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

APPLICATION OF MESQUITE SWD, INC. CASE 15654
TO AMEND APPROVALS FOR SALT WATER
DISPOSAL WELLS IN LEA AND EDDY
COUNTIES, NEW MEXICO.

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

March 30, 2017

Santa Fe, New Mexico

BEFORE: PHILLIP GOETZE, CHIEF EXAMINER
WILLIAM V. JONES, TECHNICAL EXAMINER
MICHAEL McMILLAN, TECHNICAL EXAMINER
DAVID K. BROOKS, LEGAL EXAMINER

This matter came on for hearing before the New Mexico Oil Conservation Division, Phillip Goetze, Chief Examiner, William V. Jones and Michael McMillan, Technical Examiners, and David K. Brooks, Legal Examiner, on Thursday, March 30, 2017, at the New Mexico Energy, Minerals and Natural Resources Department, Wendell Chino Building, 1220 South St. Francis Drive, Porter Hall, Room 102, Santa Fe, New Mexico.

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EXHIBITS OFFERED AND ADMITTED

(8:35 a.m.)

EXAMINER GOETZE: We'll return to the regular docket. We will start off with Case 15654, application of Mesquite SWD, Incorporated to amend approvals for saltwater disposal wells in Lea and Eddy Counties.

Call for appearances.

MS. BRADFUTE: Mr. Examiner, my name is Jennifer Bradfute, and I'm here representing SWD, the Applicant.

MR. FELDEWERT: May it please the Examiners, Michael Feldewert, with the Santa Fe office of Holland & Hart, appearing on behalf of Black River Water Management Company.

EXAMINER GOETZE: Any other appearances?

Do we have witnesses?

MS. BRADFUTE: We do. I'm sorry. I just want to make sure I'm getting everybody.

EXAMINER GOETZE: I know.

MS. BRADFUTE: Mr. Examiner, I have two witnesses here today.

And this application has been filed on behalf of Mesquite SWD in order to amend administrative orders that were issued by the Division approving several saltwater injection wells in Lea and Eddy

Counties. The only issue that Mesquite SWD seeks to amend in this application is the size of tubing that's allowed to be used within those wells. And we have two witnesses who are with us today who will provide testimony on those issues.

EXAMINER GOETZE: Mr. Feldewert, do you have any witnesses?

MR. FELDEWERT: Mr. Examiner, I may have a witness. At this point I don't anticipate calling a witness.

EXAMINER GOETZE: Very good.

Would your witnesses stand, identify themselves to the court reporter, and she'll swear them in?

MS. BRADFUTE: Yes.

MR. NEATHERLIN: Riley Neatherlin.

MR. NAVE: Stephen Nave.

(Mr. Neatherlin and Mr. Nave sworn.)

MS. BRADFUTE: Mr. Neatherlin, if you could please come up.

RILEY NEATHERLIN,

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

DIRECT EXAMINATION

BY MS. BRADFUTE:

Q. Could you please state your name for the record?

A. Riley Neatherlin.

Q. And, Mr. Neatherlin, who do you work for and in what capacity?

A. I work for Mesquite SWD as the operations manager.

Q. And what are your responsibilities at Mesquite SWD?

A. As operations manager, it's permitting wells, casing designs, designing wells, overseeing drilling, completions, recompletions. Anything regulatory with the wells, pretty much I work.

Q. And with regards to drilling and completion and casing design, that experience all pertains to the drilling of saltwater disposal wells?

A. Yes, it has.

Q. And how many saltwater disposal wells have you overseen drilling operations for?

A. Right around 25.

Q. And how many years have you worked at Mesquite?

A. Six now.

Q. Does your area of responsibility at Mesquite

SWD include the areas of Eddy and Lea Counties in southeastern New Mexico?

A. Yes, it does.

Q. And are you familiar with the application that's been filed by Mesquite SWD in this case?

A. Yes.

Q. And are you familiar with the saltwater disposal wells which are the subject matter of this application?

A. Yes.

MS. BRADFUTE: Mr. Examiner, I'd like to tender the witness as an expert in drilling, completion, permitting and casing design matters for saltwater disposal wells.

MR. FELDEWERT: No objection.

EXAMINER GOETZE: Okay. He is so qualified.

Q. (BY MS. BRADFUTE) Mr. Neatherlin, can you please turn to what's been marked as Exhibit Number 1 in the hearing notebook? And explain what this exhibit is to the Hearing Examiners.

A. This is our application to amend the orders for the approved injection wells that we have from 4-1/2 to 5-1/2 tubing.

Q. And within this application, does it list the

order numbers and the well names for each of the matters that you're seeking an amendment in?

A. Yes, it does.

Q. And what specifically are you seeking to amend in each of these orders?

A. We are seeking to amend the approval of 5-1/2 injection tubing as proposed to 4-1/2 injection tubing.

Q. And can you please turn to what's been marked as Exhibit Number 2, which has several different tabs behind it. It goes from A through H. And explain what this exhibit is to the Hearing Examiner.

A. These are the approved orders for each of the previously listed wells from the State for injection.

Q. And if you just turn to Tab A of this exhibit, could you please point out to the Hearing Examiners what specific language you would like to amend in the orders?

A. We are seeking to amend: Injection will incur through internally coded 4-1/2 or smaller tubing.

Q. And is similar language included in each of the orders included within this exhibit?

A. Yes, they are.

Q. So tubing which is 5-1/2 inches was not authorized under the orders?

A. No, it wasn't.

Q. Historically, what size of tubing has Mesquite

used in its injection wells?

A. We use the largest diameter pipe that we can use inside of the casing, anywhere from 2-7/8 to 5-1/2 depending on the wells.

Q. Does Mesquite have any saltwater disposal wells currently that have a 4-1/2-inch tubing in the well?

A. Yes, we do.

Q. And why is Mesquite requesting to use a larger size tubing in its wells in this application?

A. Why are we?

Q. Yes.

A. We're -- to maximize rate capacity for the well, as well as lower the surface-injection pressure.

Q. Now, you've stated that the tubing is going to be 5-1/2 inches. Can you please describe the other specifications for the tubing to the Hearing Examiners?

A. Yeah. It's 5-1/2 20-pound casing internally coated with glass reinforced epoxy. It's got a 5-1/2 body O.D. The collar O.D. is a 6.104, and the specific tubing that we're using is a JFEBEAR thread, which is a metal-to-metal seal connection. And that's about it for the pipe.

Q. Okay. And what are the benefits of using a 5-1/2-inch tubing?

A. Again, it's going to allow us more rate. It's

going to allow us to dispose of more water with less friction, less surface-injection pressure.

Q. And will it make the injection wells more feasible?

A. It will. We'll be able to get more water down into the injection zone. With these things being as deep and as expensive as they are and as long as they take to drill, we have to maximize the -- we can get down these wells. It takes two months for us to drill them. It's ungodly expensive, especially if something goes wrong, and getting it down into the Devonian as opposed to the shallower injection.

Q. If it becomes more feasible for you to use the Devonian and more feasible through 5-1/2-inch tubing, will that decrease the need for shallower injection wells in the state?

A. It will. It will allow us to, again, dispose of more water into the Devonian and reduce -- at Mesquite, we would reduce our footprint into the shallow injection.

Q. And to your knowledge more recently, have operators within the state been objecting to the shallower injection wells?

A. Yes, absolutely. They are wanting to move all disposal to the deep Devonian wells and move out of the

shallow Delaware above production zones.

Q. And what size of tubing is commonly used in the saltwater disposal well industry?

A. Again, it depends on the wellbore design, but typically it's the largest diameter you can get inside the casing.

Q. Is a typical size that can be used 3-1/2-inch tubing inside of a 5-1/2-inch casing?

A. Yes, it is.

Q. Is another typical size that's used 2-7/8-inch tubing inside of a 4-1/2-inch casing?

A. Yes, it is.

Q. And what are the clearances for those sizes of tubing typically?

A. Four 3-1/2 inside of a 5-1/2 tubing. It's a -- off the top of my head, you have a .45 clearance on your collar -- on your -- the O.D. of your collar, and then on your body, you have a 1-inch clearance. And then on the 2-7/8, you have a .44 clearance on your collar inside of the 4-1/2 and a -- I forgot the body. But it's -- I don't know off the top of my head.

