Loco Hills.

Q. And in what formation are you planning to inject?

A. In Loco Hills, it would be the Wolfcamp.

Q. At what stage of the process are you in?

A. The casing is drilled out and pressure tested. We haven't shot the casing yet. We're trying to get all our ducks in a row and all our federal paperwork lined up.

Q. So that is not an operational --

A. It's not operational at the moment, no.

Q. So the only operational system that you currently have is the --

A. It's the H&M, the Mayme Graham No. 1.

Q. Okay. And do you oversee those disposal

operations personally, or do you have someone that works for you?

A. Largely personally.

Q. Okay. And I apologize if you already told me this and I forgot. Did you actually drill that?

A. The Mayme Graham? We took -- VF had drilled it to the bottom of the casing and perfed it in the Devonian and abandoned the project, and we took the well over from VF and deepened it to its current TD.

Q. So you were the party that converted it into an injection well?

A. Yes.

Q. And what role did you have in that process?

A. Actually, from start to finish, everything that needed to be done. That would include planning the project, overseeing the drilling, and construction of the facility.

MR. FELDEWERT: I would, at this point, tender an objection to an expert in saltwater disposal systems. That's to me a very generic label that's, as I understand it, based almost exclusively on the fact that he's operating this one disposal system in this particular part of the county for 20 years.

MR. BROOKS: Well, given the expertise that the Examiner has in this field, I don't think he's likely to be led astray by junk science. I'll recommend to overrule the

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objection, and we'll have the witness be qualified.

MR. JONES: I think I want to qualify the witness as an expert as an SWD operator and --

MR. HALL: I'll be asking him for an express opinion on SWD operations.

MR. JONES: Okay.

DIRECT EXAMINATION (CONTINUED)

BY MR. HALL:

Q. Mr. Harrod, let's make it clear. H&M does not seek to have the Division deny Pecos Operating's application outright, does it?

A. No.

Q. All right. Would you please explain to the Hearing Examiner the configuration and operation of the Mayne Graham No. 1 well?

A. It is a vacuum system, has been for 20 years. The bottom of the casing is at 13,600 foot. We deepened the well to -- I think the TD is actually 13,890 foot. And we run a surface battery and plastic-coated tubing.

And I've lost track of where I was in answering the question. What was it?

We run a commercial operation. We've been in business for 20 years. The greatest portion of our business comes from trucking. We do and have for probably 15 years accepted water through a pipeline from formerly CW Trainer, now

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Pecos Operating.

Q. Your injection intervals are the Devonian Formation, correct?

A. Yes.

Q. If I may approach the witness, Mr. Examiner. I apologize for not distributing these earlier.

Mr. Harrod, let me refer you to what's been marked as H&M Exhibit No. 4. Can you identify that for the Examiner, please?

A. It is VF's application for the disposal, for H&M's disposal.

Q. Is Exhibit No. 4 a copy of Division Order SWD 300?

A. Yes, it is.

Q. And this was issued to VF Petroleum in 1986?

A. Yes.

Q. And this authorized injection operations into the Mayme Graham No. 1; is that correct?

A. That's correct.

Q. And appended to that is an earlier order, Order R7960. Would you explain why there are two orders?

A. VF initially was going to inject into the Devonian perfs, and I'm not -- I'd have to read both of these to tell you, because I don't have the one.

Q. All right. These two orders constitute H&M's

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regulatory authority to conduct an injection operation; is that correct?

A. Yes, it is, if it includes -- there was the order, and then we applied for administrative approval to amend the order and deepen the well.

Q. All right. Explain to the Hearing Examiner what constitutes your right to inject.

A. My right to inject, I have an assignment of VF's rights to the well. I have a letter of agreements with the surface owner as to paying royalties and complying with state regulations.

Q. And your agreement with the surface owner covers what acreage?

A. It covers, actually, his -- there's no restriction on the acreage, so as far as I know, it would actually cover his whole holdings, which is 320 acres.

Q. Is that the south half of Section 9?

A. Yes.

Q. What current rates are you injecting into the Mayme Graham State No. 1 well?

A. We were running an average of about 62,000 barrels a month, which is slightly over 2000 barrels a day, although some months I think we have gone as high as 76-, 78,000 barrels.

Q. Let me show you what we've marked as Exhibit 5.

Did you compile Exhibit 5?

