STATE OF NEW MEXICO

ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION COMMISSION

IN THE MATTTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION FOR THE PURPOSE OF CONSIDERING:

CASE NO. 21381

Application of AMERDEV II, LLC for permission to inject in Lea County, New Mexico

REPORTER'S TRANSCRIPT OF PROCEEDINGS

COMMISSION SPECIAL HEARING

AGENDA ITEM NO. 4

THURSDAY, OCTOBER 8, 2020

BEFORE: ADRIENNE SANDOVAL, ME, COMMISSION CHAIR
THOMAS ENGLER, PhD, COMMISSIONER
NIRINJAN KHALSA, ME, COMMISSIONER
SALLY MALAVE, ESQ., COMMISSION COUNSEL

Reported by: Mary Therese Macfarlane
New Mexico CCR NO. 122
PAUL BACA PROFESSIONAL COURT REPORTERS
500 Fourth Street NW, Suite 105
Albuquerque, New Mexico 87102

A P P E A R A N C E S.

FOR AMEREDEV II:

Holland & Hart, LLP
By: Adam G. Rankin, Esq.
Post Office Box 2208
Santa Fe,NM 87504-2208
(505) 988.4421
agrankin@hollandhart.com

FOR OCD:

Office of General Counsel,
NM ENMRD
By: Eric Ames, Esq.
1220 S. St. Francis Drive
Santa Fe, NM 87505
(505) 476-3463
eric.ames@state.nm.us

FOR STATE LAND OFFICE:

Office of General Counsel
NM State Land Office
By: Ari Biernoff, Esq.,
P.O. Box 1148
Santa Fe, NM 87504-1148
(505) 827-5756
abiernoff@slo.state.nm.us

CONTENTS

E X H I B I T   I N D E X

APPLICANT AMEREDEV, LLC		ADMITTED
NO.	DESCRIPTION.	
1	Ameredev Application	112
3	Updated Exhibit 2	112
4	Letter to owners within AOR	112
OIL CONSERVATION DIVISION EXHIBITS		
1	Mr. Lamkin's CV 125	
2	Recommended Specific Conditions	125
3	Recommended General Condditions	125
4	Map of surrounding wells	134
5	Map of AGI wells	134
6	Inventory of UCI Class II AGI wells	135

(Time noted 9:00 a.m.)

COMMISSION CHAIR SANDOVAL: Good morning.

I'm basically making everybody a Panelist except the call-in users who I can't. So please, everybody, mute and unmute yourself. If one of the call-in users is one of the witnesses we'll, work through that and I'll figure out which call-in user number it is and we will all unmute that person.

All right. So I think our recording function is not working, so the court reporter may interrupt you if she cannot hear. Just make sure to speak into your mics, please.

All right, everybody. Good morning.

This is a hearing in Case No. 21381, Application by Ameredev for authorization to drill, complete and operate its proposed acid gas injection well AGI #1. The Oil Conservation Division through timely notice has intervened for the purpose of this hearing.

Will the parties please make their appearances for the record, beginning with Applicant.

MR. RANKIN: Commissioner Sandoval, Commissioners, Adam Rankin appearing on behalf of the Applicant Ameredev Operating, LLC. I will have three witnesses after appearances. Thank you.

MR. AMES: Good morning -- I'm sorry.

COMMISSION CHAIR SANDOVAL: Go ahead, Eric.

MR. AMES: Good morning, members of the Commission. My name is Eric Ames, appearing on behalf of the Oil Conservation Division, and with me today as a witness is Baylen Lamkin.

COMMISSION CHAIR SANDOVAL: Thank you. And I inadvertently left off the State Land Office also made an appearance.

MR. BIERNOFF: Yes, this is Ari Biernoff on behalf of the Commissioner of Public Lands and the State Land Office.

COMMISSION CHAIR SANDOVAL: Thank you.

This hearing will be conducted in accordance with the Commission's adjudication rules. This hearing will be held in a fair and impartial manner so as to ensure that the relevant parties be heard.

The hearing shall proceed as follows: All testimony will be taken under oath. I will admit any relevant evidence unless I determine that the evidence is unduly repetitious, otherwise unreliable, or of little probative value.

Any party who wishes to make a brief opening statement before presentation of his or her direct testimony may do so. The Applicant will present direct. Parties who have standing and filed a timely Prehearing

Statement or Notice of Intent to Present Testimony may present direct testimony.