Q. And are those clearances smaller than what would be provided for if you used a 5-1/2-inch tubing?

A. Yes, they are. They're lesser clearance for the 5-1/2 inside of the 5-7/8.

Q. And why is it beneficial to have a larger clearance tolerance?

A. It allows more room for fishability and less restriction.

Q. Have you discussed the use of 5-1/2-inch tubing with the NMOCD District in Artesia?

A. Yes, we have.

Q. And what were the results of those conversations?

A. I actually called up to verify a tapered string -- running 5-1/2 and 4-1/2 tapered strings, and the acting director asked why we were not running a solid 5-inch string because he didn't see any reason to not run it. And I told him of the issues that we had had previously, that Santa Fe had said no on the 5-1/2 full string through the 7-5/8.

EXAMINER GOETZE: May I interrupt for a moment? That was Director Catanach you talked to?

THE WITNESS: No. It was the acting director of the Artesia District Office.

EXAMINER GOETZE: District supervisor?

THE WITNESS: Yes, sir.

EXAMINER GOETZE: Thank you.

MS. BRADFUTE: Thank you.

Q. (BY MS. BRADFUTE) And you stated before that

Mesquite had used 4-1/2-inch tubing in some of the injection wells that it's currently using?

A. Yes.

Q. Does Mesquite operate any wells which contain a 5-1/2-inch tubing?

A. Yes. We do have some.

Q. And are any of those located within New Mexico?

A. Yes, the Vaca Draw well in Eddy County.

Q. Okay.

A. Or Lea County. Sorry.

Q. Lea County.

And does it operate any injection wells with 5-1/2-inch tubing in Texas?

A. Yes. We have a few shallow wells with 5-1/2 tubing in it as well.

Q. And was the tubing that was used in the Vaca Draw saltwater disposal well approved by the Division?

A. Yes, it was.

Q. And did increasing the size of tubing in that well help with friction loss?

A. Yes, it did.

Q. And can you explain a little bit more to the Hearing Examiners why that is?

A. Simple layman's terms is you can -- because of the greater ID, you can get more water flow through it

at a lower pressure. It's like trying to blow water through a straw as opposed to a garden hose. You're going to be able to get a lot more water through at a lower pressure.

Q. And after obtaining approval to use the 5-1/2-inch tubing for the Vaca Draw well, did Mesquite order additional 5-1/2-inch tubing to use in other wells?

A. Yes, we did. After we got approved for that order, we thought we had proven it across the board and went ahead and ordered pipe for subsequent wells coming up.

Q. Approximately how much tubing has been order?

A. We have about 80,000 feet of 5-1/2 ordered.

Q. Are there wells currently on Mesquite's drilling schedule that you'll need to use this 5-1/2-inch tubing for?

A. Yes.

Q. And when are those wells scheduled to be drilled?

A. One of them is being drilled right now, and the other two will follow immediately after.

Q. And will Mesquite need an expedited order from the Division in order to meet this drilling schedule?

A. Yes.

Q. Can you please turn to Exhibit Number 3 in the notebook in front of you and explain what this is to the Hearing Examiners?

A. This was our initial step-rate test that we did on the Vaca Draw well. It's got a very basic rundown of the bottom-hole pressure during the step-rate test, starting with the static pressure, going all the way up to 28 barrels a minute and then stepping down and recording those pressures. And then there are the pressure versus rate charts on the step-up, and then the step-down as well, and then a pressure log graph to go along with that, again, with the step-up and step-down as they were charted.

Q. And can you point out to the Hearing Examiners what benefits you observed from this analysis from using a 5-1/2-inch tubing?

A. What we were able to observe is that we were able to get up to 28 barrels a minute still under our allowable injection pressure and not see a frac gradient on the formation. We would have gone higher had we been able to get to a frac point, but there was no -- no frac point witnessed on the formation at those rates with those pressures with the 5-1/2 tubing.

Q. And is the Vaca Draw saltwater disposal well similar to other wells which are the subject matter of

this application?

A. Yes. Structurally, they're similar in casing design and injection intervals.

Q. And what formation is the Vaca Draw well drilled for injection purposes?

A. Devonian Shale [sic].

Q. And are all of the wells which are the subject matter of this application also Devonian injection wells?

A. Yes, they are.

Q. And can you please turn to what's been marked as Exhibit Number 4 in the notebook and explain what this is to the Hearing Examiners?

A. This is, again, step-rate test data. This has the surface pressure and bottom-hole pressure, as well as rates and times all put together on one page, and then charted on our step-ups, as well our step rate down.

Q. Could you please turn to what's been marked as Exhibit Number 5 in the notebook and explain what this document is?

A. This is the surface -- surface-injection pressure and rates charted from the pump trucks that we were using, as well as the pump schedule during the step-rate test.

Q. And is Mesquite asking the Division to make any changes to the maximum pressures that are authorized in the administrative orders?

A. No. The pressures are not what we're seeking. We're seeking the change in pipe diameter.

Q. I'd like to ask you some basic information about Mesquite's saltwater disposal wells. Is the tubing placed inside of a cement casing?

A. Yes, it is.

Q. And is a packer run into each well?

A. Yes.

Q. And approximately where is the packer located?

A. Have to set the packer within 100 feet of the top injection interval.

Q. And after running the packer into the well, is packer fluid circulated through the tubing and back up the annual space to the surface before it's set?

A. Yes.

Q. And after the packer is set, is a mechanical integrity test usually conducted?

A. Yes. Every time it's conducted before injection starts and witnessed and charted and recorded and filed with the OCD.

Q. Okay. And what is the size of the annulus that will be used in the wells?

A. In this particular one, it's -- the ID of the 7-5/8 is a 6.625, a 6-5/8, and it gives you an inch-and-an-eighth -- inch-and-an-eighth clearance on the -- an inch-and-an-eighth or inch-and-sixteenth clearance on the body from the annulus of the -- for the ID of the 7-5/8.

Q. And would that annulus between the tubing and the casing be adequate?

A. Yes.

Q. I realize that we do have another witness here, Mr. Nave, who is going to testify about the different fishability procedures and fishing procedures that can be used when there is a tubing failure, but I also wanted to ask you some questions about Mesquite's experience in operating saltwater disposal wells.

Approximately how much different disposal wells does Mesquite currently have in operation in New Mexico?

A. About 15.

Q. And are you aware of any situations in which Mesquite has needed to fish out tube that has broken in the wellbore?

A. No. We have not had to fish out any tubing from a failure.

Q. And what precautions does Mesquite take to help

ensure that tubing will not break off or have a failure?

A. Daily, our pumpers are checking the back side pressures of our wells. We have gauges on them, and they also open the back side of the wells to make sure there is no pressure communicating between the tubing and the casing.

Yearly, witnessed by the OCD, we have to do a Bradenhead test to make sure none of our casing is communicating, as well as MIT tests, again charted and recorded, witnessed by the State.

Q. And does Mesquite have a procedure in place to ensure that it can properly plug and abandon wells in the event there is a tubing failure?

A. In the event, we would get with the governing body, be it the BLM and/or State, OCD, to get a procedure in place to plug and abandon a well.

Q. And could you turn to what's been marked as Exhibit Number 7 in the green notebook? And just briefly explain what this is to the Hearing Examiners.

A. This is the --

Q. Actually, if you turn one more to Exhibit Number 7.

A. Oh, I'm on 6.

Q. Yeah.

A. This is a brief summary of the specs for the

5-1/2 tubing, as well as the 7-5/8, liner with clearances, dimensions. It has a brief very general procedure for fishing, your overshot, spearfishing, and a general abandonment and plugging procedure, and then as well as it's got clearances and tolerances for 3-1/2 inside of 5-1/2 casing, as well as 2-7/8 inside of 4-1/2 casing.

Q. And is this a document that you have created?

A. Yes.

Q. And in creating this document, have you worked with Steve Nave, who is a fishing contractor that Mesquite uses?

A. Yes. Going over this, again, these are very basic, general fishing procedures and how to go through on those.

Q. All right. And does Mesquite have a company that it can contract with in the event there is a tubing failure that needs to be addressed in the well?

A. Yes. We have Steve with Nave Oil and Gas that is readily available and has tools and the necessary knowledge base to fish out whatever we need to.

