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:

APPLICATION OF TROVE ENERGY AND WATER, LLC FOR APPROVAL OF A SALTWATER DISPOSAL WELL, LEA COUNTY, NEW MEXICO.

CASE NOs. 20751, 20752, 20753, 20754, 20756, 20757, 20760

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

September 5, 2019

Santa Fe, New Mexico

BEFORE: PHILLIP GOETZE, CHIEF EXAMINER
WILLIAM V. JONES TECHNICAL EXAMINER
KATHLEEN MURPHY, TECHNICAL EXAMINER
DYLAN ROSE-COSS, TECHNICAL EXAMINER
DANA Z. DAVID, LEGAL EXAMINER

This matter came on for hearing before the New Mexico Oil Conservation Division, Phillip Goetze, Chief Examiner; William V. Jones, Kathleen Murphy and Dylan Rose-Coss, Technical Examiners; and Dana Z. David, Legal Examiner, on Thursday, September 5, 2019, 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.

REPORTED BY: Mary C. Hankins, CCR, RPR
New Mexico CCR #20
Paul Baca Professional Court Reporters
500 4th Street, Northwest, Suite 105
Albuquerque, New Mexico 87102
(505) 843-9241

APPEARANCES

FOR APPLICANT TROVE ENERGY AND WATER, LLC:

JAMES G. BRUCE, ESQ.
Post Office Box 1056
Santa Fe, New Mexico 87504
(505) 982-2043
jamesbruc@aol.com

FOR THE NEW MEXICO STATE LAND OFFICE:
(Case Numbers 20753, 20754, 20756 and 20760)

ANDREA ANTILLON, ESQ.
NEW MEXICO STATE LAND OFFICE
OFFICE OF GENERAL COUNSEL
310 Old Santa Fe Trail
Santa Fe, New Mexico 87501
(505) 827-5702
aantillon@slo.state.nm.us

FOR NGL WATER SOLUTIONS PERMIAN, LLC:
(Case Numbers 20756 and 20757)

DEANA M. BENNETT, ESQ.
MODRALL, SPERLING, ROEHL, HARRIS & SISK, P.A.
500 4th Street, Northwest, Suite 1000
Albuquerque, New Mexico 87102
(505) 848-1800
deanab@modrall.com

INDEX

EXHIBITS OFFERED AND ADMITTED

(8:36 a.m.)

EXAMINER GOETZE: First we'll deal with the saltwater disposal wells. Trove Energy has filed numerous. I would suggest --

Mr. Bruce, let's go ahead and open with one case, Case Number 20751, application of Trove Energy and Water, LLC for approval of a saltwater disposal well, Lea County, New Mexico.

Call for appearances.

MR. BRUCE: Mr. Examiner, Jim Bruce of Santa Fe representing the Applicant.

I have three witnesses.

EXAMINER GOETZE: Will these be the same three witnesses for all these cases?

MR. BRUCE: Correct.

EXAMINER GOETZE: Now, we have in conjunction with this 20752, 20753, 20754, 20756, 20757, and 20760.

Your interest is to consolidate these all?

MR. BRUCE: My thought was to consolidate them. The first -- the second and third witness will make a global presentation on all of them. And the first C-108 we'll go through in a little more detail, but the rest of the cases, we'll go through the C-108s briefly, since they're all relatively simple.

EXAMINER GOETZE: So in Cases 20753, 20754, 20756, New Mexico State Land Office has made an appearance.

MS. ANTILLON: Yes. And also in Case 20760 as well.

And this is Andrea Antillon on behalf of the State Land Office for the four cases that were cited.

EXAMINER GOETZE: Okay. And I believe in Cases 20756 and 20757 NGL is making an appearance.

MS. BENNETT: That's correct.

Deana Bennett, Modrall, Sperling, on behalf of NGL in those two cases, 20756 and 20757.

Thank you.

EXAMINER GOETZE: And, opposing attorneys, would you be unhappy with the process of going through and presenting global and then visiting each case with your particular interest in it?

MS. BENNETT: I am not opposed to that.

MS. ANTILLON: The State Land Office doesn't have any objections to that.

EXAMINER GOETZE: At this point we'll start with the presentation for 20751. We will include also 20752, 20753, 20754, 20756, 20757 and 20760.

And for the court reporter, we will visit

each case again and offer the attorneys to have the ability to cross.

Let's start off with the two cases, 20751 and 752.

MR. BRUCE: Stand up, be sworn.

EXAMINER GOETZE: Will the witnesses please stand and raise your hand, identify yourself for the court reporter and be sworn in.

MR. BARTON: Roy Barton, Trove Energy and Water, CFO.

MR. STONE: Ben Stone, SOS Consulting.

MR. ARTHUR: Dan Arthur, ALL Consulting.

(Mr. Barton, Mr. Arthur and Mr. Stone sworn.)

EXAMINER GOETZE: Just one more clarification: State Land Office, are you going to have any witnesses?

MS. ANTILLON: Oh, no. The State Land Office won't have any witnesses today. I just have a statement to make at the end.

EXAMINER GOETZE: Okay. Thank you.

Go ahead, Mr. Bruce. Call your first witness.

MR. BARTON: Good morning. I formed Trove Energy and Water --

EXAMINER GOETZE: Whoa, whoa, whoa. This is not a testimonial about you. This is questions and answers, and the lawyer's being paid good money.

MR. BRUCE: And I don't have any.

EXAMINER GOETZE: Let him take you down the road from here.

ROY BARTON III,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Please state your name for the record.

A. Roy Barton III.

Q. And what is your relationship with Trove Energy?

A. I am the founder and managing member of Trove Energy and Water.

Q. Okay. And in front of you, you have Exhibit 1. What does this show?

A. This shows the establishment date of Trove Energy and Water -- of Trove Energy initially. We added "and Water" in 2018/2019 to reflect our commitment to the water business.

Trove Energy is -- do you want me to keep going?

Q. And that's its main business, as a commercial SWD?

A. Trove Energy has been an energy developer of oil. I formed Trove on the backs of two oil discoveries in Lea and Eddy and then made a commitment to the water business in 2018.

Q. And you say Trove Energy is fairly new. Just historically, the Barton family has been involved in oil and gas in southeast New Mexico for quite some time, hasn't it?

A. Yes, sir. That's correct.

Q. Probably 85-plus years?

A. Most likely that long.

Q. So you're intimately familiar with the ins and outs of the business?

A. Yes, sir.

Q. And the next witnesses will get into this a little bit more, but you have looked at the need for SWDs in southeast New Mexico in certain areas?

A. Yes, I have. I did a study.

Q. And how many locations are you currently seeking approval of?

A. 24.

Q. And is there enough -- currently enough water capacity to -- saltwater disposal capacity for the

current and planned wells in this area?

A. Can you ask me that again?

Q. Is there currently -- looking at the current and planned oil and gas wells --

A. Uh-huh.

Q. -- is there currently enough saltwater disposal capacity?

A. No, I don't believe so.

Q. And so these wells are critically needed?

A. I believe they are.

Q. Do you have anything further to say?

A. I would just say that Trove has the necessary funding and commitment to continue development of this water logistics business in New Mexico and plans to be here for a long time.

Q. Thank you.

And was Exhibit 1 prepared by you?

A. It was, yes.

MR. BRUCE: Mr. Examiner, I move the admission of Exhibit 1.

MS. ANTILLON: No objection from the State Land Office.

MS. BENNETT: No objections. Thank you.

MR. BRUCE: And I pass the witness.

EXAMINER GOETZE: I have no questions for

this witness.

Go down the line.

EXAMINER MURPHY: I have no questions. Thank you.

EXAMINER COSS: No questions.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. Are you the Bartons that used to bid on leases over at the land office?

A. That's right.

Q. Okay. I think I probably met one of your relatives.

A. Probably my dad.

Q. Probably your dad.

Thank you.

A. Thank you.

EXAMINER DAVID: No questions.

EXAMINER GOETZE: Very good. We're done with this witness. Thank you.

(The court reporter asks if Exhibit 1 is entered into the record.)

EXAMINER GOETZE: Yes, please.

Sorry. We're dysfunctional at this time. Mr. Goetze can't keep his things in order, and Mr. Jones is going down memory lane.

(Laughter.)

(Trove Energy and Water, LLC Exhibit Number 1 is offered and admitted into evidence.)

BEN STONE,

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

DIRECT EXAMINATION

BY MR. BRUCE:

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

A. Ben Stone.

Q. And where do you reside?

A. I reside in Como, Texas.

Q. Who do you work for specifically?

A. I work for -- I actually own and work for SOS Consulting. My wife and I started SOS in 2007. I do regulatory permitting, consulting in New Mexico and Texas, a little in Wyoming, and my wife does the oil and gas regulatory and accounting.

Q. And in these cases, have you been retained by Trove Energy?

A. I have.

Q. And have you previously testified before the Division?

A. I have.

Q. And were your credentials as an expert in regulatory matters accepted as a matter of record?

A. They were.

Q. And are you familiar with the permitting issues involved in all seven of these cases?

A. I am.

Q. Intimately familiar.

A. Yes, sir.

MR. BRUCE: Mr. Examiner, I tender Mr. Stone as an expert in OCD regulatory matters.

EXAMINER GOETZE: Okeydokey. Ms. Bennett?

MS. BENNETT: No objection.

EXAMINER GOETZE: Ms. Antillon?

MS. ANTILLON: No objection.

Q. (BY MR. BRUCE) Before we get to the particular of the first well, Mr. Stone, could you refer to Exhibit 2 and discuss its contents for the examiners and what you've been looking at with Trove with respect to development of SWD wells?

A. Yes. And this is the -- these are some slides I put together to accompany some large exhibits. I labeled them as Figures 1 through 7, so we might refer to those as we look through this.

EXAMINER MURPHY: Are these Figure 3?

MR. BRUCE: Yes, Exhibit 3.

EXAMINER MURPHY: Exhibit 3.

MR. BRUCE: And the final figure is -- I'm sorry.

EXAMINER JONES: You didn't know you were going to have 30 examiners up here.

MR. BRUCE: Exhibit 3 is the final figure. It's a wellbore diagram, and this is a revised wellbore diagram.

Q. (BY MR. BRUCE) So Exhibits 2 and 3 go together; is that correct, Mr. Stone?

A. They do, more or less.

Q. Let's run through those.

A. So Figure 1 shows some of the prospecting challenges. And this is just out of our GIS system. The green -- the bluish-green spots represent existing Devonian SWDs. The orange spots are Trove prospects, and the pink spots are competitors, other C-108s that have been filed. So displayed graphically, you can see it's pretty dense. I've got another map that shows a wider area and just how inundated the situation is.

So I just wanted to point out that we've been -- we've tried to be very careful in prospecting and how we approach that. So our criteria, we start off with obviously proximity to existing or permitted or applied for SWD locations. We look at the surface

issues, drainage and arroyos and any other physical restrictions or anything that might be in the way that we need to accommodate. We look at the horizontal completions, and ultimately we communicate with the operators and lessees to find out what their current and future development plans are so we can adjust to those.