A. Yes, I did.

Q. Does it show your injection columns?

A. It does.

Q. And again, what is your average daily rate?

A. 2022 barrels per day would be the average rate.

Q. And does that volume include deliveries of water from the Pecos GA No. 1 well?

A. Yes, it does.

Q. And how much water are you currently accepting from that well?

A. Currently we are accepting 720 barrels a day.

Q. All right. You heard Mr. Gray testify earlier today. Is there a limitation on the number of the hours a day that they can use your facility?

A. Currently, we have an agreement that they were using it about 10 hours per day. At night we upped the hours, but yeah, their system comes on after 6 o'clock in the evening. It pumps all night long into the disposal.

Q. All right. Prior to that time, was Pecos restricted from delivering during the day?

A. No.

Q. All right. Could you give the Hearing Examiner an indication of what water rates the GA No. 1 well was actually capable of delivering to you?

A. It operated for years at 1400 -- anywhere from 1410 to 1450 barrels a day.

Q. Okay. Mr. Harrod, are you concerned that the operation proposed by Pecos will interfere with the operation of your disposal facility?

A. I am.

Q. And what's the basis of your concern?

A. Well, the basis of my concern is over the years I've had an opportunity to pump on H&M wherever we replace tubing and noticed an increase in pressure. And after about 45 minutes, it seems to stabilize at about three-and-a-half barrels a minute due to formation friction.

And this well is proposing to inject some 8000 barrels 1300 feet away, and my concern is -- I will concede the Devonian will accept a lot of water. It is porous. And the formation as a whole will accept great volumes. My concern is that over a given distance -- I recognize that the pressure will dissipate, but that is so close to my well bore -- I don't think that those kinds of pressures will dissipate within that distance, and it's likely to raise whatever pressures I am required to maintain my current injection rate.

Q. All right. If Pecos is permitted to inject at the 8000-barrel per day volumes at the 1500 psi pressures, will that adversely affect your injection rates?

A. It is my opinion that it will adversely affect my

injection rate. It would likely cause me to install pumping equipment, which we have not done in the past.

Q. Is that something you seek to avoid having to do?

A. It is expensive to do; it adds to the cost. And I have some concerns about some of the wells in the area that were plugged by a company called Hobbs Pipe and Supply back in the '60s. And I don't know whether -- I'm sure some of the Examiners have heard of some of their work, but most of their paperwork is close to fiction -- and that's a personal opinion -- plus experience with some plugged by Hobbs Pipe and Supply on the ranch where the whole well contained a three-foot surface plus, and that was it. They plugged a lot of Shell wells, and they plugged quite a few of the wells in this area. And I have not been an advocate of pumping at high pressures on wells in this area.

Q. Is there some concern that the cement tops reflected on the plugging information on file with the Division may not reflect reality?

A. It would be conjecture on my part just from a limited exposure to some of their wells, but even at that, the tops of the cement on most of these old wells are reported at like 12,000 foot or lower. That's -- I'm not certain how accurate that is.

Q. Now, you understand that Pecos' application is for non-commercial disposal only. Is there some concern on

your part that operations may not be limited just to disposal of lease water?

A. I recognize their desire and need for an on lease disposal. I contacted both Mr. Gray and Mr. Hux prior to objecting to this and said if they were going to limit their operations to on lease disposal, then we would not object.

And I believe Mr. Gray declined to give such assurance. And on several occasions, Mr. Hux did also. And that placed a competing commercial venture virtually on my doorstep, which I have some concerns.

Q. Are you requesting the Division to approve a lower daily injection rate than requested in the Pecos application?

A. I am uncomfortable with their maximum. We would accept the 4000-barrel-a-day rate as acceptable. Anything over that, we're looking at injecting higher pressures. Mr. Gray apparently feels that they're going to encounter --

Q. Do you think a 4000 daily volume restriction is adequate to accommodate all of the water that's anticipated to be produced from the re-entered and re-completed wells on the Pecos Operating lease?

A. I'm not certain that I understand exactly how many wells are on their operating lease. And my understanding was there were only two or three, and at 1200 barrels a day each, that would be adequate. I don't know.

At one time, CW Trainor had two wells piped into H&M Disposal, both Devonian wells, and I think his maximum rate was about 2100 barrels a day from both those wells combined.