Q. But, again, Mesquite has actually not ever had an incident in the past where they needed to fish out a broken tube?

A. No. On our -- no. We've not had to fish out

injection tubing for a tubing failure.

Q. Can you please turn to what's been marked as Exhibit Number 6 in the hearing notebook? And this exhibit is the notice exhibit, which I prepared. In this exhibit, since there are several different administrative applications, I've included a list by well which states the different parties who were given notice for each administrative application. We did mail notice via certified mailing to everybody who received notice of the original administrative applications, and then we also added EOG because Yates and some of the Yates entities were listed as parties who would obtain notice.

MS. BRADFUTE: There was one green card that was returned for one of the wells that was located in Eddy County and another green -- another person or entity who did not receive -- we didn't receive a green card back for and their interests were also located in Eddy County. We published notice on March 16th, which was a Thursday, in the Carlsbad newspaper, and an Affidavit of Publication is located as the last page of this exhibit.

Q. (BY MS. BRADFUTE) Mr. Neatherlin, were Exhibits 1 through 7 prepared by you or under your supervision or compiled from company business records?

A. Yes.

Q. And is the granting of this application in the interest of conservation and the prevention of waste?

A. Yes, it is.

MS. BRADFUTE: I'd like to move that Exhibits 1 through 7 be admitted into the record.

MR. FELDEWERT: No objection.

EXAMINER GOETZE: Okay. Exhibits 1 through 7 are so entered.

(Mesquite SWD, Inc. Exhibit Numbers 1 through 7 are offered and admitted into evidence.)

MS. BRADFUTE: And that's the questions that I have for this witness.

EXAMINER GOETZE: Very good.

Mr. Brooks, I'll make you go first.

EXAMINER BROOKS: I have no questions.

EXAMINER GOETZE: There we go.

EXAMINER JONES: Mr. Feldewert?

CROSS-EXAMINATION

BY MR. FELDEWERT:

Q. Mr. Neatherlin, as I understand it that by increasing the tubing size from 4-1/2 to 5-1/2 inches, you decrease the pressure -- or the friction loss, correct?

A. Yes.

Q. Which then allows you see to dispose of more volume?

A. Yes.

Q. Without -- and dispose of more volume without exceeding the surface-injection pressure or the bottom-hole injection pressure that the Division has determined necessary to protect the formation?

A. Yes.

Q. Okay. And there are -- are there any concerns that arise with respect to the formation by injecting additional volumes?

A. No. As we saw in the step-rate test, on that bottom-hole pressure, we didn't even -- we didn't get close to a frac point, and that's at the allotted point to -- psi per foot that's issued by the State.

Q. And so in your opinion, this would be a prudent move for both the company and other operators that are disposing into the Devonian?

A. Yes.

MR. FELDEWERT: That's all the questions I have.

EXAMINER GOETZE: Back to the Examiners.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. Thanks for coming, Mr. Neatherlin.

EXAMINER JONES: You've got another witness; is that correct?

MS. BRADFUTE: Yes, we do.

EXAMINER GOETZE: The witness is going to address what issues?

MS. BRADFUTE: He's going to be addressing the fishing issues.

EXAMINER GOETZE: Okay.

Q. (BY EXAMINER JONES) Well, then, so we're talking about four or five wells here; is that right?

A. Six wells or -- we have about nine permits, I believe.

Q. Basically, you're addressing specific wells here? You're not asking for relief on any other besides what you're talking about here; is that correct?

MS. BRADFUTE: The application is to amend these eight wells here that are listed in the application.

EXAMINER GOETZE: Right.

Q. (BY EXAMINER JONES) And the wells that you've got now, are they tapered casing? In other words, you've got 9-5/8 and 7-5/8 in all of these wells?

A. The design is for that, yes.

Q. Okay. So these are proposed wells to be drilled, then?

A. Yes.

Q. Okay. So none of these have actually been -- are actually drilled?

A. Of the list, the Cypress is currently being drilled. The Scott is currently being drilled at this time.

Q. Two rigs going right now?

A. Yes.

Q. And the rest of them are just proposed wells.

So you're -- I guess we could go back to -- how much rate are you going to go down these wells, or do you propose to go down these wells?

A. We're going to get as much as the formation will allow us to take under the allowable injection pressure.

Q. Okay. So how many operators will you be taking fluid from?

A. As many as we can. One thing we have been noticing is the amount of water that operators are producing. One of these Devonian wells taking 40,000 barrels a day will service about four sections and that's it.

Q. Okay. Okay. So you're affecting four sections, and if something happens to your well, it will affect production in those four sections at least until they can come up with another disposal?

A. Uh-huh. Yes.

Q. Okay. So we're going to talk about fishing later, I guess.

So the wells that you're putting in, are you anticipating any deviations in these wells as you go down?

A. No. We don't anticipate any.

Q. So you're hoping to get a straight hole --

A. Yes.

Q. -- and be able to run pipe without kinks in your pipe or problems running your tubing also?

A. Yes.

Q. So have you had any trouble so far getting your tubing in the hole?

A. No.

Q. But so far you've been running tubing with -- you haven't run any 5-1/2 except on the Vaca Draw; is that correct?

A. On the Vaca Draw, which was sidetracked.

Q. It was sidetracked?

A. Yes.

Q. Did you have trouble going down?

A. Not at all.

Q. Was that -- did that have any DV tools in it, in the casing in that one?

A. In the 7-5/8, yes. It was a re-entry that we ran the 7-5/8. And the OCD came back and said if we ran 7-5/8 to the surface, they would allow it for the 5-1/2.

Q. And you got in the hole okay.

You didn't have to go in and address the casing at all with a bit before you got down with your tubing?

A. No, sir.

Q. And what about the cement design on the wells that you're proposing? Is it to completely cover casing with cement?

A. Yes. In every order that we receive from the OCD as a disposal well, we must circulate cement to surface on our upper strings, as well -- and then our liner, we must circulate cement and seal off that liner and run the cement bond log to verify that we have bonded pipe behind -- we have bonded pipe throughout the well.

Q. Okay. So your cement design is for circulation, but if you didn't get circulation, would you still want to run the real tight tubing in?

A. If we did not get circulation, the OCD would make us go back and seal that off.

Q. Okay. But we all know that there are problems sometimes with shooting holes in your pipe, and you may not get much of a squeeze anyway, and you're endangering your pipe by doing that. So you may end up with a situation where you don't have cement -- total cement coverage. But you still wouldn't want to go with the 5-1/2 in that 7-5/8?

A. Yes. The size of injection tubing is not going to affect the integrity of the casing.

Q. Okay. The plugging procedures that are required are inside, outside plugs, so if there is an issue with no cement on the outside, then -- and if you twist off uphole and you can't fish it, well, you might have a problem properly plugging the well. That's one of the issues that we're looking at.

A. With -- the benefit with the 5-1/2 is you can actually go in with a 2-7/8 workstring and go inside of it. You can use 2-3/8 workstring, traditional tubing. You can run coil tubing and go in, and then you'd be able to go to the bottom of the 5-1/2. And you can either cut it, you can perforate it, and then you would be able to pump cement down the 5-1/2, out the perforation holes and completely seal off the liner, as

well as the inside of the 5-1/2 tubing.

Q. Okay. Your 5-1/2 that's plastic coating, what is the ID of the --

A. The minimum ID is a 4.2 -- 26 -- yeah. That's the flare ID and in the collar.

Q. Okay. But after it's plastic-coated?

A. That's the flare ID of the -- that's the ID of the plastic coating. That's the smallest ID.

Q. So you could get a perforating gun inside it?

A. Oh, yes, absolutely.

Q. 3-1/2 perforating gun --

A. Yes.

Q. -- inside it?

Do you have any idea of your friction factor on your 5-1/2 plastic-coated tubing?

A. I do not, not an actual factor. I do not.

Q. As far as that goes, would you have an idea of the friction factor of 4-1/2-inch plastic-coated tubing?

A. No, sir.

Q. Have you run any comparisons of the rate you could get down 4-1/2 versus 5-1/2?

A. Yes, we did.

And I was hoping to have a step rate done on the 4-1/2 with the bottom-hole sensor, but we had some issues with service companies, and we weren't able

to get it done before then. But we did do a surface-injection test on another well that we have, 4-1/2. That's a Devonian well. And we were only able to get up to about 23-, 24,000 barrels a day at 3,200 pounds. And that was after acid stimulation. And then, you know, on the Vaca Draw well, before acid stimulation with 5-1/2 tubing, we were able to get up to about 40,000 barrels a day at 3,400 pounds.