And all through all of Trove's prospects and I believe all of them today have been adjusted at some point. I may not have all the details on which ones are adjusted by how much, but I do have some sample communications with some of the operators where we went back and forth and they said, "Could you do this, and we need" -- so anyway, we made those adjustments.

And then finally, in locating our prospects, we -- we looked at road access so we could minimize the construction of new roads when possible.

I would point out that Trove does not consider other SWD operators except to completely avoid any competitor's SWD three-quarter mile bubbles. Other infrastructure generally is not known. So right now my mission in prospecting is simply to look at the GIS and try to avoid those, you know, as the effective one-and-a-half-mile spacing that we've established for Devonian SWDs. I have little to no knowledge of competitors' pipelines. I did -- in some communications

later on with NGL, I was able to ascertain where some of those pipeline routes are for Mesquite and some that they acquired some -- that they acquired from Mesquite and some of theirs. So I'll show that later. But that's pretty much the extent of my knowledge, is when a competitor or someone else contacts me and says, "Gee, Mr. Stone, we've got this facility here" or whatever. But that was not in my original criteria when I was spotting -- spotting wells.

The next slide concerns disposal interval determinations, and that was in reference to large Figures 2, 3, 4 and 5. So this is the stuff I did in-house prior to us contacting a geologist. We did give the geologist an assessment and mapping study to present with these cases, but from my original prospecting efforts, I used my own contour layers for the Devonian and the Precambrian -- and that's shown on Figure 2 -- across the entire area with relation to SWDs and the Trove prospects.

So then on Figure 3, I selected the existing Devonian SWDs and permitted SWDs, those that have received an approved permit on their C-108s. So I determined the injected intervals that were permitted. They may not be active, but they're permitted. So I plotted those in GIS. So I've got a northern line that

progresses west to east across the range -- I'm sorry -- across 25 South, and then I've got a southern track that goes west to east across 26 South. So that's shown A to A and B to B on Figure 3.

On Figure 4, I present that as a cross section, a depth graph, if you will. So, again, referencing those spots from Figure 3, the green spots, I presented those injection intervals, and those will be the blue-gray, the shaded bars. Those are the permitted intervals for those SWDs or permits.

The red diamond is the top of the contour of the Devonian, and these are all subsea. And then within that range of wells, at A, I inserted the Trove prospects in appropriate positions that would tie in in relation to those existing wells. And the gold diamond, the yellow diamond, on top of those bars, represent the same Devonian contour. So it gives you kind of an idea. And I did not do this prior to assembling any of those prospects originally. When I would do these, I would do them one at a time, get through it, make my interval determination, do everything else, compile the C-108, do the whole thing as just a package. It never occurred to me to present this until I was preparing for this hearing to kind of lay it all out and see how this all tied together. And I kind of surprised myself on my

accuracy. So it actually -- it actually came out pretty nice.

The Trove prospects in relation to -- this isn't saying that anyone's wrong. It's just showing that what those contours are is what other people have permitted. We can see that the diamonds fluctuate up and down. Some are slightly above or slightly below the top permitted interval, and I got pretty consistent on mine. In addition to the contours, I used offsetting existing Devonian saltwater disposals. So I had that information. So to the extent that I could, I kind of gathered one prospect at a time that information to make the determination of what the top and bottom should be. We all know we're targeting the same thing, the same Devonian-Silurian intervals, so it was just my method of getting a good -- good intervals to advertise and permit on the C-108.

Figure 5 is for our confining strata, structure and stratigraphy. These two maps, one is the Woodford Shale isopach, and the other is structured on the Siluro-Devonian carbonates. These were both produced in a paper by Ron Broadhead. So this kind of gives us an idea. And we know that the entire structure, the Devonian, the Precambrian, everything kind of follows it -- we're entering into that deeper

portion in southern Lea County and extending across into Texas, so we know we're kind of at the bottom of that structure and everything kind of piles up and fans out from there. So it kind of ties in with the deepest part of our Woodford structure. Our confining zone for the top of our intervals is at the thickest portion and a good portion -- a good area of the Trove prospects, particularly the WLC mid and south. You can see we've probably got 2-, 250 feet of Woodford Shale sitting on top of those prospects.

Q. Will there be additional geologic testimony by the other witness?

A. Mr. Arthur is certainly capable and available to testify to geology.

Q. Go ahead, Mr. Stone.

A. So that's really all that that kind of shows. I do have the stratigraphic column that everyone's well familiar with, and it shows the target -- the Devonian-Silurian target interval in relation to the other -- other formations.

Q. And what do Figures 6 and 7 show?

A. I am about to determine that myself. For this, I just -- on the slide -- the handout slide that goes with these, it just references the intense competition for the real estate for these SWDs. Everyone obviously

is under that same intense competition, but I would point out -- and it's, I think, accepted by industry generally -- that NMOCD's unwritten but currently mandated three-quarter-mile area of review for Devonian SWDs helped create the gold rush mentality to lock up quickly diminishing real estate available for SWD placement.

So I understand the perception of some new operators, Trove being one of those, is that we're just running out there rush dog, throwing darts at a board trying to -- trying to chew up real estate, but I can assure you that there have been, on several of our prospects throughout and always in communication with the operator and lessees, many times -- many times we have -- I have adjusted the location over to accommodate not just the operators or lessees but even the competition.

And I've gotten to the point that if -- if an overlapping C-108 was advertised and I picked up on that public notice and determined that our bubbles overlapped, I would just make a judgment call. If I believed that they were ahead of me in preparing their C-108, I would go ahead and adjust mine over. And I didn't document it here so much, but I could certainly do that. On many occasions, I've done that just to --

just to get out of the way, thinking that, you know, give them the room. If they've -- if they've made the effort, they've advertised, they must be days away -- if they haven't submitted, they're days away from submitting their C-108, so I'll just get on over to the extent that I can, which means I would be back in communication with the operator or lessee, make sure that my new adjusted spot would conform with their current and future development guidelines, and so I'd make that adjustment.

So there have been a couple that, for whatever reason, I might have actually gotten the C-108 submitted -- the Trove C-108 submitted and after the fact found out from the OCD pending application database that we, in fact, had stepped on someone. I didn't have any knowledge of it without having something -- you know, the OCD doesn't have that as a GIS layer. No one has it as a -- well, some of the other operators may be tracking it, too. But now Trove has it also as a GIS layer, but it's a completely manual effort to track the publications, go into Google Earth, mark them manually, spot them, export a KMZ, import a KMZ into my GIS and display these so we can keep track of where everyone is. And we're just trying to -- to me that's a good neighbor policy. I understand everybody wants their SWDs out

there. We want to get ours out there, too. But we've tried to employ a good neighbor policy every chance we get. We've tried to accommodate people. We'll move over if we can.

And as far as infrastructure, that's just something that I'm not sure who all has what all information, to be able to always accommodate getting out of the way of somebody's infrastructure. And to that point, I'm not sure that there is anything in the rules and regulations that would -- that would require an SWD operator prospecting to get out of the way. If you aren't hitting a pipeline right-of-way, if you're in compliance with the rules and regulations, if you're an approved operator in the state of New Mexico, I've got every bit as much right to spot my SWD there as anybody else, if I've not landed on an oil and gas right-of-way operation, and I've avoided the AOR bubbles. And that's been our approach to prospecting in everything that we've submitted.

Q. Trove isn't here to pick a fight with anyone?

A. No, not at all. As a matter of fact, I would much prefer -- and I've had -- I don't have it in front of me right now, but I think Trove has received 20 protests with 15 different applications, and it has negotiated seven of those out, and some others are

pending except for the ones that remain here today.

So my preference, my druthers is to talk to somebody, whomever, whatever the issue is and see what we can work out. If I stepped on you, we will gladly withdraw it. But I know the availability of data is getting better and better now, so we all understand where everybody's at and, you know, what's going on. And we're sensitive to that and we want to stay out of the way, but we don't want to be pushed out of the way either.

Q. And the final figure doesn't have a number on it, but the wellbore sketch --

A. Yes, sir.

Q. -- what is that? Can you just briefly go through that?

A. Actually, if you don't mind, Mr. Bruce, right before that Figure 7 --

Q. Oh, Figure 7.

A. Well, I had referred to, when I was able to determine the location of the NGL and acquired Mesquite pipelines -- these may not be perfect, but I think they're probably within an eighth of a section or something. I think they're as accurate as they can be for an image overlay. They aren't georeferenced. So depending on the tilt you're dealing with and trying to

get that to adjust -- the JPEG or whatever image you're dealing with, trying to get that to adjust and tie in, I used several visual reference points to do that, and so this is the result of the best -- my best effort as a graphic artist to correctly represent what we think NGL has out there.

And I also have the NGL Battle Ax facilities down there just across the state line, and that was also supplied to me from communications with NGL -- I believe indicated that a couple of our prospects were within a mile-and-a-half of their NGL Battle Ax facilities. So I guess that was the reason for their protest. But anyway, that's Figure 7.

And then the unlabeled Figure 8 is a generic wellbore diagram. And as part of our global presentation -- I had mentioned that we're all targeting the same thing, and with little changes between the Trove well or a Solaris well or anybody else's well, we're building the biggest, baddest saltwater disposal wells that I never would have imagined we'd ever be building ten years ago. So they're pretty impressive, I think, from a construction point.

But it does point out our surface casing, our intermediate at appropriate depths, fully cemented to surface depending on whatever the depth is for that

particular prospect. And then we've got our, what I would call, intermediate two, but Paul Kautz in the Hobbs office insists it's called a production casing, correctly. So he slapped me enough times that I finally started labeling everything "Production Casing" instead of "Intermediate Two." And so that's down generally in the lower portion of the Wolfcamp.

And then we've got a 7-5/8, 39-pound liner set with either 2- or 300 feet up inside of the production casing and extending down to the top of the Devonian interval. And then our open-hole interval extends down into whatever the prospect calls for. Generally, it stays in the Devonian. Some of them tag the Fusselman just a little bit. I don't believe I have any submitted that actually get into the Montoya. But as you can see, this clearly illustrates that our injected fluids are going right in zone, as they should be.

That was my best attempt at humor for a presentation, so that's all I have right there.

Q. Okay. What is Exhibit 4?

A. Exhibit 4. When we knew that we had these separate hearings, that we would be bringing these to hearing, I went through each individual prospect and re-examined the area of review and pertinent details.

So for each of those, I've documented anything that I found. I documented some occurrences of communicating with the operator to make the correct location picks, and I've got the -- I've got some prospect development details for those protested applications. And then it continues on into some of what we've discussed already, prospecting communications, prospecting challenges, a sample of vetting and approval from the prospect side by the operators.

And then I did some additional groundwater information. I would point out that out of these eight wells, we only have one -- one of them has one water well that needs to be sampled, and we actually were not able to obtain that sample yet. But I did supply a representative freshwater sample for the area. So even though we didn't have [sic], groundwater is obviously still important to everyone. And after all, the C-108 is submitted under the auspices of the Underground Injection Control program, which the focus of that program is to protect underground sources of drinking water and protect correlative rights and the environment. So that's where our focus would lay with each submittal we make.