Any party to this hearing may cross examine witnesses. Only the Commissioners or parties shall have the right to cross examine a witness. Cross examination by the other parties will be conducted at the conclusion of these presentations, followed by the cross examination by the Commission. Redirect examination will be permitted but such testimony is limited to testimony and at my discretion. A party who wishes to give rebuttal testimony or make a brief closing argument may do so at the conclusion of the testimony in the same order as the direct testimony.

Any objections concerning today's conduct may be stated orally during the hearing with the party raising the objections briefly stating the grounds for objections.

The ruling I make on any objection and the reasons stated for it will be stated in the record.

(Note: Agenda Items 1 through 3 reported buy not transcribed herein.)

COMMISSION CHAIR SANDOVAL: Now we will proceed with Agenda Item No. 4, which is Case No. 21381 which I was just so excited to get into earlier.

All right. Well, we will now proceed with the hearing.

Is there any admission of evidence or facts?

MR. RANKIN: Madam Chair, I don't believe there are at this time; however, I will just note the Applicant Ameredev Operating, LLC, has conferred with both the State Land Office and the Oil Conservation Division regarding certain general conditions and special conditions for approval that are being recommended by both the State Land Office and the Division, and Ameredev has reached agreement with both the State Land Office and the Division regarding those conditions of approval.

COMMISSION CHAIR SANDOVAL: The Applicant may wish to make a brief opening statement.

MR. RANKIN: Thank you, Madam Chair.

Ameredev Operating, LLC, seeks authorization in this case to inject treated acid gas for purposes of disposal through its proposed Independence AGI#1 well, which will he located in Section 20, Township 25 South, Range 36 East in Lea County, New Mexico.

The target injection zone will be approximately 16,230 feet to approximately 17,900 feet deep through an open hole completion.

The proposed well will inject treated acid gas up to a maximum of 12 million cubic feet per day, and a maximum surface injection pressure of 4,779 psi.

As you will hear, an Order approving this proposed AGI is critical to addressing an existing gas treating and disposal capacity issue in the area of the proposed well, where numerous existing wells operated by Ameredev and others are currently other shut-in or production is being curtailed due to this capacity issue, and where other wells that are planned are on hold due to this lack of capacity.

Ameredev cannot proceed with its plan to construct a gas treating facility to resolve this capacity issue until it has an Order approving this AGI. So this proposed AGI well is critical to resolving this bottleneck issue, protecting against potential waste as a result, and to ensure that Ameredev and offsetting operators can produce their fair share of production.

So time is of the essence here, so we greatly appreciate the Commission's willingness to hold this special hearing and accommodate our request for a special hearing date to hear this application during everyone's busy schedules. So I just want to make a note of that, and we appreciate your willingness to do so.

Ameredev will have three witnesses. The first, Mr. Floyd Hammond, the Chief Operating Officer for Ameredev. He will provide a brief overview of the company and its operations in New Mexico at a high level, and will explain the impact the current gas-treating disposal capacity issues have on their production.

Mr. Alberto Gutierrez of Geolex will address the relevant aspects of the C-108, as well as provide an overview of the site geology, hydrogeology, and the proposed AGI well system design and operation, the effects on the injection zone.

Mr. David White, also with Geolex, will testify on the potential for induced seismicity in the area as a result of the proposed injection, his analysis of subsurface pressure conditions as a means to confirm appropriate reservoir containment, and the results of the company's treated acid gas plume dispersion modeling.

As Ameredev witnesses will testify, the proposed AGI will protect human health and the environment, and will not result in waste or impair offsetting correlative rights.

Finally, Ameredev has agreed on a set of general and specifics conditions, as I noted, for the design and operation of the proposed well and the second redundant well through discussions with both the State Land Office and the Oil Conservation Division.

So for all these reasons, Madam Chair and Commissioners, we ask that the Ameredev application in this case be approved with the modifications as agreed to by the State Land Office and the Oil Conservation Division.

Thank you very much.

COMMISSION CHAIR SANDOVAL: Thank you, Mr. Rankin.

Does the Division wish to make a brief opening statement? You may also choose to do that at the beginning of your presentation of evidence.

MR. AMES: Thank you, Madam Chair. At this time OCD declines the opportunity to make an opening statement.

COMMISSION CHAIR SANDOVAL: Does the State Land Office wish to make an opening statement? You may also do it at the beginning of your presentation of evidence.

MR. BIERNOFF: The State Land Office will waive its opportunity to make an opening statement.