Q. This the same well you're talking about?

A. No. These are two different wells. One has full string of 4-1/2, and the Vaca Draw has the 5-1/2 tubing in it.

Q. Okay. If you had a program that you could actually calculate the flow rate, assuming your formation is exactly the same, you could give us plots of this; could you not?

A. Yes.

Q. Okay. We may be asking for that.

A. And we're still going to go ahead and do the step-rate test, so we will have that information available in the near future.

Q. That's actual empirical data that your -- your actual calculations that you could do. If you had a Nodal Analysis Program, you could actually run your analysis on 4-1/2 --

A. Uh-huh.

Q. -- tapered string with 4-1/2 at a mile -- for the bottom mile of your well and bigger casing -- or bigger tubing on the upper part above your well, and then you could compare them to see -- because we hear you saying this and it makes all kinds of sense, except -- you know, we're not talking about fishing yet. But we don't -- we do not see any actual numbers. You're not presenting in this case to show what the difference is between constricting your tubing versus opening it up another -- another inch or so.

A. Well, you know, like the example I gave earlier, you can blow a lot more water through water hose than you can through a straw.

Q. That makes sense. It does make sense.

Do you have any idea of the capacity of your Devonian, first of all, Formation?

A. The reservoir capacity?

Q. Right.

A. No. Being relatively new injection for the area, it's still --

Q. Let's say an estimate on the absolute maximum Devonian capacity, what would you guess?

A. I couldn't guess without knowing fracture structures and how long and how connected they are and

complete permeability.

Q. It could be really good, or it could be tight, possibly?

A. It could be tight.

Q. Most of the time it's not, though?

A. Most of the time, it's not.

Q. So let's say you got your -- you know your Devonian is capable of, let's say, 30,000 barrels a day. Well, then you could run your designs, and you could show us the difference between running the 4-1/2 and versus your 5-1/2 --

A. Uh-huh.

Q. -- and then you could let us know.

MS. BRADFUTE: Well, they don't have a Nodal Analysis Program; Mesquite does not. They can provide the step test for the wells that they have the 4-1/2 inch.

EXAMINER JONES: There are engineering firms that have these things, so it's just a question of asking around.

MS. BRADFUTE: Uh-huh.

EXAMINER GOETZE: It would go a ways, yes.

Q. (BY EXAMINER JONES) What about your handling of the waters on the surface -- you put big tank batteries out there --

A. Yes. All of our tank batteries are designed for disposals. We -- as opposed to doing a surface installation, we recess all of our bits about 6 feet so that we can more than hold the maximum capacity of our tanks instead of having, you know, a traditional 1- or 2-foot firewall, just because we have large capacity at our tank batteries.

Q. Do you have a -- is that containment lined?

A. Yes. It's lined with a polyurea spray and liner.

Q. Okay. So you would set tankage out there proportional to what contracts you get for the disposal?

A. Yes. Our batteries are pretty standard as far as how we set them up, the capacities, and base them off of our -- how much water we're going to move through that well.

Q. Okay. But do your wells -- being commercial disposals, do they -- they surge the wells? Is that one of the reasons you need capacity on your tubing is because you're going to have to at times surge your well with more rate than you would if it was a lease disposal well and if you had flowlines coming in and post-production?

A. It's not really so much of a surge because actually what we're seeing is the projection from

operators on their water production is a slope. And then what actually comes out is more of a steep step-up. So it's actually -- what we're seeing is it's a very constant rate of -- pretty much maxing out our rate that we can get through that well every day.

Q. Okay. Okay. So how do you handle your scaling issues?

A. All of that's done with a chemical treatment on the surface facilities, or, you know, when we take custody of the water from the operator, whether it ties into our pipelines or whether it's trucked into some of our facilities.

Q. Okay. So you contract with a scaling company?

A. Yes. We have a chemical company that we use. We're doing chemical tests or water analysis tests two to three times a month and adjusting our chemicals as needed to keep scale and bacteria and anything else that may arise under control.

Q. And your acute corrosion, do you use coupons to measure your corrosion? In other words, your corrosion -- your corrosion scaling company, they actually take care of corrosion and scaling at the same time; is that right?

A. Yes.

Q. Okay. And what about filters for your wells?

Do you believe in filters? Some people seem to not believe in filters.

A. Oh, yes, absolutely. We have -- on our facilities where we have truck-and-load stations, we have screen pots that have an 1/8-inch perforated screen to catch anything larger than an 1/8 of an inch so that it doesn't go through our transfer pumps on facility -- or through the battery.

And before it gets to our injection pumps, we have filter screens -- or filter pots that have a bag filter that -- I believe it's a 20-micron filter that pulls anything greater than that out before it hits our injection pump and goes downhole.

Q. Okay. And what do you do with the filters after you are done with them?

A. Throw them away.

Q. Where do you put them?

A. In a receptacle.

Q. Okay. So you dispose of them somehow?

A. Yes.

Q. So the faster you inject in these wells, the more fines you're putting into them; is that correct? I mean, even if you filter it, if you don't have -- it depends on the design of your tankage, but you might be carrying over more and more fines into your wells the

faster you put --

A. Our batteries are not designed for maximum retention so that we're -- and actually what we have is a desander. So all of the water that first comes into our facility runs through a desander. It knocks it out, and then it goes through the filtration steps. And, again, it has that retention time from the desander to the gun barrels to the injection tanks before it's actually hitting the pump. We're not -- we're not carrying over a lot of fines. Our TDS is minimal.

Q. How often do you backflow these wells?

A. Honestly, we haven't had to backflow many of our wells.

Q. So you've got a good rate and not --

A. Good rate, and we're not seeing pressure increases. We're not seeing decrease in rate. And a lot these wells have been in operation for five or six years now.

Q. How often do you check the TD on your well?

A. It depends. If we need to go in and do remedial work, it's then, but we try not to go in and do anything unnecessary to the inside of the well just as a precautionary message -- or precautionary method, so we're not jeopardizing the integrity of the lining or risk going in and getting a tool hung up and then have

to go in and do more work to the well, so on an as-needed basis.

Q. Do you have a way to go in and test the pressure -- pressure test your tubing inside of the --

A. Yes. All of our packers, we run a seal nipple in it and run a nipple on the top of the packer, test the tubing from the bottom of the tube to the top of the wellhead.

Q. Okay. So is the ability to put in 5-1/2 tubing, especially if you have adequate casing size on the outside -- is that giving you more capability to actually check on your well often -- more often, and go in and maybe clean your well out if you had to?

A. It actually does. Again, because it is a 5-1/2 casing, your ID is so much bigger as opposed to the 3-1/2 or 4-1/2 tubing that you -- there are so many more tools available because it is actually casing, you know, that they are running in production wells. So the amount of tools available to go in and do these is way larger than what you would have for your smaller ID tubings.

Q. Okay. So that's a good thing?

A. Yes.

Q. And if you had to go a little bit bigger than 7-5/8, what would be the next size up with your casing?

A. The next size up would be an 8-5/8 casing.

Q. Cost you more to drill?

A. Yes, exponentially, 30 percent more.

Q. But if you lose your well, you've lost a huge investment also?

A. (Indicating.)

Q. So far you haven't. But you've got 15 wells, and you haven't had --

A. Uh-huh.

Q. How long have these wells been operating?

A. The ones that --

Q. The Devonian wells.

A. The Devonian wells, the -- we have our Military well, which was brought on line in November, and our -- you know, moving from the Delaware, shallow injection, to the Devonian. That's the new one that we have operating the longest. And then we have the Big Eddy SWD #1 that's been in operation for about five years now with no troubles in it as far as tubular failure.

Q. You haven't had to have any pressure increases or step rate --

A. No, not on those wells. We're not trying to increase the pressure. I mean, 3,500 pounds, 3,489, that's a lot of surface pressure. We don't want to be operating at that. We want to keep our pressures as

minimal as possible and put away as much water as we can.

Q. Okay. So your pumps tube at -- your pumps, what do you have out there for pumps?

A. We will have two H pumps, and they're designed for maximum allowable pressure, as well as maximum rate, the maximum rate that we can get for that pressure. They're run on a VFD, variable frequency drive, so they automatically speed up and slow down. If the well starts pressuring up, it automatically slows the pump down to regulate that pressure, or we can -- we can set it to, you know, whatever range we want it to operate in so that it stays below that pressure.