We can go through any of that if we need to. It's general on some of the pages, but then it

contains the specific secondary review I made in preparation for the hearing for each of the eight prospects.

Q. Let's head on to the C-108. This is for the first case, the FLC South Federal SWD No. 1. Let's run through that C-108 briefly.

A. Okay. The FLC is located in Section 26 of 26 South, 32 East. This is one of the ones, I believe -- well, maybe not. I'm actually not sure if NGL filed a protest on this one or not, but it's down there in that neighborhood.

So I've got the C-108 application with the general answers to the questions posed categorically on the form, and then I go into the subject well data, the tabulation of the AOR wells and the AOR review maps. It has the same type of wellbore diagrams with the correct depths for that particular prospect. It gives some -- a brief synopsis of the operations as far as drilling and design to all strings cemented to surface, et cetera.

Q. And what volumes are anticipated to be disposed?

A. Well, we had originally proposed 30,000 with 5-1/2-inch flush joint, but since we're at hearing, we will also request for all of these a 7-inch tubing string over to the 5-1/2-inch string, and we'll expect

to get rates between 40- to 50,000 a day.

Q. And will Trove comply with the .2 psi per foot of depth on the pressure?

A. Absolutely. That's our maximum injection pressure for each prospect.

Q. And looking at the wellbore sketch, will the design and construction of the well prevent the movement of fluid between zones?

A. Yes, it does.

Q. And this well does not have any fresh water within a mile or two of it; is that correct?

A. No, it doesn't. It does not.

Q. That's only the PSE Federal No. 4, correct, that has water nearby?

A. I thought it was the Ole 55. Let me check. I will tell you.

Q. Oh, that's right.

A. It's the Ole 55, freshwater well.

Q. Yeah.

And what will be the main source of injection water? What formations will it be coming from?

A. The current production in the Bone Spring and Wolfcamp primarily. I'm sure there will be some Delaware brought in, but basically it's to accommodate

the --

Q. Will the injected water be compatible with the formation -- the Devonian Formation water?

A. Yes.

Q. And do you have water analyses of the disposal zones, as well as the source water in this package?

A. They are, yes, sir.

Q. And you made the geologic affirmation that there is no evidence of the open faults or other hydrologic connections between the injection zone and sources of drinking water?

A. Yes, sir. I did make that statement myself. It's signed and dated.

Q. And what is Exhibit 5A?

A. 5A is an exhibit I put together with, I believe, essential data that the OCD would like to know on an upsize tubing request. I don't think I have a copy of 5A.

So on that, I just list the eight prospects, location and case numbers, justification, and just make the statement that it's our belief and what we typically read in industry journals and newspaper articles is that we think that daily produced water will increase annually by 2025, and some estimate an additional 1.1 million barrels per day over the current

volumes. So that's part of it.

Again, what's been pointed out by other operators that have requested this upsize tubing is that we get more capacity with fewer wells, less horsepower, less pollution to the environment. And for me, larger tubing just makes sense. Getting that amount of fluid downhole near target through a 7/8 tubing string, you reduce -- you don't lose your pressure and fiction loss. I've got a chart on the next table. I don't recall -- I actually generated this chart based on available data, and I did this for another project years ago. I found it. I updated it. I inserted the 40k-barrel-of-water-per-day line just for reference so you can see where that -- if we're talking about a 40,000-barrel-a-day well, where that falls with the friction loss factor for the various size tubing. So you can see for 7-inch, we've got essentially -- not no but very little fiction loss, and it just increases exponentially as you go up -- or actually down in your tubing size. You can see, for instance, that perhaps even 3-1/2-inch, that 40,000 barrels a day is just not conceivable. You start blowing up pumps and equipment and things at that point. So that's all this illustrates, is that relationship between the tubing and the friction loss and what you can actually move

downhole.

We are still proposing to go to a 5-1/2 flush joint inside the liners so we will introduce -- again, bring our friction back up. But it's for that short run down through the liner that we've achieved our goal of eliminating and getting as much fluid downhole near target with as little friction as possible. So we end up with greater daily rates available through the section.

Q. And it's feasible to do it in all of these wells?

A. It is.

Q. And, Mr. Stone, was notice mailed to all of the pertinent offsets of each of these seven applications?

A. It was -- it was initially for the C-108. However, if the protester happens to be another SWD company, they may not have been notified. So they were notified during the notification for this actual hearing, and a copy of the C-108 was provided at that time. For the submittal of the original C-108, they may not have been noticed, but that --

Q. And were cover letters -- you provided green cards, et cetera, white slips?

A. Yes, sir.

Q. Did a letter giving the -- were letters giving

the date of this hearing also attached?

A. Yes, sir. And, Jim, let me make sure I've got a copy of that here.

(The court reporter requested the witness speak louder.)

A. Okay. Sorry.

Exhibit 6. This is my notification service list certification. So I list each prospect. I list the noticees, if you will, and whether or not that individual was a protestor. So that's the first several pages. I signed to certify that. I've got copies of all the certified mail receipts. And, again, this was for the hearing effort. This wasn't the original notification. The original notification is contained in each C-108 application. So for the hearing, I've got copies of the hearing notices. And I also added copies of the green cards that were returned.

I received all the green cards back with the exception of one, and that was from M&A Enterprises. However, they did return the card on the original C-108 notification when they were noticed for it. And for whatever reason, they just never picked up the hearing notice package.

MR. BRUCE: Mr. Examiner, we'll supplement the record with the actual notice letters that went with

these green cards.

EXAMINER GOETZE: Very good.

Q. (BY MR. BRUCE) Mr. Stone, were Exhibits 1 through 6 prepared by you or compiled under your supervision?

A. They were.

Q. And in your opinion, is the granting of this case, 20751, in the interest of conservation and the prevention of waste?

A. It is.

MR. BRUCE: Mr. Examiner, I move the admission of Exhibits 1 through 6 in this first case.

EXAMINER GOETZE: Since you've already done 1 --

MR. BRUCE: Excuse me. 2 through --

EXAMINER GOETZE: Thank you.

So, Ms. Bennett?

MS. BENNETT: No objection.

EXAMINER GOETZE: Ms. Antillon?

MS. ANTILLON: No objections.

EXAMINER GOETZE: Very good. Exhibits 2, 3, 4, 5 and 5A are so entered.

(Trove Energy and Water, LLC Exhibit Numbers 2 through 5 and 5A are offered and admitted into evidence.)

EXAMINER GOETZE: Now, looking at the first two cases, 20751, 20752, we'll ask questions regarding those two cases, and then --

You've got extras? How many exhibits do you have, Mr. Bruce?

(Laughter.)

MR. BRUCE: This is simply the C-108 for 20752.

EXAMINER GOETZE: You have a C-108 for each?

MR. BRUCE: Yes.

EXAMINER GOETZE: Wow. I thought this was all one batch.

THE WITNESS: You should see my office.

EXAMINER COSS: You should see our offices.

EXAMINER GOETZE: Okay. With that in mind, we'll stick to the original, and then we'll move into 52. So we'll ask questions about 751, but, unfortunately, the way things are going, it will be questions about the whole thing.

CROSS-EXAMINATION

BY EXAMINER GOETZE:

Q. I'll start off by saying welcome back, Mr. Stone.

A. Thank you, Mr. Goetze.

Q. And, basically, the only thing we're seeing a difference from the original application provided to us is modification to surface locations based upon the information compiled. So what we have in the application here will be the final surface locations, correct?

A. Surface locations have not been modified.

Q. Okay. So we have on record so we can keep track of it?

A. Yes, sir.

Q. Thank you.

With the process -- and I see in notice, you did notice Texas.

A. Yes, sir.

Q. Did they ever send anything back, just out of curiosity?

A. They did not.

Q. Thank you.

A. The green card.

Q. Yeah. Okay. Important stuff.

A. Yeah.

Q. But no phone calls or no --

A. No, sir.

Q. -- letters?

EXAMINER GOETZE: Having reviewed the

C-108s and seeing the modifications here, I have no additional questions for this witness.

You want to ask questions? You're not appearing in this case.

MS. BENNETT: And I do have a question about that, though. Are we asking questions for all the cases?

EXAMINER GOETZE: Well, it looks like Mr. Bruce has a C-108 for the next one, so we're going to have to quickly go through 52. We will give you the opportunity.

MS. BENNETT: Okay. On these exhibits, though, for my particular cases?

EXAMINER GOETZE: Yes.

MS. BENNETT: Okay. Great. Thanks.

EXAMINER GOETZE: We won't deny you the opportunity.

MS. BENNETT: Thank you.

EXAMINER GOETZE: I pass to Ms. Murphy.

CROSS-EXAMINATION

BY EXAMINER MURPHY:

Q. Did you prepare the GIS maps?

A. Yes.

Q. Did you use that in ArcGIS?

A. No. It's in QGIS.

Q. Q.

A. It's an open-source application.

Q. The maps are wonderful. Thank you.

A. Thank you.

Q. I have no other questions.

A. Thank you.

CROSS-EXAMINATION

BY EXAMINER COSS:

Q. On your Figure 4, your cross section -- 4 and 5, sort of out of curiosity, like towards the left on section A to A prime, the blue section, does that represent the thickness of the Silurian-Devonian?

A. Permitted interval.

Q. The permitted interval.

A. Are you talking about these blue bars?

Q. Yeah.

A. Right.

Q. Okay. So that's the permitted interval and not necessarily the thickness of the formation?

A. That's correct. That's correct.

Q. Okay. I suppose that's my only questions.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. Quickly, your well Number 5, which is, I think, 20754, is going to be the deepest well in the basin; is

that correct?

A. According to this. That wasn't my original plan.

Q. 19,450 feet.

A. To anticipate a possible question, I would say that we will be mud-logging these and keep an appropriate interval, make sure we don't go too deep.

Q. Your 7-inch liner -- well, you've got another witness that will talk about the casing; is that right? Are you the casing guy?

A. For today, I am.

Q. For today. Okay.

Are you using gas -- the threads on your 7-inch -- 7-5/8 liner, are they going to be gas-resistant threads?

A. I would assume so, but I'm not that much of a casing guy, and what's being done is what we will be doing. But if that's required, then certainly that's what we will do.

Q. I think it might be. It's up to Mr. Goetze on that.

I guess I have another question. Your friction curves --

A. Yes, sir.

Q. -- were those with plastic-coated tubing?

A. That was the raw tubing.

Q. That's raw tubing?

A. Right. So certainly those numbers -- those lines would digest about a line width or two to the left to accommodate if there was a liner.

Q. Okay.

A. And the tubing we ran would be lined, of course. But this just does show the stock API steel tubing with smooth -- assumed smooth surface.

Q. Okay. You've got another witness, an engineer, too, right?

A. Right.

Q. Okay.

A. Yeah.

Q. You've done a lot of this work yourself. I know you have.

A. Yes, sir.

We didn't pay him for that, though, so --

Q. Oh, you didn't pay him for that?

A. So if he wants to testify on that, then that's up to him (laughter). No. That's good. He's certainly available for anything.