Q. Is it reasonable to anticipate that the adjoining wells would produce volumes approximating 1200 barrels a day of water?

A. It would be within reason to anticipate that they might produce more.

Q. Okay. Are you asking the Division to specifically provide in its order that the Pecos Operating well be limited to accepting water just from its lease acreage?

A. At one time I believe I proposed to Mr. Hux that we would be satisfied if they would just limit their operation to Section 16, and they declined to do that also.

Q. Are you also requesting that the Division's order include a provision that if there are any subsequent applications to amend any injection authority, to increase volumes, increase pressure, increase rates, or to accept commercial volumes of the water, that H&M Disposal be notified first?

A. I would certainly expect us to be notified first. But my opinion is we're here because it seemed they were headed at some point into statements that they would need at some point to recover the disposal, which would make it a commercial disposal.

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So my point is, we can have these issues now, or we can wait until they make an application to amend their disposal permit and have the same arguments at some point in the future, is basically why we're here.

Q. All right. Mr. Harrod, is Exhibit 4 a copy of H&M's Disposal order that's on file in the records and maintained in the ordinary course of business of H&M Disposal?

A. Yes, it is.

Q. And Exhibit 5 was compiled by you; is that correct?

A. Yes, it was.

MR. HALL: At this point, we move the admission of Exhibits 4 and 5. This concludes our direct examination of this witness.

MR. JONES: Any objections?

MR. FELDEWERT: No, Mr. Examiner.

MR. JONES: Exhibits 4 and 5 will admitted. What happened to the other exhibits?

MR. HALL: These are all I'm tendering.

MR. JONES: Okay.

MR. HALL: Pecos beat me to it.

CROSS-EXAMINATION

BY MR. FELDEWERT:

Q. Mr. Harrod, I'm trying to catch up with your approval authority here. It looks like initially you were

approved to accept produced water only from certain areas, correct?

A. Initially, it started out as an on lease disposal for VR Petroleum.

Q. And that's reflected in the --

A. I'm sure that's reflected in the first order, that it was going to be reinjected to the -- back in the Devonian perfs in that original well.

Q. And then --

A. And then it was amended to be a commercial disposal.

Q. And that was done by VF Petroleum?

A. The application was made by VF. It was actually -- and then that was amended, and it was actually -- it was approved as a commercial disposal, and then it was amended to deepen the well out of the casing.

Q. And that's about the time that you took over operations; is that correct?

A. That is when we took over operations.

Q. Okay. So you took over operations after it had been approved as a commercial well?

A. VF made the application, and then we took over the well and did the work.

Q. Okay. And you are permitted to have a wellhead injection pressure of up to 2720 psi, correct?

27205. 1500

A. We are.

Q. In this application that's been filed by Pecos Operating, you're objecting to our request for 1500?

A. Yes.

Q. And your primary concern is that we are somehow going to be competing with your commercial operation, if I'm understanding you correctly?

A. My primary concern is that you're going to be injecting a large volume of water in close proximity to my well. My secondary concern is that it potentially is going to turn into a competing commercial operation.

Q. And your concern about the disposal of additional water into the Devonian -- or it is a concern for you because it may cause you to somehow change your operation, if I'm understanding you correctly?

A. You're understanding me correctly.

Q. Okay. And apparently it's an investment that you would be unwilling to make to keep your -- to maintain your commercial operation?

A. It would not be an investment I would be unwilling to make. I'm uncomfortable with pumping at pressures on these old wells, as I believe I stated.

And I say it is an expense that -- if you wanted to get into pumping more, I guess my injection pressure is 1200 pounds more than yours. I mean, that's not the issue of

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what's behind this. This is just a very proximity of this well to my existing well. And I have an economic interest to protect the wells as well as the land owners.

Q. I understand. And you have been injecting into the Devonian now for over 20 years?

A. I have.

Q. And you have been injecting into the Devonian for over 20 years within a half mile of an existing producing well in the Devonian -- isn't that correct --

A. I'm not certain that --

Q. -- give or take a few feet --

A. Chuck Bah operated that well where he was producing when H&M Disposal was put in. I couldn't really say.

Q. -- when you have been injecting into roughly the same depth of the Devonian that Pecos is seeking approval here today?

A. Exactly.

Q. And contrary to what Pecos is seeking permission to do, you have been injecting produced water from not just the Devonian, but from various other formations; is that right?