Q. Are those positive displacement pumps?

A. No. They're H pumps, so it's a centrifugal pump with multiple stages of a diffuser and turbines.

The positive displacement pump you're talking about is a PD pump, an injection pump, a triplex or a quintuplex. We don't -- we won't use those on the Devonian wells because you can't get the rate with the pressure. We do have those in operation on our shallower Delaware wells, and they are also run on a VFD and pressure sensor.

Q. Do you have a SCADA System or a continuous chart?

A. Yes. All of our facilities are fully automated. So there is a SCADA. So we're tracking pressures. We're tracking rates. We're tracking VFD output. Any factor that we can track on that pump, we would exclude it.

Q. Okay. I don't have any more questions.

EXAMINER GOETZE: Mr. McMillan?

EXAMINER McMILLAN: I'll just let you go ahead.

EXAMINER GOETZE: All right.

CROSS-EXAMINATION

BY EXAMINER GOETZ:

Q. Let's start off with a discussion about the Vaca Draw. And to make it very clear, I participated with you in this final design, along with Maxey Brown, the district supervisor from the Hobbs District. There we made you change the design to bring the 7-5/8 to surface.

And with that, the other wells that you are considering for changing, are those designs going to be, what, through the Woodford? Are they going to be at the bottom section of this limited liner hung from intermediate casing?

A. Yes, from the top of the Wolfcamp to the top of the Devonian.

Q. Okay. So we're through the Wolfcamp?

A. Yes.

Q. You had stated that you had 5-1/2-inch tubing in wells in Texas, that they were shallow. What depths are you looking at there?

A. 7,500 feet. 5,000 to 7,500 feet.

Q. Putting into where roughly? Any Permian? Below Permian? Woodford?

A. It's Delmar, Fort West [phonetic].

Q. Okay. That portion of the Basin?

A. Delaware, basically.

Q. Now, with volumes, saltwater disposal wells do not have any correlative rights and, therefore, spacing of them is, at best, a decision made by the Applicant.

A. Uh-huh.

Q. We have here a volume which has, in other states, indicated issues later on in reservoir situations, and I'm speaking primarily of induced seismicity. How are we going to, as a Division, limit the injection at high volumes? And what happens with further assessment of reservoir through the life of the well? The tendency is we don't see these wells going away until we start to fracture the formation, and then we start to see issues. Our ability as an oversight of the UIC Program, these wells will have a large area of

radius of influence.

A. Uh-huh.

Q. How are we going to make an estimate on what happens with those wells? With these -- if we increase the volumes, is there anything that you have in your experience that we can stand back and say this is no more, we can't tolerate this much volume going in until an event happens, or are we going to look at providing some sort of alternative?

A. So --

Q. Is Mesquite looking at having multiple? And when they do, are they looking in the area outside the AOR to see what influences they may have? And if you don't --

A. I mean, I'm kind of -- are you asking how are we going to go forward working with spacing on the wells to keep from communication?

Q. We have had a history in the past where the piling up of wells in close proximity has resulted in the --

A. I think that goes back to the OCD on spacing and allowing permitting within certain areas.

Q. Okay. We'll leave it at that.

With regards to Exhibit 3, if you could provide -- I have no times for each of the steps, if you

could provide that information.

A. If you go back to --

MS. BRADFUTE: Exhibit 4.

THE WITNESS: 4 and 5 have the times.

Q. (BY EXAMINER GOETZE) Yes, they do. So we're not --

A. And, actually, 4 has it all together. It has the rates, the time, the bottom-hole pressure and the surface pressure all right next to each other.

Q. Yes. That's very good.

So this is just for discussion? Okay? So I can't use this as a step-rate test?

A. Oh, no. It was an actual step-rate test that was done with bottom-hole pressure sensors. This was --

Q. Okay. So this is the result --

A. This is the Vaca Draw. This is the post test that we did. We actually did a post test before we did stimulation so that we could actually see how much benefit our stimulation is doing, so we have a baseline going forward. And we will actually be doing our post step-rate test on Monday to see what -- what and how good we did on our stimulation of the well.

Q. And what type of stimulation did you do?

A. It was an acid job.

EXAMINER GOETZE: At this point those are

the only questions of this witness.

RECROSS EXAMINATION

BY EXAMINER JONES:

Q. Are you going to do a follow-up after your step-rate test to see what --

A. Yes, we will. Get an ISAP and then do a follow-up.

Q. And analyze it?

A. Yes. It'll be both with surface and bottom-hole pressure.

EXAMINER GOETZE: And provide it?

THE WITNESS: Yes. We're going to do that. And then we'll go back and do -- we'll actually go and do that because the 4-1/2 well, too -- the one we have 4-1/2 tubing in, and, oh, I'd say here by the end of the month, I should be able to get another one that will actually be a tapered string. I have two of them with the tapered string.

EXAMINER GOETZE: Mr. McMillan?

CROSS-EXAMINATION

BY EXAMINER McMILLAN:

Q. I guess my only question, essentially, is going to Exhibit 7. Is -- on 7-5/8 -- so essentially the drift is going to be 6.64-something? Is that what this is saying? So my question is what will be the drift for

the 7-5/8 using this?

A. The drift is a 6-1/2, API drift. That was taken under -- that's what we're drilling out with is a 6-1/2 bit. But, you know, when we run our packer and our gauge ring, it's 6.625. So we make sure we can get it down and set it with a wireline.

Q. Okay.

EXAMINER GOETZE: I believe we're done with this witness.

Thank you very much.

EXAMINER JONES: Thanks for coming.

EXAMINER McMILLAN: Thank you.

MS. BRADFUTE: I'd like to call my next witness.

EXAMINER BROOKS: Can we have a break?

EXAMINER GOETZE: My lawyer wants a break. Let's have a break. Let's come back in about ten -- how about 15?

(Recess 9:30 a.m. to 9:45 a.m.)

EXAMINER GOETZE: All right, folks. We're going to go back on the record for Case Number 15654.

I've been requested to make one announcement. We have an individual we believe is going to be showing up for the Westbrook Oil, and if that witness is here, I want to inform them that that

compliance case will be after lunch. So if you wish to give testimony, it'll be after 1:30 that you have to be here.

Meanwhile, let's go back to the record for this case.

STEPHEN NAVE,

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

DIRECT EXAMINATION

BY MS. BRADFUTE:

Q. Could you please state your name for the record?

A. Stephen Nave.

Q. And, Mr. Nave, who do you work for and in what capacity?

A. I work for Nave Oil and Gas. We are a fishing tool company. I am a fisherman and the president of the company.

Q. And can you please explain your background and your work experience to the Hearing Examiners?

A. The first couple of years or a few years, I was drilling, roughnecking. In 1980, I started in, primarily, the fishing tool operations only, and I went to work for a company called Star Tool Company and worked as a fisherman for, oh, 15 years. Was promoted

to fishing tool manager where I oversaw all of the fishing operations for 100, 115 employees.

Q. And does your area of responsibility include the areas of Eddy and Lea Counties in southeastern New Mexico?

A. Yes, ma'am, it does.

Q. And are you familiar with the application that's been filed by Mesquite SWD in this case?

A. Yes, ma'am.

MS. BRADFUTE: Mr. Examiner, I'd like to tender Mr. Nave as an expert in fishing operations.

EXAMINER GOETZE: Mr. Feldewert?

MR. FELDEWERT: No objection.

EXAMINER GOETZE: Very good. He is so qualified.

Q. (BY MS. BRADFUTE) Mr. Nave, could you please turn to what is marked as Exhibit Number 7 in the hearing notebook in front of you? And I wanted to walk through this exhibit with you so that you could explain the items discussed in it to the Hearing Examiners. Could you please start by explaining what the specifications are of the tubing discussions in this exhibit?

A. Well, this talks to the diameters -- outside and inside diameters, specification of 5-1/2 -- 5-1/2,

in this case, tubing and the inside diameters and specifications of 7-5/8 39-pound casing. What this is -- to me what this leads to is what -- what is -- what are we capable of working with on 5-1/2 inside of 7-5/8 39-pound from a fishing standpoint in case of a tubing failure.