Q. Okay. That's it from me.

CROSS-EXAMINATION

BY EXAMINER DAVID:

Q. Mr. Stone --

A. Yes, sir.

Q. -- real quickly, you were the one responsible for submitting all the notification?

A. Yes, sir.

Q. Okay. So looking at the notification service list in Exhibit 6, I notice for each SWD, there is a list of affected parties. So how did you determine who was an affected party for all these wells?

A. These are within the one-mile radius for notification, and these are all federal tracts. We didn't -- on these, we didn't have any private tracts. We were more concerned with having tracing one down. We had operators and lessees for each -- each area. So it was actually a pretty simple notice process.

Q. Okay. That's the only question I have. Thank you.

RECROSS EXAMINATION

BY EXAMINER JONES:

Q. The notice to M&A, you included the notice they returned, but there is no date on that notice.

A. Well, that -- the --

Q. That was the early notice, I understand.

A. From the original C-108, yeah.

Q. So about what date was that?

A. It would be the -- that's on the Ole 55. So the submit date of the Ole 55 was -- I don't have that exactly handy, but --

Do you have that, Mr. Bruce?

Q. Just for my information, what's the gist of the first --

A. It's about three months ago.

Q. But I mean the actual substance change in the application, was there any substance to the change in the application?

A. There was no change.

Q. Okay. Okay.

EXAMINER GOETZE: So what I would say --

Are we done with this witness?

MR. BRUCE: For the first case, yes.

EXAMINER GOETZE: Yes. What we'll do is we'll go through the stack, and we'll bring him up for or any of the other witnesses for the NGL cases.

MR. BRUCE: Okay.

EXAMINER GOETZE: And then, I believe --

Ms. Antillon, do you have any questions with regards to crossing?

MS. ANTILLON: No.

EXAMINER GOETZE: So basically it will be for NGL cases that we'll bring up the witnesses again so that there can be specific cross. Okay?

MS. BENNETT: That sounds great.

I do want to enter my appearance in another case, 20753, and ask -- I just want to enter my appearance to ask some questions to understand whether -- based on the maps, to understand whether I need to ask further questions.

EXAMINER GOETZE: It's kind of in the middle of the session.

MS. BENNETT: It is. Uh-huh.

EXAMINER GOETZE: But since we're here to ask questions, we'll let you ask questions on that.

MS. BENNETT: Thank you.

EXAMINER GOETZE: What I would proceed to do is we'll go through each of your witnesses for every case and then revisit them.

But I think, if we're done with this witness, we'll take a break for about 15 minutes and then start with your next witness.

See how irregular it is?

(Recess, 9:29 a.m. to 9:50 a.m.)

EXAMINER GOETZE: Let's get back on the record, Case Number 20751.

Mr. Bruce, it is your floor.

JAMES DANIEL ARTHUR,

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

DIRECT EXAMINATION

BY MR. BRUCE:

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

A. James Daniel Arthur.

Q. And who do you work for?

A. I'm the president and chief engineer of ALL Consulting.

Q. And what's your relationship to Trove in this case?

A. Trove hired ALL Consulting to do some work for them relative to these permits, so I'm here testifying today on behalf of Trove.

Q. Have you previously testified before the Division?

A. Yes, sir.

Q. And were your credentials as an expert petroleum engineer and expert in seismicity accepted as a matter of record?

A. They were.

Q. And are you familiar with the application --

with those issues with respect to the seven applications that we're here on today?

A. Yes.

MR. BRUCE: Mr. Examiner, I tender Mr. Arthur as an expert petroleum engineer.

EXAMINER GOETZE: Ms. Bennett?

MS. BENNETT: No objection.

EXAMINER GOETZE: Ms. Antillon?

MS. ANTILLON: No objections.

EXAMINER GOETZE: Very well. He's so qualified.

Q. (BY MR. BRUCE) Well, first, Mr. Arthur, let's briefly go through Exhibits 7 and 8. I think you said you prefer Exhibit 8 first. Just briefly, what do they show?

A. So Exhibits 7 and 8 were prepared by Howard McLaughlin, the professional geologist, looking at the area of interest, the geologic setting, the various other disposal wells in a larger area, about a 2,000 square-mile region. As you go through this, we've got some structure maps of the Devonian, general information about the geology, a closer-up geologic interpretation for the specific area around the Trove wells, various different logs, cross sections and so forth describing the Devonian-Silurian injection interval, as well as the

upper and lower confining units.

So this is information that is consistent with geologic evaluations that I've worked with and supported on other disposal well cases and has, I would say, been presented by other experts in this general area, including depths and upper and lower confinement and so forth. So that's Exhibit 8.

And Exhibit 7 is really just several of the exhibits or figures in Exhibit 8 that are blown up to a larger size.

Q. This similar geology has been presented over and over to the Division; is that correct?

A. Correct.

Q. And there is an upper -- there are confining units of the Woodford Upper Shale, and down below, there's also a confining unit; is there not?

A. Yes. So what we see above the upper confining unit, being the Woodford, lower being actually the -- you know, the bottom of the Devonian unit, Montoya, Simpson, and from logs that Mr. McLaughlin presented here, as well as my experience in looking at these and other ones and what I'll talk about in the fault slip analysis, was we see lower confinement, too, from the data we have available.

Q. Let's move into your Exhibit 9, the fault slip

analysis. Did you prepare this?

A. Yes.

Q. And let's run through it. You've presented similar or almost identical testimony at other hearings regarding a similar type of data for other wells; is that correct?

A. Correct.

Q. Why don't you run through and give your analysis of the fault slip?

A. So the information and methodology we used here is similar to what I've presented the Division previously and also similar to what other experts have done here and in what we see done in Texas. So what we chose to do on this particular situation -- since there's a number of Trove proposed wells that are in the same area, we wound up doing four fault slip potential modeling areas that captured all of the wells being submitted. Each of those modeling areas were 100 square miles each. Since we didn't -- you know, we haven't drilled the wells yet. We've got other data in the area, but, you know, the data from different logs can vary a little bit. We did a couple of scenarios. We tried to do a best and worst case to be able to, you know, bracket what the potential fault slip would be.

Each of the scenarios we did over a 25-year

injection period. The information on depths and injection, interval thickness, porosity and so forth, we got from a variety of sources, including existing -- existing injection wells, data from them as completed, the C-108s. And for each of the individual Trove wells, we've looked at other reference data. In our study area for this, we had one mapped Precambrian fault in one of the 100-square-mile review areas. No faults in the other ones. But what we did, in an effort to try to give kind of a worst-case basis, is we added some random faults using strike and dip consistent with other known New Mexico faults, kind of looking back using something consistent with the Snee and Zoback paper and their research.

And then some of the geologic parameters that the FSP model requires, we've looked at that from either logs, research that we've done, other witness' testimony, our past testimonies. It's the same general area, a lot of the same information. And then obviously we've adjusted depths and so forth based on the actual geology from what -- from what some of these cross sections that Mr. McLaughlin had, as well as some of the various data that we saw.

The parameters that we -- that we generally utilize is on page 3. It gives a number of the sources,

you know, stress gradients and porosity permeability, but you'll notice that on some of these where we have ranges like porosity 5 to 10 percent, you know, so we did two scenarios, kind of a high and a low, to try to bracket what actual conditions will do so we don't -- we're not doing something to overestimate or underestimate something. We're trying to make sure we've considered the array of issues.

On slide four for the injection data, we had 13 deep Class II injection wells active in 2019 within the four areas. I've got those listed towards the end of the presentation. But the monthly average rates were calculated from kind of injection start through 2019, and that's what we used in the model for them. For the 14 proposed Trove disposal wells, within those four -- those four areas, we used an average rate throughout the entire modeling period of 40,000 barrels of water per day.

So on slide five, you can see the various FSP areas that we model. The Trove wells are kind of round yellow dots. I should have put the numbers on here, but if you look at the four squares, the upper right one is what I call area one. The lower right one would be area two. The lower left is area three, and the upper left is area four.

But as you can see with these, we've got -- you know, we've captured some of these. I'll point out that in area one, the blue line -- kind of blue-dashed line to the -- kind of the upper right is the only known existing fault. We didn't have any other faults within this. I would say generally in FSP modeling or if you're -- we do a lot of evaluations for induced seismic potential regardless of the modeling. But if we're not having faults, you know, the FSP modeling is always going to show up as zero, no matter what. So that's part of the reason we tried to include some random faults, to see if we could make anything happen.

Slide six is area one, so that's that upper right-hand corner. I've got these kind of annotated a little bit. But this is -- we actually ran multiple-year scenarios. But in this one, I'm showing the 25-year scenario with -- with the details in the back. So this is an estimated porosity of 5 percent, estimated permeability of 10 millidarcies, injection interval 17,4 to 19,000, estimated thickness, you know, with high 5 percent porosity about 100 feet.

In running this, we come up with a fault slip potential of 0.00. Even with the existing fault, the two green lines to the left on the little map in kind of the center of the figure are the two random

faults that we added. So even on this one, on scenario one, area one, we had an existing fault, but we went and added two additional faults just to see if we could make something happen, and that's not necessarily unusual. I'd say past testimony from other experts doing this or from past testimony that I've given, that's pretty consistent. This is similar to what we do with the Texas Railroad Commission when we're presenting this type of data. So that's area one, scenario one.

And then what we did on scenario two, we bumped up the porosity 10 percent, permeability, 100 millidarcies, so forth. And that 10 percent -- that estimated thickness 10 percent porosity, as much as 250 feet, you see a lot less shading. And I'll point this out, kind of go through this first one in a little bit more detail. As we get the less color, that's just less potential, less pressure, you know, so we've got it. We're assuming a little bigger zone. So we're still at zero with this, but we varied the parameters.

So for the -- for the other three parameters, if we go to slide eight, this is a very similar thing. So we've got four proposed Trove wells in this one. So we use those same low-end parameters of 5 percent porosity, 10 millidarcies. We run -- we run the model with some hypothetical faults. We get zero on

scenario one, you know, lower porosity, lower permeability. If we go to page 9, we get zero fault slip potential at that.

If we go to page 10, this is area three. So this is that lower left circle that we showed. We've got three proposed Trove wells. We added some hypothetical faults both for -- pages 10 and 11, for the first scenario. And second scenario, we come up again with our 0.00 percent fault slip potential.

If we go to 12, this is the last area. So this is that upper left, scenario one. It has three proposed Trove wells, some other existing wells. Under the first scenario, with the lower porosity, lower permeability, 0.00 fault slip potential, and at the higher, you get 0.00 fault slip potential.

So this is -- this is, I would say, pretty similar looking at the data, the geology, evaluating what both Mr. McLaughlin provided here and the work we've done before. There's just very little fault slip potential from what we could see based on known information, as well as in trying to add hypothetical situations, which certainly has been, you know, a concern by the Division on well, what if -- you know, what if there is a fault that we don't know about? That's certainly what has happened in Oklahoma and even

around the Pecos area and West Texas. So we're trying to be conservative here and say, "Well, maybe there is something that we don't know about, so we'll look at that."