A. That's true. It's a commercial operation.

Q. So you are injecting, if I understand it, additional fluid into the Devonian Formation?

A. That's true.

Q. And I believe, based on your estimates, you have

been injecting additional fluid into the Devonian at what rate, if I'm looking at your Exhibit 5?

A. The average is 2020 barrels a day.

Q. Okay.

A. Some months we approach 80,000 barrels. It's generally around 60,000 barrels.

Q. And what would be the yearly rate?

A. 60,000 -- about 720,000 barrels.

Q. Per year?

A. Per year. Is that not 6000 times 12?

Q. I'll accept your math. And you've been doing that for 20 years. So let's see. So I guess 10 million barrels over the 20-year period wouldn't be an unreasonable estimate?

A. In fact, it's closer to 11 or 12.

Q. Okay. And you haven't seen any -- you can't point to any study indicating any kind of a pressure change in your well bore as a result of this 20 years of injecting 11 or 12 million barrels of additional water into the Devonian?

A. Well, I would -- although not on a lease, a great deal of that water comes from VF's operation. So again, the biggest water producers in the area are Devonian wells. A great percentage of that is Devonian water.

Q. But my question is --

A. But your question is, there's additional water

added to that, and I have not seen a significant change in the water level at H&M.

Q. You haven't seen any change, have you?

A. No.

Q. Okay. Do you agree that the Devonian is a large permeable reservoir?

A. I do.

Q. And are you operating at full capacity today?

A. No.

Q. This Exhibit 1 shows a plugged well that's close to your operations. It's been the subject of discussions, that M Graham No. 1. Are you looking at our Exhibit No. 1?

A. Your Exhibits No. 1 would be the M Graham No. 1. Okay. I know the well I think you're talking about.

Q. Okay. You're familiar with that well?

A. No, not particularly.

Q. Wasn't that part of the study that resulted in your approval?

A. I am assuming that it was, yes.

Q. Do you have anything to indicate that it was not part of the study?

A. No. I'm sure it was included in the original application.

Q. And that's actually closer to your disposal well than it would be to Pecos' proposed well, correct?

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A. Yes.

Q. And when this application was approved by the Division, are you aware of any concerns that were raised about that particular plugged well?

A. I am not aware of any concerns that were raised.

Q. And to your knowledge, over the last -- given your 20 years of injecting additional water into the Devonian at the rates we discussed, you haven't observed any concerns arising out of that plugged well?

A. No. Because I'm a vacuum system. I'm not pumping on my well.

Q. And would you agree, then, that that plugged well is not a cause for concern for injection operations in the Devonian?

A. Conditionally, depending on the pressures involved. I am not an engineer. I would think it would be in direct relation.

Q. Will it cause a concern if you take advantage of your ability to inject pressures of up to 2695 psi?

A. It would certainly concern me, yes. Essentially, I am not pumping on that well for a reason.

Q. So if I'm understanding your testimony, are you saying that you would not take advantage of your authority to inject at higher pressure without first looking at the condition of that well?

A. I am certainly telling you that.

Q. Okay.

A. I would state for a fact I have no intention to inject at those kind of pressures.

Q. And do you disagree with Mr. Gray's projections of what the injection pressure will be bottom hole, based on their tubing size and their planned operations?

A. I do disagree.

MR. FELDEWERT: I don't have any other questions. Thank you.

MR. JONES: I would like to ask a few, Mr. Harrod.

EXAMINATION

BY MR. JONES:

Q. This Hobbs Pipe and Supply. Which offset wells are you a little bit concerned about, as far as plugs set?

A. I'd have to go back. They, in fact, plugged the Mayme Graham. And there was -- they were prone to pulling on the casing and setting off dynamite and if the casing didn't move, lowering another charge. And I think -- and shot off three charges in the H&M before -- well, the casing is recorded as being shot off at a certain depth, but it took a considerable amount of squeezing to discover those other zones where it had been blasted and had not been parted.

Q. Okay.

A. The same is true on some of the wells I have on

the ranch west of Lovington. On some of those, any -- like I say, one of them had cast-iron bridge plugs set and plugs set, and when I was trying to -- Charles Gillespie went back in them, and there was three foot of cement at the surface and some aluminum pipe in the bottom of the hole, and that was all it was -- in a Wolfcamp well.