Q. And, Mr. Nave, is it your understanding that the tubing specifications -- the casing specifications listed at the top of Exhibit Number 7 are representative of the tubing that Mesquite seeks to use in this case?

A. That's correct. Yes, I do.

Q. And I'm going to hand out -- this is not included in the notebook -- what's been marked as Exhibit Number 9. And could you explain to the Hearing Examiners what this exhibit is?

A. This is no more than a chart of specifications for different sizes of -- sizes and weights of casing, tolerances, wall thicknesses and stuff like that. It's exactly the same thing that's up here (indicating). It gives a few more size references.

Q. Okay. And is this something that you consulted in order to prepare for your testimony here today?

A. Yes. This is something that we consult for. It's where we get our dimensions from for most operations.

Q. Could you please look at the overshot fishing procedure discussed in Exhibit Number 7 in the second paragraph section, and explain what the overshot fishing procedure is to the Hearing Examiners?

A. Okay. We've got this set up as -- in the event the tubing fails and leaves a collar looking up. I would say that it could be no more than 50 percent chance that a collar would be left looking up. However, if that's the case, a collar inside -- on 5-1/2 casing inside a 7-5/8 casing is too large to fish from the outside with an overshot. It probably can be gotten a pretty good hold of with a die nipple or a die collar. However, it would probably be simpler to just go ahead and mill the collar away and fish the tube. It would be the exact same procedure that you would use in quite a few other applications with the collar only being 6 or 8 inches long. It's easier to mill it away than it is to deal with it. So that's what you would do on a deal like this.

You can then latch on to it with an overshot from the outside. In this case, the outside of the pipe is just a steel pipe. Sometimes you need to get ahold of the outside simply because you need an enlarged ID to be able to work through. In this case, you can run overshot and have basically like a patch.

It will latch on, make the string continuous, run a 5-1/2 plumb back to surface. So anything that you can get in the bottom of it, you can get through -- from the top to the bottom, i.e., another workstring if you needed to.

So that's what the -- what the top part of this is, is how to get ahold of it providing, say, the tubing just parted, and you can latch on with overshot and potentially pull the -- do whatever you need to do and release from the packer and retrieve the tubing from the hole and repair it and run it back in.

Q. Now, is the overshot fishing procedure something you could use when 5-1/2-inch tubing inside of a 7-5/8-inch casing is used?

A. That is correct. You can use an overshot to fish 5-1/2 inside of 7-5/8 39-pound.

Q. Now, would this fishing procedure differ in any way with a well that uses a 4-1/2-inch tubing?

A. 4-1/2, no. Well, you can fish the collar on 4-1/2 with the overshot, too, but it would be -- the only difference is one step, to mill the collar away, in case you did have a collar looking up. Otherwise, it's exactly --

Q. And in some respects, would it be easier to fish out a tube that's 5-1/2 inches?

A. The main aspect would be with the larger ID of the 5-1/2, you can get more -- you have a larger selection of stuff that you can work from the inside with. The outside, there is basically no difference. The inside, you do have a bigger selection of things you can work with.

Q. I'm going to pass out what's been marked as Exhibit Number 10, and could you explain what that document is to the Hearing Examiners?

A. Okay. This is basically just some pages taken from the instruction manual from National Oil Well Manufacturers overshots. This is Series 150 Overshots. The drawing kind of explains the concept on the front. The next page gives a general description in how you work it and things like that. It has -- this tool has the capability to go over the outside and catch onto a steel body looking up. It can pack off on it so that you can pump pressure through the inside and it will come out around the overshot. Basically, it's an attachment method to get back onto the fish.

The third page on this is the specifications of overshot manufactured. There is a mark over here on one that starts out -- if you'll look, it's a maximum catch size of 5-1/2-inch. That overshot is 6-5/8 O.D. This is a readily available overshot that

National makes, along with several other manufacturers, on a regular basis. We use it regularly. It's sitting on my shelf in the shop now. This is 6-5/8 O.D. and 39-pound, 6-5/8 ID. I understand that is -- you can't get that inside there. However, turning these overshots down a few thousandth or a 16th or an 8th is a common procedure. We do it all the time, because this kind of thing -- on things like submersible pumps inside of a 5-1/2 casing, we have to skin down overshots. Even to fish 2-7/8 eight round tubing inside a 20-pound 5-1/2 casing, you have to turn the overshot down. They don't make an overshot that is really designed to do that. So we skin it down. And in this case, it would be no different. It's not anything that wouldn't be regularly done.

Q. So it's a common practice within your industry --

A. Very common practice.

Q. -- to go ahead and skin it down and use an overshot?

A. That's correct.

Q. Can you please explain what the spearfishing procedure is to the Hearing Examiners?

A. A spearfishing procedure would be to fish from the inside. A spear with the overshot goes on the

outside. The spear goes to the inside. It's basically the same process in reverse. The helix pushes quicker throughout the inside and bites from the inside of the pipe.

In the case of disposal wells or injection wells, you have a plastic coating. This plastic coating has to be removed for the spear to work. However, if it is a sprayed-on liner, as this -- that they're proposing it is, that's usually pretty simple in that you -- the catch range on a spear, especially when you get into the larger sizes like this, is efficient so that you'll be able to put it inside the plastic. And it will -- if you get real rough with it, it will probably pull out the first time, but all it does is pull the plastic liner out. Then you stick the spear back in, and the next time it catches, the steel will shed the plastic off after it pulls out in there and leaves the steel.

But internal fishing with this type pipe is readily accessible. We do that on a regular basis, too.

If you have something like a dual line or something where it's fiberglass or a PVC liner, then you have to mill that out first, but it's easy to do with -- and, in fact, I think you're going to have an exhibit there of the spear.

Q. Yes, I am. And I will pass out that exhibit.

A. And I can kind of show some things with that, too.

Q. Number 11.

A. There are various types of spears. This is a standard Itco type spear that National Oil Well and many others make. The first page is a picture. The second page is just a general description of construction and what it does. The next page there shows a couple of things, and one is the nut there, the sidehill type nut and sub type nut. Well, what that does -- the sub type nut means that you can put a mill or something on the bottom of that to mill plastic or whatever you need to out of the way. It would be one application for that, and then -- then the grapple can go down in and get ahold of the steel.

It also facilitates the use of the spear pack-off assembly, which runs below the spear and makes it where you can pump pressure through the fish to be able to circulate around it or something like that. So that's pretty much the mechanics of the way the spear works.

Now, as far as which spear, there would be numerous spears that would work inside 5-1/2 casing. The one I've marked here is a 5-inch O.D. spear that that's designed to catch 5-1/2, 5-3/4 pipe. It's

readily available. Every fishing company in the country's got it.

Q. Now, is spearfishing a procedure that is commonly used within the industry to fish out tubing?

A. Absolutely. You fish tubing -- it really works better in larger pipe simply because the spear itself reduces the ID of tools that you can work through. And pipe the size of 5-1/2, you can get 1-inch tools, which is capable of three points and stuff like that, through the 5-1/2 spear, but you wouldn't be able to on 2-7/8 or 2-3/8 spears. They only have like a 3/8-inch ID. So you can't get through the spear on the smaller stuff, but you really can on the larger stuff.

Q. So spearfishing is something that is more readily used and available when you have larger-size tubing?

A. Absolutely. Absolutely. They just use it more often because it works just as well. The spears are very strong, capable of getting very good hold of the fish, and you can work through the larger-size spears.

Q. So there are minimal differences when you are using an overshot fishing procedure with the use of a 5-1/2-inch tubing, and then there are additional options available for spearfishing procedures when you have a 5-1/2-inch tubing, correct?

A. That's correct. You just -- depending on what you need to do would be which one you would need to -- they both have the capability of latching on and pulling whatever you need to or working below it. If you need larger-diameter tools in the hole, then you would want to use the overshot. If you have no use for the larger-diameter tools, use the spear. Both these tools have the capability of engaging the 5-1/2 tubing and then releasing from it and coming back out of the hole and then going back and re-engaging again if you need to.

Q. Can you explain what the abandonment procedure would be to the Hearing Examiners in the event there was a tubing failure and you needed to go in and either cut off part of the tubing in order to properly abandon the well or do something else to fish out the tubing?