We've got, you know, no known faults also, I'd say, in southeast New Mexico that -- that align with kind of the horizontal stress fields, and so we're not likely to see a slip, from what we can tell. The modeling that we did through 25 years at 40,000 barrels a day for that period of time showed no potential.

I'll also note that -- you know, one of the things that we do when we do this modeling -- and I know you-all have commented on this in the past. But when you look at unconventional development now, I mean, New Mexico is certainly getting become bombarded by a lot of -- I mean, you guys are at the -- at the center of the target of where everybody is drilling for oil and gas, and that's great. But a lot of these wells don't produce water like the old conventional wells. It's not like water just -- production just keeps going up and up and up and up. So what you see on a lot of production is that you get a big, high volume of water during flowback, initial production phase, and that tends to decrease over time.

So I think that in addition to the

conservative estimates we've made there, you know, assuming that we're going to have 40,000 barrels a day in all these wells for 25 years is likely a stretch as well. So just something to think about. And I know that's not our typical thinking because we've seen so many production curves, water production, oil production in the past, but we're starting to get enough data on a lot of horizontals not just here in New Mexico but other places, and that's what we generally see. And that's not -- not the case in every play. Like, the Mississippi Lime, it just produces water like crazy. But right here, that's been what we see.

But ultimately the conclusion from all of this, which I think is a pretty conservative evaluation, is that there's very little risk for the potential of induced seismicity. We do see upper confinement. We see -- we believe we have lower confinement. These are deep wells. They're -- they're cased in -- like Mr. Stone mentioned, they're built like -- you know, like battleships.

And I will note, as the petroleum engineer on the project, too, is that Trove is planning on using gas-sealed joints and couplings because we've just seen too many of that with other disposal wells in the area being mechanical integrity issues because they're -- you

know, they're allowing gas to enter the well or -- you know, so we do a lot of gas-migration investigation, a lot of mechanical integrity issues. So that's the plan that we're going to there.

The rest of the presentation really references some of the control data that we use, which is similar to what was used by Mr. McLaughlin, to be to be able have that, and then, you know, the different disposal wells and information on where we gathered the rates that we utilized for the model.

Q. And so in the four areas that you delineate, there is little to no chance of seismicity issues?

A. That's my professional opinion as a petroleum engineer, registered in 34 different states, and doing a whole lot of induced-seismic litigation and testimony.

Q. In your opinion, is the granting of all seven of these applications in the best interest of conservation and the prevention of waste?

A. I believe that there is so much demand here and -- and, you know, going through the history of the Underground Injection Control program and how it's been instrumental in allowing development to occur, is that there will be waste if -- if we don't have a really good way to handle this water. And these wells and the proposed injection intervals and methods offer a good,

safe, environmentally sound manner to do that, so yes.

MR. BRUCE: Mr. Examiner, I move the admission of Exhibits 7, 8 and 9.

CROSS-EXAMINATION

BY EXAMINER GOETZE:

Q. First question: Who is Howard McLaughlin?

A. So he's a professional geologist hired by Trove.

Q. Could we have a resume? Has he appeared before the Division before?

MR. BRUCE: I have never had him as a witness.

EXAMINER GOETZE: Okay, Mr. Bruce.

MR. BRUCE: But I will find that out and certainly get a resume.

EXAMINER GOETZE: Let's put in a resume so we know who is preparing this.

So you wish to enter Exhibits 7, 8 and 9?

Ms. Bennett?

MS. BENNETT: No objections.

EXAMINER JONES: Ms. Antillon?

MS. ANTILLON: No objections.

EXAMINER JONES: Exhibits 7, 8, 9 are so entered.

(Trove Energy and Water, LLC Exhibit

Numbers 7, 8 and 9 are offered and admitted into evidence.)

MR. BRUCE: Pass the witness.

EXAMINER GOETZE: We're only working on -- or we're doing this in general and more specifically for 20751.

MR. BRUCE: Okay.

CONTINUED CROSS-EXAMINATION

BY EXAMINER GOETZE:

Q. So for clarity, we ran a 25-year model at 40,000 barrels per day in all -- all situations?

A. Yes, sir.

Q. Did we take into account adjacent well operations, too?

A. Yes, sir.

Q. We've been down this road before, so at this point, I find nothing in the FSP that's been presented that I have any more questions on.

Thank you very much.

CROSS-EXAMINATION

BY EXAMINER MURPHY:

Q. Exhibit 8, page 1, I know that was the geologist, and they talk about the Simpson and the Montoya group. Is it possible to get a rough estimate of how thick the geologist thinks those are below the

proposed SWDs?

A. So we did cross sections that I've reviewed. We didn't try to estimate thickness for those, but I'm sure that we can.

Q. Thank you.

A. They will be estimates, though.

Q. Estimated estimates sometimes the best we have.

CROSS-EXAMINATION

BY EXAMINER COSS:

Q. So just here on your faults, did you -- what are some of the characteristics of the fault you that inserted. Strike slip? Normal faulting? How did you choose the orientation and what amount of slip?

A. So -- so what -- so induced seismic potential is really kind of interesting because you can -- you know, you can find a normal fault on, say, 3D seismic, but one of the issues with induced seismicity is that a lot of the faults that have been issues are strike-slip fault, and it's pretty tough to see those, you know, even on good 3D seismic because a lot of that seismic data is up above. So what we did here is we put in those hypothetical faults based on the existing faults in the area so we did normal faults.

Q. What amount of offset did you include on this? Are they all the way through the Pennsylvanian and all

the way through the basement?

A. No, in the basement, so these are basement faults.

Q. That would crosscut this formation?

A. These are -- these are basement faults that would -- that would be in -- that would go up into the Devonian.

Q. Okay. And any amount of offset?

A. I don't remember the offset that we used, and -- I don't recall.

Q. Was it great or small?

A. A small offset.

Q. Okay. And just for my -- you follow this modeling -- injection modeling, what I'm seeing on area one, scenario one. That's just for one well and none of the surrounding wells?

A. No. So for area one, scenario one, we model everything in that. So, for instance, there are five Trove wells there.

Q. Okay.

A. So this is like -- if this was --

Q. 20 kilometers, looks like.

A. Yeah. But, I mean -- but this has all of those wells, even the proposed wells, injecting, as well as the existing wells to continue injecting.

Q. Okay. Well, thanks for clarifying that for me. That's all my questions.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. You worked in Oklahoma on the Oklahoma wells, is that right --

A. Uh-huh.

Q. -- those big high-rate disposals?

A. Some of which, in the Arbuckle, were 100,000 barrels a day, yes.

Q. Do they ever lose mechanical integrity?

A. So I would say that Oklahoma, in the deep Arbuckle wells, is a little different than here in New Mexico, so we're not dealing with some of the same depths and so forth. There certainly are production horizons that you have to go through, but the wells have generally not been as complicated. So like some of the work that we've done here in New Mexico is we've got wells that have casing hangers, and you're going through multiple, like, gas zones. And that seems to be one of the issues that has caused a problem here where we've seen mechanical integrity things. We might pass a regular test over, say, half hour or an hour, but over time, you'll build pressure because I think you've got -- more so than the couplings, you've got, you know,

these casing hangers that allow the ability for gas to migrate through. Some of those wells are older. And it could be couplings. I've certainly seen that happen. But in Oklahoma, we didn't really have that. So it was more -- comparatively, more simplistic wells.

But still, you know what we see then and even now is -- is larger tubing sizes being critical to cut down on friction. You know, those are some of the challenges. We've certainly done some wells where we've run tubing, had to pull out, redo the joints because it just -- you know, finding qualified people to run, say, a 7-inch or even a 5-1/2-inch tubing string is difficult, and you have to really pay a lot of attention on every -- on every joint and every coupling and make sure you get a good seal.

Q. Can you describe what -- what should happen if one of these wells fails a mechanical integrity test?

A. So there are two parts to mechanical integrity, so I'm assuming you're discussing part one of mechanical integrity.

Q. The inside.

A. Yes, which would be the casing tubing annulus.

Q. Yes.

A. So some of that depends. So there's a number of -- like, when I was at EPA doing mechanical integrity

testing, there are a number of different testing methods that you could look at. But let's just say that you can have pressure variations due to temperature, due to fluid, you know. So on a lot of wells, what we see is initial injection, or after injection has, say, stopped for a while, if the well is taken offline, you know, because you've got to fix a pump or something goes down, is a lot of times that initial injection due to temperature of the injection fluid or other things like that can impact that casing tubing annular pressure. So you can get -- you can get variations that way. And I don't really consider that a loss of mechanical integrity.

But if you do have a well that does, say, lose mechanical integrity or perhaps has a -- a, you know -- I mean, if it's a catastrophic loss, I mean, that's go in and fix a well. Now, the other challenge that's more complicated is let's say that you get a slow building of pressure. Maybe you have some gas entry into that casing tubing annulus. So what we've done on a number of those, even here in New Mexico, is really trying to understand those. So we've done, you know, various types of pressure buildup tests to be able to see what -- you know, how much it's building, how often, if you vent it off. I mean, some of them you can vent

off and they'll stop, you know. I mean, it doesn't mean that because you get gas entry that it's always going to have gas entry. Sometimes it could be a temporary phenomenon. I mean, because you think those gas particles, those molecules are pretty small, so sometimes they can self-heal.

But if that continues, you know, then you -- then you have a choice. You have a choice to go in, and there are products like resins that you can squeeze with. There are tools like temperature and audio logs that you can identify the gas entry point.

But overall I think it's also reasonable to look at what's the -- what's the impact of that particular issue. So if we have, say, gas entry coming in and we suspect that it's -- you know, that it's from some sort of, you know, intermediate zone that has natural gas and it's slowly coming in that tubing annulus, well, if we look at the overall purpose, based on the federal regulations of the UIC program and also New Mexico's regulations, you know, that mechanical integrity is really geared towards protection of underground sources of drinking water.

So in the UIC program back in the '80s when we were putting all the protection stuff together, we always wanted to have at least two barriers of

protection between our injected fluid and an underground source of drinking water. Well, one of the things that you'll notice with these wells that we're building here is we're having multiple casing strings, you know, several of them that are, you know, cemented to surface beforehand, your surface casing and intermediate one and intermediate two maybe. You know, I mean, it's really -- it's really interesting to think how these are built. So the bottom line, you ultimately have multiple layers of protection. Maybe, you know, instead of two layers of protection, you might have four or five layers of protection, not counting cement, even as a barrier.

So when we looked at the risk of hydraulic fracturing, we would be looking at, you know, a tubing, an annulus -- not counting that -- but then casing, cement, casing, cement, casing, cement, maybe, and counting each of those. EPA has not typically done that. They've looked at it as a pipe, you know, some sort of barrier that way.

So within -- within -- within that sort of scenario -- let's say you're building a low pressure. We've seen some of these that they're only building less than 100 psi, but they, you know -- in a variation. So you could look at that and go: Okay. What is the potential increased risk to an underground source of

drinking water because of this, and you may find there isn't any.