It had additionally been plugged by Hobbs Pipe and Supply and had three or four places where -- when they set off a charge, if the casing didn't come, they didn't make any real report. They just came up hole and did it again and again and again.

And they have plugged any number of wells out in the area. And they plugged most of the Shell wells in that time frame.

Q. Okay. Hopefully, our inspectors are watching plugging operations closer nowadays. But I guess that might be of concern to Pecos to re-enter that well, but I guess they take their chances on that.

This well that they have chosen, would you have rather they had chosen the No. 5 well?

A. I didn't really have a rather. The only reason, I believe I stated, we were concerned about the volume, all the conversations we attempted to have with Pecos was that they -- whatever the application said about non-commercial, they had intentions to expand that. And if any of their operations did

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not pan out, then they would have to recoup their costs by turning it into a commercial operation.

So I had a concern about the volume they were proposing to inject. And I felt I had some economic interest in what I thought might affect my operations in existing wells. So here we are.

Q. If they weren't injecting at night, couldn't you contract more water to come into your well at night?

A. I could. I take more water during -- it's largely a matter of timing. You get trucks going out. They haul their first load back in first thing in the morning until noon. They're lined up. They all go away. And then in the evening the last load back into the yard, you get -- truck traffic comes in big lumps. I mean, I can install a booster pump and increase my rate. I lock it up at night because we've had a lot of trouble with unaccounted for fluids and drilling fluids going through it.

So this has only been a recent develop with them. I had some cleanup work to do, intended to replace a battery that's -- these days you just don't go out and buy supplies or go get work done. Everything is not immediately available. So for several months now, we've been in the process of redoing our battery and some other things. And they have generously cooperated by running 12 hours a day, basically, rather than 24. But that was for -- the past number of years, they have

been on 24 hours a day.

Q. Okay. Do you know the history of the original hearing order signed by the governor on this -- on your well? I think it was signed by the governor. I thought it was. I thought I saw it earlier.

But there was a case -- in this case, there was an administrative order that countermanded a hearing order. And I saw in the transcript that there was some concern about the surface owners originally out there that there might be a reason why this well was limited to be in a lease injection well with VF Petroleum.

A. Mr. Mauch was and still is the surface owner. And, I think, essentially, there was nothing in it for him if it was just a lease disposal. When VF abandoned the project and we took it over from them, we were paying Mr. Mauch a royalty. As soon as that issue was cleared up, well, he dropped all of his objections to it.

Q. Okay. Did you have to squeeze off above 13,600?

A. We squeezed off those original perfs.

Q. Perf. Okay. And what size tubing do you have in the hole now?

A. We have a mixed ring. There's 2 7/8 rice line and bottom 5000 foot is 2-inch plastic coating.

Q. How come?

A. Largely because it's J-5 tubing. The packer is

set at 13,500 foot. In our view, it tended to lighten the string a little bit, and we weren't running near as close to the mechanical limits of the pipe that way.

Q. That kind of restricts your -- even though it's a plastic line, it does restrict your rate a little bit.

A. It does to an extent. We can always go to bigger tubing or other things. We've operated it more as a matter of with the lease maintenance and lease costs rather than trying to maximize the volume. We're kind of the cheap guy on the block, price-wise.

Q. It sounds like you've been in the oil patch a long time and -- the business about pressuring up after three-and-a-half barrels a minute, what I heard is you're saying the Devonian itself is causing the restriction at that --

A. Yes. It's formation restriction. Every -- we had occasion over the 20 years to replace our tubing several times. And after we pass the state pressure test, we have always gone back and pressured up on the well, basically, to flush out the well bore and make sure that we were maintaining integrity from pressure inside the tubing also.

And when you first start pumping, you can pump it five-and-a-half barrels a minute with very little pressure. And then you start getting away from the well bore, and you start running into formation -- I assume it's formation

friction. The pressure will come up, and you will go from five-and-a-half barrels a minute to three-and-a-half.

And after about 45 minutes, you're down to three barrels a minute or so at a constant pressure. And we've never had occasion to pump at any higher pressure or any longer than that. That's from my experience doing it three or four times. You can get an initial high rate, and then it slows down significantly as you start to load up the formation.

Q. What did you do to that open hole? Did you just drill it out and acidize it?

A. We just drilled it out and acidized it.

Q. Okay. Are you familiar with the procedure that the Division uses when a well goes from a lease disposal well to a commercial disposal well?