A. Okay. If there was 5-1/2 that was stuck in the hole and it was deemed, you know, it would not be beneficial or unable to get it from the well, basically where you have 5-1/2 and 7-5/8, we still have the capability to wash over it and -- 6-3/8 wash pipe is readily available. It would be the same thing as running 4-1/2 wash pipe over 2-7/8, basically, especially over 3-1/2.

The difference being -- with the 5-1/2, if

it's really stuck in the well, it would be no different than 5-1/2 casing being cemented in a well that's in a producing situation. We can now go through the inside of 5-1/2. We can't really do that in a 20,000-foot well on 2-7/8. We can run cutters. There are a multitude of cutter varieties. There are mechanical cutters, hydraulic cutters, wireline electrical cutters, sand cutters, perforators, section mills. All this can be done through 5-1/2 that literally wouldn't be able to be done through the smaller pipe.

Now, 4-1/2, yeah, most of it can be done through 4-1/2. 3-1/2, 2-7/8 and 2-3/8, you become very limited on what you can do inside.

But as far as plug and abandonment, I would say if it really gets stuck in the hole, perforate and squeeze cement around it and run 2-7/8 in there, and you've got another general well. So you can literally plug it from the inside rather than having to get it out.

Q. I'm going to pass out what's been marked as Exhibit Number 12 to you, and could you please explain to the Hearing Examiner what this document is?

A. This is one example of a tool that can be used inside 5-1/2 or 4-1/2. If it's plastic-coated, this particular tool is capable of going 3-5/8 O.D. You run

it on a tubing string. It can run inside this pipe. It don't care if it's plastic-coated or inch-thick steel or in a collar or what. Once you pressure up on it, it starts -- it pushes a piston down. It pushes knives out with carbide cutters on it. And you start rotating, and it cuts through the whole thing, and you're able to lift it out of the hole. Like I say, this is no more than an example of one tool that is capable of doing this thing in this situation.

Q. So there are numerous other tools that could be used to cut out --

A. That's correct.

Q. -- the bottom of the pipe to allow for plugging and abandonment?

A. Yes, ma'am.

Q. If you could turn back to Exhibit Number 7 and turn to the last page of that exhibit, and explain what this last page tells the Hearing Examiners.

A. Okay. As I understand it, these are some scenarios that are allowed through some of the permits from the OCD, and that's 3-1/2 tubing inside of 5-1/2 casing. The 3-1/2 tubing has a collar diameter of 5-1/2-inch O.D., and then it has an upset that screws into either end of that, and then it goes to 3-1/2 O.D. body.

The fishing procedure on 3-1/2 inside 5-1/2 is exactly the same as the fishing procedure of 5-1/2 inside 7-5/8. You cannot fish the O.D. of the collar. You can still fish the ID, but you have the same issue with plastic coating, dual line, whatever's in there.

The clearances are basically somewhat the same. I mean, you still have to -- to get ahold of the outside, you have to pull the collar off. Then you can fish the body. 20-pound -- as I say again, you have to go with a small enough overshot to be able to get in 20-pound and fish it. So that would be -- it's readily doable. That's -- the first paragraph -- or the first column up here deals with that, and basically I'm saying that there is really no difference in the fishing methods for that than there would be with 5-1/2 inside 7-5/8.

The same goes for the 2-7/8 inside 4-1/2. The collars are not fishable. The tube is. You can either cut the pipe below the -- below the collar and pull that piece out and then fish the body and mill the collar off. It's the same on all three of these different scenarios -- three different scenarios we're talking about here.

The difference being that when you get a liner inside one of these smaller-diameter tubing, like

a plastic coating or a dual line, you're starting to really limit the internal diameter of this and the tools that you can get in it. You can't run chemical cutters or electrical -- electric line chemical cutters through that that will catch and cut the pipe. And trying to come up with a workstring to work inside that 2-7/8 tubing to run mechanical cutters is really tough. So basically you have a better chance of working with the 5-1/2 than you do with 2-7/8 if you want to get to that point.

Q. And could you please turn to what's been marked as Exhibit Number 8 in the hearing notebook and explain to the Hearing Examiners what this exhibit is? And in particular, if you could turn to the information on the second page.

A. Riley called me and wanted to know what -- what would be -- which I field these calls on a pretty regular basis. What can we do in this size hole? What's the maximum size fish we can catch in here and stuff like that? He said, If we had 5-1/2-inch casing inside 7-5/8-inch 39-pound, what would we do? I said, Well, it shouldn't be an issue. We have the overshot with 6-5/8 O.D. We'll have to skin it down just a little bit. The coupling size is 6-1/16, basically 6.125. Mill the coupling off if you leave it in there.

And like I say, there's, I'd say, a less than a 50 percent chance you leave it because it's going to break either -- the only time you would be dealing with the coupling is if it breaks right on top of the coupling. It's just as likely to break underneath the coupling or in the length of the joint or somewhere. So, you know, 50/50 that you won't even have to deal with it, and then we can run the overshot, and that's if we want to really go through with large-diameter stuff. That's all readily available. We can spear it. We can also run wash pipe. And in the worst-case scenario, we can start calling this casing and work inside of it.

Q. In your opinion, will the use of 5-1/2 tubing inside of the proposed casing create an increased chance of tubing failure that can't be revolved?

A. No, I do not believe so. And, in fact, I kind of think the opposite.

And what these guys are talking about, these wells are not shallow wells. These are deep wells. And it's just like the rigs and the equipment that's used to drill them with. You need larger stuff in there to be able to stand the strains on the loads. You take small stuff and hang 20,000 feet of it on there, we see -- our major issues in the fishing industry is people running too big of stuff in too small

a hole.

But it's not as critical in a -- in a hole that's at least, say, 4-3/4 -- or 4-1/2 ID as it is in one that's 3-1/2 ID. We start to run out of tools in the working space there. The larger -- the larger hole we're in, the more options we have to fish. And once you get to the point where you have 4-1/2 ID, then we have a lot of options. But less than that, 4-1/2 casing, 4-inch casing, 3-1/2 casing, it's a disaster. We can't do much with those.

So I don't think this is -- I don't think this is any more likely to be an issue than the rest of them and probably less likely.

Q. And were Exhibits 7 through 12 prepared by you or under your supervision or compiled from your company's business records?

A. Yes, ma'am.

Q. And in your opinion, will the granting of this application be in the interest of conservation and the prevention of waste?

A. I would think so.

Q. Thank you.

A. Yes, ma'am.

MS. BRADFUTE: Those are the questions I have right now.

EXAMINER GOETZE: Do you want to tender your exhibits?

MS. BRADFUTE: Oh, yes. Thank you. I would like to move to have Exhibits 7 through 12 admitted into the record.

EXAMINER GOETZE: Mr. Feldewert?

MR. FELDEWERT: No objection.

EXAMINER GOETZE: Okay. Thank you. Then you can ask the questions.

MR. FELDEWERT: Real quick.

CROSS-EXAMINATION

BY MR. FELDEWERT:

Q. Mr. Nave, you have a lot of experience fishing and spearfishing in the oilfield industry?

A. Yes, ma'am -- yes, sir.

Q. Any experience spearfishing off a jon boat on the Mississippi or Missouri Rivers, because that's the only thing I know anything about? So I don't have any questions.

(Laughter.)

A. Not on the Mississippi River.

Q. Okay. I have no questions.

EXAMINER BROOKS: Okay. Mr. Examiner, did you --

EXAMINER GOETZE: I so -- Exhibits 7

through 12 are so entered into the record.

EXAMINER BROOKS: Okay. That's what I was going to ask.

(Mesquite SWD, Inc. Exhibit Number 7 through 12 are offered and admitted into evidence.)

EXAMINER GOETZE: Thank you. Mr. Feldewert is very anxious today.

EXAMINER BROOKS: Well, he wanted to describe his prowess as a fisherman.

EXAMINER GOETZE: Any questions, Mr. Brooks?

MR. BROOKS: No questions.

EXAMINER GOETZE: Gentlemen?

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. Thanks for coming, Mr. Nave. You don't know a guy named Joe Kitrel [phonetic]?

A. I do.

Q. Was he with Lea Fishing [phonetic], or was he --

A. Lea Fishing.

Q. I remember him from the old days.

So I guess one of my big questions is why -- why would this pipe get stuck in the first place?