So one option, as a remedial possibility, could be to say, "Okay. We want you to put a limit on the annular pressure so that it doesn't get out." So maybe you've got to vent it daily, weekly, monthly, whatever it is. So that's an option. The idea of trying to fix with a squeeze could not result even in an improvement and would be very costly.

Q. Okay. Okay.

A. Sorry.

EXAMINER GOETZE: Does the attorney have --

EXAMINER DAVID: No. It's beyond my -- thank you very much.

EXAMINER GOETZE: Mr. Bruce?

MR. BRUCE: Nothing further of this witness.

EXAMINER GOETZE: In that case let's go ahead and take 20751 under advisement.

Let's move on to 20752, and you have a C-108.

MR. BRUCE: I've handed you-all a Form C-108 marked Exhibit A, and I would recall Mr. Stone just very briefly.

EXAMINER GOETZE: Very good.

BEN STONE,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Mr. Stone, is this Exhibit A, 20752, the C-108 for the PSE Federal SWD No. 4?

A. I apologize, Mr. Bruce. I should have taken the opportunity to organize my exhibits.

(Laughter.)

A. I've got it.

Q. Did you prepare this C-108?

A. I did.

Q. First off, other than in Case -- your prior testimony except as to the specifics of the C-108 itself, does that apply to all seven of these cases?

A. It does.

Q. Okay. And very briefly could you just identify the well, its location and a little bit of its -- the target injection zone and a little bit of the operations of the well?

A. Yes. The Federal No. 4 is located in Section 30-24-32 in Eddy County. Well construction is similar, and the interval, we determined is 17,000 to 18,500. Well operations would be, again, if we upsize the tubing

for a target of 40- to 50,000 barrels per day at .2 psi per foot or 3,400 psi.

Q. And all the rest of the packet contains the information normally required by the Division --

A. It does.

Q. In your opinion, is the granting of this application in the interest of conservation and the prevention of waste?

A. It is.

MR. BRUCE: Mr. Examiner, I move the admission of Exhibit A in Case 20752.

EXAMINER GOETZE: Since you folks are not participating in this, it will be accepted as Exhibit A in Case 20752.

MR. BRUCE: No further questions.

(Trove Energy and Water, LLC Exhibit A is offered and admitted into evidence.)

MR. BRUCE: I have no further questions.

EXAMINER GOETZE: I have a quick question, Mr. Stone.

CROSS-EXAMINATION

BY EXAMINER GOETZE:

Q. I did note in your exhibits overall, you recognized the Cotton Draw application, which is to the northwest of this location. Was there any communication

with OWL? Did they approach you folks as far as --

A. I did talk to OWL.

Q. And the outcome of the discussion was?

A. The outcome was that I actually thought we would withdraw this application.

Q. Just realize -- we'll make it part of the record. Just realize that OWL is there, and they do have an earlier date. And we'll let you have the option of thinking about it.

MR. BRUCE: Okay. I was not aware of that, Mr. Examiner. I think he discussed it briefly yesterday, but I forgot.

EXAMINER GOETZE: That's okay. You paid for the time and effort. I'd hold on to it.

I have no further questions.

THE WITNESS: OWL did indicate that they intend to pursue the Cotton Draw.

EXAMINER GOETZE: We'll see what happens. But just be aware it's there, and it may be something that we may have to go down the road into the issuance of the order to have a discussion about.

Examiner Murphy?

EXAMINER MURPHY: No questions.

EXAMINER COSS: No questions.

EXAMINER JONES: No questions.

EXAMINER DAVID: No questions.

EXAMINER GOETZE: But before we get to the -- are you going to do each of them?

MR. BRUCE: Just very briefly. Maybe just have him identify the well involved.

EXAMINER GOETZE: Okay. Very good.

So we are proceeding through the additional cases and have received C-108s for each, and the same witness is in place. We will proceed with Case Number 20753.

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Mr. Stone, is Exhibit A the C-108 for this case?

A. It is.

Q. And did you prepare this?

A. I did.

Q. Which well is involved, and could you just briefly discuss the disposal interval?

A. This is for the WLC-M, or Mid, No. 3, and it is located in Section 10, 25 South, 33 East. The target interval is 16,990 to 18,900. That would yield the .2 psi per foot of 3,398 psi.

Q. And, again, you'd be seeking the 40- to 50,000 barrels of day?

A. With the upsized tubing.

MR. BRUCE: Mr. Examiner, I move the admission of Trove Exhibit A in this case, 20753.

EXAMINER GOETZE: Ms. Antillon?

MS. ANTILLON: No objection.

EXAMINER GOETZE: In Case Number 20753, Trove Exhibit A is accepted and made part of the record.

(Trove Energy and Water, LLC Exhibit A is offered and admitted into evidence.)

EXAMINER GOETZE: I have no questions. I will pass the witness.

Do you have questions?

EXAMINER MURPHY: I'll pass the witness.

EXAMINER COSS: I will also pass the witness.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. You got 5-1/2 on your wellbore diagram all the way to the surface, is that correct, on this one? This is not a tapered one -- tapered tubing?

A. Well, let me see, Mr. Jones. It should be.

Q. It should be a tapered?

A. 5-1/2-inch tubing with 5-inch flush joint inside liner.

Q. Well, I was just looking at the diagram.

A. Uh-huh. So that is a --

Q. I don't see a 7-inch.

A. Oh, no, no, no. This is the original. The 7-inch request is part of this hearing. That's an additional request.

Q. Okay. Do you have another diagram for that, or is it just part of the -- just verbally or --

A. The large exhibit.

Q. That applies to several cases?

MR. BRUCE: Exhibit 3 is a generalized wellbore sketch, and then Exhibit 5A is the request for increased tubing size. So the C-108s themselves have the old wellbore diagram.

EXAMINER JONES: Okay. Okay.

Q. (BY EXAMINER JONES) Just briefly, if you lose mechanical integrity, what are you going to do? If you go out there and do an MIT and it fails, what's going to happen?

A. We're going to locate the hole.

Q. You're going to fix?

A. We're going to have to fix it.

Q. Are you going to divert water to a different well?

A. Those are certainly some of logistic questions that all large volume SWD operators have to answer, but

absolutely. It would have to be tied into a system. If you've committed to that volume of water, you don't just turn the valve and shut it off obviously. So yeah, there would be a lot of logical operations. It's not as simple as today's 10,000-barrel-a-day.

Q. It's not as easy as it used to be.

A. Yeah. No. It's a significant operation without a doubt.

Q. Okay. Thanks.

EXAMINER DAVID: No questions.

MS. BENNETT: Mr. Examiner, for the record, this is the case I asked to be allowed to enter my appearance for NGL.

EXAMINER GOETZE: I thought it was the one at the end.

MS. BENNETT: No. It's 20753.

EXAMINER GOETZE: Oh. Well, in that case would you like to ask a question of this witness?

MS. BENNETT: I do have a couple of questions, if I may.

EXAMINER GOETZE: Please proceed.

MS. BENNETT: Thank you.

CROSS-EXAMINATION

BY MS. BENNETT:

Q. Good morning.

A. Good morning.

Q. Thanks for providing these maps for us. I did have a couple of questions based on the maps that you prepared.

Specifically, if you could look at Figure 7. Now, does Figure 7 show the well that is being proposed in Case Number 20753?

A. Yes, ma'am.

Q. And is that up in Section 10 up towards -- not exactly the right-hand corner but up to the north and sort of to the right?

A. Near the top center of the map?

Q. Yeah, here (indicating).

A. Yes, ma'am.

Q. And on the map here, you have some cross-hatching, and it says "NGL North Ranch." So is the well that's being proposed in Case Number 20753 within the exterior boundaries of the NGL McCloy Ranch?

A. It is.

Q. A moment ago you mentioned that there are some logistical questions that all SWD operators will have to face if you need to shut down a well. Has Trove got a plan like that in place?

A. I can't say that we do yet. We're still designing the system, and we have yet to get a permit.

So we're a ways away from designing our operational program, but certainly we'd have multiple wells tied together. We hope to participate in some pipeline sharing, if that's made available, so we hope to coordinate with other operators, whatever. I can't today describe what that full operation might be, but we understand the impact of shutting down a huge volume.

Q. So is it fair to say that today you're here on seven SWD applications? And then I think Mr. Barton testified that there are a total of 23, but you don't have a backup plan yet if one of those wells were to go down?

A. We don't have -- we don't have an SWD permit yet.

Q. Okay. I did have a question about the wellbore also based on Mr. Jones' question. So Exhibit 3 is the generic wellbore diagram; is that correct?

A. That's correct.

Q. So this exhibit wellbore diagram doesn't actually have the depths of the footages that you're proposing for each wellbore?

A. This one, if you'll notice right under the title, it is based on the Ole 55 SWD.

Q. Uh-huh.

A. So it does actually represent that one --

Q. For that one?

A. -- identically, but construction and depths will vary slightly depending on prospect to prospect.

Q. So does that mean for this case, 20753, that there isn't an actual wellbore diagram showing the depths and casing design that you intend to use for those depths, or are you saying you would use the same design as in the wellbore diagram that's in the C-108 but just with a larger diameter pipe?

A. Well, that's actually correct. The casing doesn't change. It's only the tubing that changes. So it will look exactly like this but at these depths of what is illustrated right here.

Q. Okay. So I had another question, too, based on Figure 1. And I think you might have answered this already, and I apologize if I wasn't following it. So on a lot of the wells, for example -- well, 20753 isn't on this drawing as far as I can tell, but just taking, for example, the Ole 55, it says "Respotted 4/26/19." Was that done before you submitted the C-108 -- the original C-108?

A. I'm sorry. On which?

Q. The Ole 55, just taking that as an example. It has "Respotted 4/26/19."

A. Yes, ma'am. That's actually my notation of

what I had done, and that was respotted. That one was actually negotiated with ConocoPhillips, the operator and lessee of that federal lease. And so that was just there for myself because I had already entered it into GIS, so when I adjusted it over, I wanted something that I understood that's my new location.

Q. Uh-huh.

But this respot -- and I think you testified about this earlier. This respot occurred before you submitted the C-108?

A. Correct.

Q. The original C-108?

A. Yes, ma'am.

Q. Okay. And then I guess the only reason -- or you didn't provide NGL with any notice of Case Number 20753 going to hearing; is that right?

A. Going to hearing?

Q. Uh-huh.

Just looking at Exhibit 6 and I think this is --

A. Yeah.

Q. -- on page --

A. If it's not on there --

Q. Okay. Did you prepare all of the materials that are in the C-108?

A. Yes, ma'am.

Q. And so you prepared the document that discusses the proposed operation of this well?

A. Yes, ma'am.

Q. And the geologic information, did you prepare that?

A. I did.

Q. When did you prepare those?

A. For this well?

Q. Uh-huh.

A. Again, I would -- I have to locate my submittal dates, and I'm not sure what exhibit I might have that on.

Q. Were those -- I guess I'll just ask an easier question probably than having to look through the documents. Were those all prepared at the time you submitted the original C-108?