A. Currently, I'm not. I know we did it mostly administratively back 20 years ago when this was done through the Hobbs office.

Q. Okay. That's why you got an attorney. You talk to him.

A. I will ask him.

Q. Do you have anything going in District Court right now about this issue?

A. Do I? No.

Q. Nothing between two parties in District Court about this issue?

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A. No, not that I'm aware of. I might ask my attorney.

Q. I'm still trying to figure out if a saltwater disposal well has correlative rights or not. You guys can say something about that later.

MR. BROOKS: Well, as Legal Examiner, one of my functions is to answer your questions, but I don't know that we need to do that on the record.

MR. JONES: Okay.

MR. HALL: Mr. Examiner, be careful what you ask for.

MR. JONES: It's nice to have all the questions answered.

Terry, do you have any questions?

EXAMINATION

BY MR. WARNELL:

Q. Yeah. I do have a question for Mr. Harrod. Sitting here looking at the math, Pecos accounts for about a third of the water that you're injecting into the well right now? Give or take?

A. Give or take. If you go back, though, where they were shut down for several months, our volume didn't go down. Anything that Pecos does not put in there is made up for by trucking.

Q. So if they stopped being a customer of yours, that wouldn't be a financial burden to your operation?

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A. No, not particularly. I mean, there were two months there where they were shut down completely, and I don't think our disposal volume dropped at all.

Q. Okay.

MR. JONES: Mr. Hall, do you want to ask any more follow-up questions?

MR. HALL: I'm finished. Thank you.

MR. JONES: Mr. Feldewert, would you like to ask any more questions of this witness?

MR. FELDEWERT: No, Mr. Examiner.

MR. JONES: Okay. Thank you very much.

MR. HALL: That concludes our case, Mr. Examiner.

MR. JONES: You want to have some -- who wants to go first?

MR. FELDEWERT: In terms of a closing, I'm not sure we need a closing. I think you hit it dead on. I don't think anybody has a monopoly over a disposal operation, so long as our client has met the criteria required by the Division, they're entitled to have a disposal well.

MR. JONES: Mr. Hall?

MR. HALL: Mr. Examiner, let me make clear once again that H&M does not seek to have the Division deny outright injection authority as Pecos proposes.

We ask that you do take their application at face value and that the order issued by the Division provide that

disposal operations will be limited to lease operations only. If you look at Pecos Operating Exhibit No. 1, they have 120 acres of lease acreage on there. There's one re-completion producing, one more probable candidate, another possible candidate.

But based on experience, I think we know that a volume limitation of 4000 barrels a day would be more than adequate to accommodate any water production from that lease. We think this is the middle -- the reasonable middle ground. We would also ask that the order issued by the Division provide that if Pecos wants to come back and apply to increase that limit, that they provide notice to H&M, we go through another hearing process rather than doing it administratively. Notice is not always so certain, as you know.

Again, we're not seeking to deny them. We recognize there's a need for capacity out there. But we think this is a reasonable middle ground.

MR. JONES: Okay. Thank you very much.

Case No. 14122 will be taken under advisement.

[Hearing concluded.]

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

_____, Examiner
Oil Conservation Division

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REPORTER'S CERTIFICATE

I, JOYCE D. CALVERT, Provisional Court Reporter for the State of New Mexico, do hereby certify that I reported the foregoing proceedings in stenographic shorthand and that the foregoing pages are a true and correct transcript of those proceedings and was reduced to printed form under my direct supervision.

I FURTHER CERTIFY that I am neither employed by nor related to any of the parties or attorneys in this case and that I have no interest in the final disposition of this proceeding.

JOYCE D. CALVERT
New Mexico P-03
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STATE OF NEW MEXICO)
)
COUNTY OF BERNALILLO)

I, JOYCE D. CALVERT, a New Mexico Provisional Reporter, working under the direction and direct supervision of Paul Baca, New Mexico CCR License Number 112, hereby certify that I reported the attached proceedings; that pages numbered 1-71 inclusive, are a true and correct transcript of my stenographic notes. On the date I reported these proceedings, I was the holder of Provisional License Number P-03.

Dated at Albuquerque, New Mexico, 15th day of May, 2008.

Joyce D. Calvert
Provisional License #P-03
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