What are you guys seeing? You're fishing a lot of pipe, so --

A. Well, there are a lot of reasons that pipe gets stuck. Probably the most prevalent reason is neglect, not checking the back side and making sure you don't have pressure on it. Some other things are pressure collapse possibly on the casing that can stick it, potentially just dried-up seals in the packer assembly. Say you need to remove the tubing string from the well and you just can't quite get it to release. That's the primary ones that I can think of. Now, that's assuming the well's put together correctly and packer fluid is circulated on the back side and we don't leave mud back there or something like that, which we -- that's not supposed to be done.

Q. Okay. So if you were milling to get rid of your collar, how often do you see issues with milling out -- going outside of your casing?

A. As far as -- as far as that goes, that can be definitely controlled. We can actually skirt a mill and put no cutting structure of any kind on the outside of this thing to mill this away with.

Now, on the collar, if you get something that's literally the full diameter of the casing, we can use what's called a pilot mill. A pilot mill is

stabilized on the inside of the fish that's being milled up, and that keeps it from walking around any. But the milling surface or milling structure comes down directly on top of it. There is nothing to cut with on the outside. So -- and you're only talking about milling for 6 or 8 inches here. You don't -- it's going to be hard to make a right-angle turn with a mill and a foot.

Q. Okay. If you latch on and start pulling on this pipe, is it designed to come -- come apart at the threads, or is it designed to pull the body -- to pull the body loose?

A. You're talking about the tubing in this case?

Q. Yeah, the tubing, not your fishing equipment.

A. Well, yeah. For the most part, this kind of -- this thread style which is -- it is typically weaker in the coupling so -- or right at the root of the thread where it goes into the coupling is usually where it would part, if everything is equal.

Upset tubing is designed a little bit differently, where it gets thicker up there and makes it basically the same strength all the way through, but we still have just about as many parts right at the collar at upset as you do on this kind of pipe.

Q. Mr. Neatherlin talked about the thread design, and I don't quite understand. I forget. Do you

understand what he was talking about being 5-1/2 tubing? It's not simple 8 round threads, is it?

A. Well, it's not a simple 8 round thread. But they're using a lot threads now that -- basically, I can't really tell you the difference other than some engineers decided it's better, and maybe they can prove it under pressure and stuff like that. It may be more likely to hold, or under a drilling situation is what everybody's -- in our -- for reference in this situation, it's the same diameters. It's only a difference in the shape of the thread itself that we're talking about here.

Q. Okay. Okay. And what about the size of the -- the size of the rig you need to actually fish 5-1/2 tubing casing?

A. That would have to be rated to the weight of the string. You have 20-pipe and you've got 20,000 feet of 20-pound pipe, you've got heavy string. So you wouldn't want a rig on there that's only capable of pulling half that.

Q. So it's going to cost quite a bit?

A. It's going to cost quite a bit. However, the cost of the rig to pull the pipe with, I think would be pretty -- pretty nominal -- pretty small considering that you just got through drilling a 20,000-foot well.

Q. Okay. Okay. Compared to the drilling cost?

A. Right.

Q. Thank you very much.

CROSS-EXAMINATION

BY EXAMINER GOETZE:

Q. To follow up his question on the milling aspect, if you've got a cutter in there, is there potential for damaging the casing or liner that's already there in at that interval?

A. There would be, if you do not set the cutter up for cutting what you're -- you can set the cutter up to cut only a certain distance. If you do that correctly -- it just has to be done correctly. I mean, if you do it wrong, yes.

Q. And have you had any experiences with Devonian retrieval?

A. Yes, sir.

Q. Okay. And for production wells --

A. Yes, sir.

Q. -- and SWDs?

A. Yeah.

Q. Thank you. No more questions.

EXAMINER McMILLAN: I don't have any.

MS. BRADFUTE: Mr. Examiner, can I call Mr. Neatherlin back up for one follow-up question?

EXAMINER GOETZE: Sure.

We're done with this witness. Thank you. Unless you want more follow-up questions.

MR. FELDEWERT: Nope.

RILEY NEATHERLIN,

after having been previously sworn under oath, was recalled, questioned and testified as follows:

DIRECT EXAMINATION

BY MS. BRADFUTE:

Q. Mr. Neatherlin, you're still under oath. I just wanted to remind you.

I wanted to follow up just briefly on a couple of the Hearing Examiners' questions about capacity and concerns about the amount of water that's being injected into the reservoir. If saltwater disposal companies continue to use wells which have smaller tubing sizes, 4-1/2 inches and smaller, in the short term, in order to handle the capacity of water that is being produced by operators in the field, will a greater number of wells need to be drilled within New Mexico to handle that water capacity?

A. Yes. If you can't handle the required amount of water that's being produced through the tubing, you're going to have to drill exponentially more wells to handle the water capacity.

Q. Okay. Thank you.

EXAMINER JONES: We still want to ask for the engineering analysis of the difference between the 4-1/2 -- installing a 4-1/2 liner from 10,000 to 15,000 feet versus installing a 5-1/2 casing -- or tubing from 10,000 to 15,000 feet and of the range of pressures that you would end up with on your surface for the same injection rate.

THE WITNESS: Okay.

EXAMINER JONES: And can you add in the friction factor so we can do something in the future?

THE WITNESS: Yes.

MS. BRADFUTE: Is there anything else the Division would like us to submit?

EXAMINER JONES: No. We might have to work interactively with that if you have any questions.

MS. BRADFUTE: Great. Can we submit that via an affidavit?

EXAMINER GOETZE: Oh, you can submit it as a request of information. It can be by an email.

THE WITNESS: Okay.

EXAMINER GOETZE: We'll make sure it gets in the record. We're asking for technical information, so you're supplementing your application.

MS. BRADFUTE: Okay.

EXAMINER GOETZE: We will ask you to provide it to the Holland & Hart also.

MS. BRADFUTE: Yes.

EXAMINER GOETZE: With that, we don't have any other questions for you. Thank you very much.

And is this your case?

MS. BRADFUTE: This is the end of my case. I'd ask that the matter be taken under advisement.

EXAMINER GOETZE: Let's ask Mr. Feldewert if he has anything he wishes to present.

MR. FELDEWERT: Mr. Examiner, the only thing I want to say is that we appeared at this hearing in support of the proposition to allow 5-1/2-inch injection tubing for disposal into the Devonian.

EXAMINER GOETZE: That's it?

MR. FELDEWERT: That's it.

EXAMINER GOETZE: Okay.

MS. BRADFUTE: Mr. Examiner, one other item that I should have mentioned earlier: While this application relates to the specific wells referenced within the application -- we filed the application because there was specific language in those orders. We didn't find anything in the rules which actually limits the size of tubing that's used, and we would like to have 5-1/2-inch tubing approved for wells in the future.

But I think that would be handled on applications that come in in the future with an application of evidence that's been presented to the extent that those wells don't differ with these wells.

EXAMINER GOETZE: Well, we understand that the reason we're having a hearing is because we understand that this may be a trend for which we do not have experience and/or information, and it does tie with other things that are under our authority. And we tend to put in the specifications based upon what Applicant has requested. Now we're jumping into a new realm. So that's why we're here at a hearing, to see what we can look at and decide if we need more information or if we can approve it. So this is part of our process for things that are outside our rules.

MS. BRADFUTE: Yes. And we appreciate that.

EXAMINER GOETZE: I assume you want it to be rushed, but we cannot afford you any time as far as knowing what's going to be on the -- we may be furloughed, and we may be here and we may not be here. But we'll put it in the front of the package. Okay?

MS. BRADFUTE: I appreciate that.

EXAMINER GOETZE: Okay.

MS. BRADFUTE: Thank you.

EXAMINER GOETZE: Case 15654 is taken under advisement.

We'll take a few-minute break.

(Case Number 15654 concludes, 10:28 a.m.)

(Recess 10:28 a.m. to 10:36 a.m.)

STATE OF NEW MEXICO

COUNTY OF BERNALILLO

CERTIFICATE OF COURT REPORTER

I, MARY C. HANKINS, Certified Court Reporter, New Mexico Certified Court Reporter No. 20, and Registered Professional Reporter, 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 that were reduced to printed form by me to the best of my ability.

I FURTHER CERTIFY that the Reporter's Record of the proceedings truly and accurately reflects the exhibits, if any, offered by the respective parties.

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 case.

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