A. That's correct.

Q. So March 26th, 2019, approximately. It's on the front.

A. Thank you.

Q. Yeah.

And then this is kind of a follow-up question. Well, actually, I'll ask this of another witness.

Thank you very much. I appreciate that.

A. Yes, ma'am.

MS. BENNETT: I would like to say for the record that these wells are within the exterior boundaries of the McCloy Ranch that NGL is protesting -- objecting to this application.

EXAMINER GOETZE: So are you the owner of the land?

MS. BENNETT: NGL is the owner of a BLM grazing lease.

EXAMINER GOETZE: Are you the owner of land?

MS. BENNETT: No. NGL is not the owner of the land.

EXAMINER GOETZE: That would be the Department of the Interior, Bureau of Land Management?

MS. BENNETT: That's correct.

EXAMINER GOETZE: Thank you.

CROSS-EXAMINATION

BY EXAMINER GOETZE:

Q. Looking at something with regards to the No. 3, Mid, we had -- to the southeast of the WCL Fed SWD No. 3, we currently do have a disposal well that's being spud. It is the Dagger State SWD No. 1, API 3002545815. It is Advance Energy Partners Hat Mesa, LLC. In

reviewing this application -- in discussion with them, we permitted based upon their production in the area. Do you know if Advance Energy was noticed, or is there any indication that they appeared as an operator?

A. I had no idea that that was --

Q. Okay. Just to put it in the record.

EXAMINER GOETZE: With that, any other questions regarding this application?

Then let's move to the next one. This would be 20754, which would be the WLC Mid Fed SWD Well No. 5.

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Mr. Stone, is Exhibit A the C-108 you prepared for this well?

A. It is.

Q. Preliminarily, in looking at the wellbore sketch, I just want to clarify something. On each of these seven C-108s, the surface location remains the same?

A. That's correct.

Q. And the well name is the same, and the injection interval is the same -- is -- is correct on each of the wellbores?

A. That's correct.

Q. The only thing that changed on the generic map is the tubing size --

A. That's correct.

Q. -- for each of the seven applications?

A. Correct.

Q. Could you just briefly identify this well's location and give a summary of its operation?

A. Yes, sir. The WLC Mid Federal SWD No. 5 is located in Section 31, 25-33. The proposed interval is 17,350 feet to 19,450 feet. We are limited then to 3,470 psi for .2 psi per foot. And, again, with the upsized tubing, we'll be targeting 40- to 50,000 barrels per day.

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

A. It is.

MR. BRUCE: I have no further questions, Mr. Examiner.

EXAMINER GOETZE: Very well. First, the State Land Office has the opportunity for questions.

MS. ANTILLON: No questions.

EXAMINER GOETZE: Thank you very much.

I have no questions regarding this application. I pass the witness.

EXAMINER MURPHY: No questions.

EXAMINER COSS: No questions.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. Are you going to plumb all of the bradenheads to surface as the OCD requires?

A. Yes.

Q. Okay. No more questions.

EXAMINER DAVID: Do we need to move admission of the exhibit here? I don't think --

EXAMINER GOETZE: We'll let Mr. Bruce earn his money.

EXAMINER DAVID: Okay.

MR. BRUCE: Move the admission of Exhibit A in this case, Mr. Examiner.

EXAMINER GOETZE: State Land Office?

MS. ANTILLON: No objection.

EXAMINER GOETZE: Very good. Then in Case 20754, Exhibit -- Trove Exhibit A is so entered into the record.

(Trove Energy and Water, LLC Exhibit A is offered and admitted into evidence.)

EXAMINER GOETZE: Can we move on to the next case?

MR. BRUCE: Yes, sir.

EXAMINER GOETZE: Case Number 20756, which involves the WLC South Fed SWD No. 3.

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Mr. Stone, is Trove Exhibit A in Case 20756 the C-108 you prepared for this well?

A. It is. It is.

Q. And, again, will you please summarize the well's location and operational parameters?

A. Yes, sir. The WLC South Federal No. 3 is located in Section 26 of 26 South, 33 East. The target interval is 17,750 feet to 19,015 feet. The maximum injection pressure would be 3,550 psi per foot -- or per surface pressure, and we would expect a target volume of 40- to 50,000 barrels per day with the upsize in tubing that we request.

Q. In your opinion, is the granting of this application in the interest of conservation and the prevention of waste?

A. It is.

MR. BRUCE: Mr. Examiner, I'd move the admission of Exhibit A in this matter.

EXAMINER GOETZE: Ms. Bennett.

MS. BENNETT: No objection.

EXAMINER GOETZE: Ms. Antillon?

MS. ANTILLON: No objections.

EXAMINER GOETZE: Therefore, Trove Exhibit A for Case 20756 is so entered.

(Trove Energy and Water, LLC Exhibit A is offered and admitted into evidence.)

EXAMINER GOETZE: And, Ms. Bennett, I believe you have the first opportunity.

MS. BENNETT: Thank you.

CROSS-EXAMINATION

BY MS. BENNETT:

Q. Hello, again.

So I'd like to ask you a few questions about the C-108.

A. Okay.

Q. If we look at the two-mile area of review, which is about maybe ten pages in, the two-mile area of review extends into Texas; is that right?

A. That's correct.

Q. And so there is the one-and-a-half-mile -- or the one-mile area of review?

A. Yes, ma'am.

Q. Did you notice any offset -- send notice to any offset operators within the one-mile area of review in Texas?

A. I did not.

Q. Mr. Bruce clarified or you might have clarified a moment ago in one of the other cases that Exhibit 5A is the application for increasing the tubing size?

A. Yes, ma'am.

Q. And so just so I'm clear, Trove Energy is asking for an amended application -- to amend all the applications to an increased tubing size through an exhibit entered in this case?

A. Yes, ma'am.

Q. But before today, there was no indication that Trove was seeking to have an increased tubing size with a higher capacity --

A. That's correct.

Q. -- injection?

So today is the first time anyone has notice of that?

A. I believe so.

Q. Okay. Thanks.

And then on Figure 7, if you could look at that for a second, you've identified the WLC as No. 3 well as down in the lower right-ish, mid right, and then you've identified the NGL Battle Ax facilities?

A. Yes, ma'am.

Q. And earlier you were mentioning that the purple -- these purple-ish lines are pipelines, NGL --

or Mesquite pipelines, and then the orange are NGL pipelines?

A. Yes, ma'am.

Q. So there is a purple pipeline, it looks like, down below the WLC-S No. 3 --

A. That's correct.

Q. -- facilities?

Those are all the questions I have.

MS. BENNETT: I would just note for the record that NGL objects to the amended application being submitted by an exhibit at a hearing rather than going through a more formal amendment process and also objects to the location of this well.

Thank you.

EXAMINER GOETZE: Well, this is a little conundrum because under the federal regulations, changes in casing design is only a minor modification and does not require notification. It's so spelled out that way, and we have handled that until such time. The entry of this application as amended is not surprising. Everyone is doing it. I think Trove came along after they had made their original application and looked at what happened. But I will say for the record, there is no requirement under the UIC program for this type of change. It's kind of a conundrum, but so noted and

noted of record.

With regard to notice, it is the Division that gained guidance to the Applicants to at least notify the Texas Railroad Commission. They did so on this well. This is an agreement reached between directors, so we are bound by that at this point until such time that we have changes in this process. So at a minimum, we're requesting operators who are in the proximity of the border to provide notice to the Railroad Commission so it can be disseminated.

Having said that, any questions?

I have no further questions regarding this application.

Ms. Murphy?

EXAMINER MURPHY: No questions.

EXAMINER COSS: No questions.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. Is there a way for you to run a temperature survey on this under injection conditions?

A. Thank you, Will. I appreciate the question.

(Laughter.)

A. As a long-time production lawyer, I've certainly never encountered this kind of well. I was mentioning to someone earlier that the highest rate I

ever logged was 10,000 barrels a day in 3-1/2-inch tubing, and I had to stand the wireline truck on its head just to try and keep up with that slug moving down the hole.

It's certainly possible. I mean, the pressures would not be the limitation, but I think the rate that the fluid would be traveling through the pipe would be so rapid that you may never see it except for when you actually enter the injection interval, and you would see it disperse in the injection zone. You could shoot some very heavy slugs out and possibly detect any challenges. And to detect it, we'd have a no flow at the bottom of the hole.

But as far as temperatures, I mean, certainly you could run a temperature. Again, an injection temperature by itself does little good without being able to shut the well in and compare that temperature throughout and see what's going on that way. So for the value of information you get from a temperature survey versus the challenges of just trying to obtain that information, I don't think it would be worth it in and of itself, but technically it would be possible.

Q. Okay. Thank you.

EXAMINER DAVID: No questions.

EXAMINER GOETZE: Very good.

Then let us move on to 20757. It's the Ole 55 Fed SWD No. 1.

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Mr. Stone, is Trove Exhibit A the C-108 you prepared for this well in Case 20757?

A. It is.

Q. Again, would you run through the well location and its operational parameters?

A. The Ole 55 -- and I apologize. I should have known better than to spell Ole as O-L-E in New Mexico.

(Laughter.)

A. But the Ole 55 No. 1 is in Section 31, 26 South, 32 East. The target interval is 17,100 to 18,800 feet. The surface-injection pressure at that depth at .2 psi per foot would be a max of 3,420. With the upsize tubing, we would still expect to achieve 40- to 50,000 barrels per day.

Q. In your opinion, is the granting of this application in the interest of conservation and the prevention of waste?

A. It is.

MR. BRUCE: Mr. Examiner, I move the admission of Exhibit A.

EXAMINER GOETZE: Let's see. Ms. Bennett?

MS. BENNETT: No objections.

EXAMINER GOETZE: Very good.

With that in mind for the record, Trove Exhibit A for Case 20757 is so entered.

(Trove Energy and Water, LLC Exhibit A is offered and admitted into evidence.)

EXAMINER GOETZE: And last but not least, Case Number 20760. This would be for the WLC Mid Fed SWD No. 4.

MS. BENNETT: Mr. Examiner, I did have a couple of questions about Case Number 20757.

EXAMINER GOETZE: Oh, sorry. We got carried away. Go ahead and ask questions, please.

CROSS-EXAMINATION

BY MS. BENNETT:

Q. Very quickly. These questions will be similar to the questions I just asked.

So if you look at the C-108 about ten pages in --

A. Yes, ma'am.

Q. -- the one-mile, two-mile and three-quarter-mile radius --

A. Yes, ma'am.

Q. -- on this one, for the Ole 55, it looks like a

large part of the three-quarter radius extends into Texas; is that right?

A. That's correct.

Q. Did you notify any of the Texas minerals, lessees or operators of the application?

A. I did not.

Q. On Figure 7 -- Figure 7 shows the Ole 55 about in the mid-lower south section, south part of the map, and, again, this map shows the NGL pipelines or the Mesquite pipelines in purple and orange. Do those pipelines basically run near or intersect the proposed location of this well?

A. They run near it. Yes, ma'am.

Q. On Exhibit 5A, I see -- Figure 1 of Exhibit 5A, I think you testified earlier that you prepared that figure; is that right?

A. I did.

Q. And did you prepare -- I think you testified that you prepared it for prior cases or in the past sometime.

A. I'm sorry. You're speaking of the friction table?

Q. Yes. It's Figure 1, injection tubing, friction loss versus rate.

A. Yes, ma'am. I don't have recollection of what

project I was working on when I did that, but I had it in my encyclopedia of stuff.

Q. But you didn't prepare it specifically for any of these wells or this well?

A. No, ma'am.

Q. And is that accurate for all of the slides that follow? They're taken from other materials or prepared by you but not specifically for this case --

A. That is correct.

Q. -- or these cases?

A. I would point out, if I might, that that friction table has no relation to a particular well. I mean, it's applicable to your wells and Solaris' wells. It reflects the stats on pipe. So it would be analogous to Halliburton RedBook for determining pipe specifications.

Q. Thanks for that clarification.

And let's see. Those are the only questions I have. Thank you.

A. Thank you.

CROSS-EXAMINATION

BY EXAMINER GOETZE:

Q. I would just like to revisit one thing. We do note in the C-108, in its amended form, that we do have one water well that was identified and questionable as

to whether you would be able to access it for a water sample?

A. We think we can. We just have not been able to get that done yet.

Q. So that's fine. We'll make that a submittal at a later time. But please make a determination as to whether you can get it, and if you can't, specify the reason why.

EXAMINER GOETZE: Questions from any of the examiners?

EXAMINER COSS: No questions from me.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. Would you be getting water from Texas, too?

A. That's not a -- I would say potentially, but that's not a question that I can answer. Mr. Barton might be able to reflect some light.

Q. It goes both ways, I guess.

A. It does.

EXAMINER GOETZE: Counsel?

EXAMINER DAVID: No questions.

EXAMINER GOETZE: Very good. Now, returning prematurely to where I was before, Case 20760, and this would be the WLC Mid Fed SWD No. 4.

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Mr. Stone, is Exhibit A the C-108 you prepared for this well?

A. It is.

Q. Could you again summarize the location and its operational parameter?

A. WLC Mid No. 4 is located in Section 17, 25 South, 33 East. The target interval is 17,440 feet to 19,000 feet. The surface injection pressure at .2 psi per foot would be 4,088, and we would still hope to achieve 40- to 50,000 barrels a day through the upsized tubing configuration.

Q. One final question: As to all of these proposed wells, you obviously have gotten surface locations, but have APDs been filed with the BLM for any of these wells?

A. No, sir.

Q. Thank you.

MR. BRUCE: And I'd move the admission of Exhibit A, Mr. Examiner.

MS. ANTILLON: The State Land Office does not object.

EXAMINER GOETZE: Exhibit A for Case Number 20760 is entered into the record.

(Trove Energy and Water, LLC Exhibit A is offered and admitted into evidence.)

EXAMINER GOETZE: And I have no -- I do have one question.

CROSS-EXAMINATION

BY EXAMINER GOETZE:

Q. Are you aware that Mesquite still has an outstanding application in 21 -- Section 21 South -- southeast from 17 for the Linda SWD No. 1? It was applied for 10/16/2018.

A. I am, Mr. Examiner. I've communicated with them. Apparently they have some challenges, too. So I guess our position would be to see how both of them float out after -- after they run the process.

Q. So throwing in our lap. Thank you very much.

A. Happy to accommodate.

(Laughter.)

EXAMINER GOETZE: Other examiners, questions?

EXAMINER DAVID: No questions.

EXAMINER JONES: No questions.

EXAMINER GOETZE: Okay. With that, C-108s have been entered into the record.

MR. BRUCE: That's all I have.

I suppose the only issue is: Do either of

the other attorneys have any questions for Mr. Arthur?

EXAMINER GOETZE: Do you have questions for Mr. Arthur?

MS. BENNETT: I do, yes.

EXAMINER GOETZE: Okay. Well, let's bring Mr. Arthur back then.

In an effort for clarity, would you identify which cases and --

MS. BENNETT: Yes. I'd like to ask questions -- if it's okay with the Division, I'd like to ask questions in all three cases at once.

EXAMINER GOETZE: Okay. Very good.

MS. BENNETT: Yeah. Those are Cases 20753, 20756 and 20757. Thank you.

EXAMINER GOETZE: Proceed.

JAMES DANIEL ARTHUR,

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

CROSS-EXAMINATION

BY MS. BENNETT:

Q. Good morning. Thanks for being here again.

A. Good morning.

Q. I just had a few questions for you about the fault slip probability, fault slip potential analysis that you prepared and the geologic evaluation that Mr.

McLaughlin prepared.

So let's start with the fault slip potential analysis, which is Exhibit 9. And this fault slip potential analysis, I understood from your earlier testimony, applies to all of the wells that Trove is proposing today; is that right?

A. Correct.

Q. Okay. And I believe in -- and I forget who asked you this question. Perhaps it was Examiner Goetze or Examiner Jones. But they asked if this study took in adjacent wells and you said that it did. What do you mean by adjacent wells, or what did you understand that question to mean?

A. So wells within the 100 square miles.

Q. Okay. SWDs?

A. Correct.

Q. And when I look, though, at the last page -- or the second-to-the-last page of the study -- actually, the last page, page 18, does page 18 include the adjacent wells that you included in your study?

A. I believe this includes all of the wells that were included in each of the areas, one, two, three and four.

Q. So your study doesn't include any proposed wells, though, right?

A. Correct, other than the Trove wells.

Q. Uh-huh.

Just the Trove wells and currently operating wells but no other proposed wells?

A. Correct.

Q. And when I look at page 18, you have the average daily injection rate there. Is that the rate you used to model for these wells when you did the four different scenarios?

A. Correct.

Q. Did you model the Trove wells at 40,000?

A. Correct.

Q. Do you know what these wells are permitted for, the nearby deep SWD injection wells? Are they permitted for 40,000; do you know?

A. I don't know. I believe they could go higher, but this is what they've been operating at.

Q. And like taking a look at just as an example page, page 7 -- or let's look at page 6. That's scenario one. So there you have the five proposed Trove wells, and the three squares are the offsetting SWD wells in that area?

A. Correct.

Q. And then -- but this is already fast-forwarded through time to 2045; is that right?

A. Correct.

Q. So your slides don't include any of the five- or ten-year increments leading up to 2045?

A. I have that information, but I didn't provide it for this presentation. So there is not -- I know that's happened in other presentations like Mesquite and ones I've done in the past, but it's not -- there is not a formal requirement or something. We could do every single year or every six months or something like that. I just skipped to the end to see what that would be, since that seemed to be the most appropriate thing. We were at zero throughout that period and at 25 years. There is no fault slip potential.

Q. And I'm thankful you didn't do every six months because a lot of time and paper, and that is not going to be a requirement, right, every six months? Just kidding. Yeah. I'm here all day, so I'm happy to entertain.

(Laughter.)

Q. Now, on the geologic evaluation, this goes back to a question that Examiner Murphy asked earlier, which is that this is sort of a geologic study of the geologic formations for this entire area, right? It's not site specific to any particular well -- proposed well?

A. Well, it included the Trove proposed wells. So

there is actually one figure where they -- where Mr. McLaughlin put in a proposed Trove well through that. But I would say more so it's, you know, contours and so forth of that with those located on there and see how that fit. But it's not the individual well cross section of how -- of what Mr. Stone presented relative to picking the exact top and bottom of the injection interval.

Q. So this geologic evaluation doesn't have the thicknesses of the formations for each well like the thicknesses of the Montoya, the Simpson, the injection interval for each well -- each of the proposed wells?

A. Not for each of the proposed Trove wells.

Q. So is there anything in the C-108s -- and I'm just going to pick a C-108 out of the packet -- that shows the thickness of the injection interval for these proposed wells or the thickness of the Montoya-Simpson-Woodford; do you know? And I maybe should have asked this of Mr. Stone when he was up here.

A. So we have tops and bottoms of that whole Siluro-Devonian and his picked injection intervals, but the Montoya-Simpson does vary somewhat. We've been asked to provide those thicknesses and we will.

Q. Thanks.

And I realize you didn't prepare Figure 7,

so this might not be the right question to ask you. But there is a well here, the WLC-M No. 2, that I don't see any exhibits for or anything and it doesn't appear to be part of this case. Do you know the status of that?

A. You'd have to ask Mr. Stone that.

EXAMINER GOETZE: This is the WLC South?

MS. BENNETT: WLC Mid.

EXAMINER GOETZE: Mid? Okay.

Q. (BY MS. BENNETT) Let's see. I did have another question that just went away. Well, since I can't remember, that's all the questions I have. Thank you.

A. Thank you.

EXAMINER GOETZE: I have no further questions for this witness. I'll pass the witness.

EXAMINER MURPHY: Pass the witness. Thank you.

EXAMINER COSS: Pass the witness.

EXAMINER JONES: I'm all questioned out here.

EXAMINER DAVID: No questions.

MR. BRUCE: Excuse me. Is your last name Jones?

EXAMINER GOETZE: He still has all of the afternoon.

(Laughter.)

EXAMINER JONES: Yes. You'll be here, too.

EXAMINER GOETZE: That's right. You best be careful.

MR. BRUCE: I would ask that these matters be taken under advisement, Mr. Examiner.

EXAMINER GOETZE: At this point we would offer the State Land Office to present their statement with regards to the cases for which they made an appearance. And for the record, I believe it was Cases 20753, 20754, 20756.

Is that correct?

MS. ANTILLON: And 20760, yes.

Thank you, Mr. Examiner and Commission.

My name is Andrea Antillon. I'm here on behalf of the State Land Office.

As mentioned, we have entered an appearance in Case Numbers 20753, 54, 56 and 60. With regard to those cases, the State Land Office is reviewing those applications and has concerns with the saltwater disposal wells due to its proximity to State Trust Land.

Thank you.

EXAMINER GOETZE: With that, we will take Case Numbers 20752, 20753, 20754, 20756, 20757 and 20760 under advisement with the stipulation that there are additional information requests --

MR. BRUCE: Right.

EXAMINER GOETZE: -- and that they will be provided to those parties.

EXAMINER JONES: Did you already take 751 --

EXAMINER GOETZE: Yeah. We did 751 already. But we'll confirm that yes, we have also taken 20751 under advisement.

MR. BRUCE: And the five or six issues you've asked about.

EXAMINER JONES: And you're not worrying about 752 at this time?

MR. BRUCE: At this time. We will check that out.

(Case Numbers 20751, 20752, 20753, 20754, 20756, 20757 and 20760 conclude, 11:13 a.m.)

(Recess, 11:13 a.m. to 11:27 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.

DATED THIS 1st day of October 2019.

MARY C. HANKINS, CCR, RPR
Certified Court Reporter
New Mexico CCR No. 20
Date of CCR Expiration: 12/31/2019
Paul Baca Professional Court Reporters