COMMISSION CHAIR SANDOVAL: Thank you.

The Applicant now may present its direct testimony regarding its application. Each witness will be sworn in at the beginning of his or her testimony.

Please call your first witness, Mr. Rankin.

MR. RANKIN: Thank you very much, Madam Chair.

May it please the Commission, we'd like to call our first witness, Mr. Floyd Hammond.

COMMISSION CHAIR SANDOVAL: Would the court reporter please administer the oath.

FLOYD HAMMOND,

having been duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. RANKIN:

Q. Good morning, Mr. Hammond. Will you please state your name for the record.

A. Floyd Hammond.

Q. By whom are you employed?

A. Ameredev Operating, LLC.

Q. How long have you been employed by Ameredev Operating, LLC?

A. A little over five years.

Q. What is your current position with the company?

A. Chief Operating Officer.

Q. What do your duties include as CEO of the company?

(Note: Sound adjustment.)

COMMISSION CHAIR SANDOVAL: It looks like he kind of scooted up a little bit in that seat.

THE WITNESS: I'm closer to the microphone.

Q. Mr. Hammond, maybe I'll re-ask that last question. What do your duties include as the Chief Operating Officer of the company?

A. Management of the day-to-day operations of the organization.

Q. And do your duties include the oversight and management of this proposed acid gas injection well in this application?

A. They do.

Q. And, Mr. Hammond, you're appearing today as a nontechnical fact witness just to provide overview and back the company; is that correct?

A. That's correct.

Q. You're familiar with the C-108 application that was filed in this case and presented to the Division as well as the Commission?

A. I am.

MR. RANKIN: And, Madam Chair, I'd like to be able to share my screen to present a copy of Exhibit 1 so I can confirm this was the C-108 that was filed on behalf of the Applicant here. (Note: Pause.)

I'm unable to do so. Is there a way you can give me permission to share my screen, Madam Chair?

COMMISSION CHAIR SANDOVAL: Yes. (Note: Pause.)

MR. RANKIN: Okay. Very good. In a moment I will be attempting to share my screen, and I will work to get to the correct exhibit.

Q. Mr. Hammond, are you able to see my screen at

this time?

A. I am.

Q. I'm going to scroll down, and will you just confirm, Mr. Hammond, that this appears to be the first page of what has been marked as Exhibit No. 1, which is the C-108 that was prepared by Geolex on behalf of Ameredev, LLC, and presented to the Division and the Commission in this case?

A. Yes, sir, it appears to be.

Q. I'll just represent it's 101 pages, so I won't scroll through the entire thing, but thank you for your confirmation.

I'm going to stop sharing.

Now, what is the name of the proposed well that Ameredev is proposing?

A. It is Independence AGI #1.

Q. Where is that well that's proposed to be located?

A. That's in Section 20 -- uh, 25 South, 36 East.

Q. Mr. Hammond, on the C-108 Ameredev II, LLC, is identified on the C-108, but to whom should the permit actually be issued to in this case?

A. Ameredev Operating, LLC.

Q. Will you just please briefly explain the relationship between Ameredev II, LLC, and the Applicant

here who should be the permittee, Ameredev Operating, LLC.

A. Yes. Ameredev Operating is a wholly owned subsidiary of the Ameredev II, and it is the operating company.

So it's the company with the OGRID number and it's registered with New Mexico as an operator. And that's where the operations take place.

Q. Now I'm going to attempt again to share my screen, Mr. Hammond, and I will ask you, once I do that, a few more questions.

Okay. Are you able to see my screen that I am sharing with you on your screen, Mr. Hammond?

A. Yes, sir.

Q. This has been marked as exhibit No. 2 -- a little difficult to see, but at the bottom here.

Will you refer to this exhibit on the first page. Will you just give us a little background on Ameredev: What is its businesses, where is its operations, and how long has it been operating in New Mexico?

A. Sure. Ameredev is an independent exploration and production company. We operate in Lea County, New Mexico, our operations are exclusively in Lea County, New Mexico. And if you refer to the map on the right side of the page, the yellow outline is our acreage plot.

If you refer to the blue dots this will show you where the proposed AGI is.

So in 2017 Ameredev started acquiring leases in this area, this area, this position, although myself, as well as a number of our other team members on our team, have worked in the Northern Delaware Basin building up assets in New Mexico over the last years.

Since that time we've drilled 21 wells, we've built out associated facilities, and are really excited about continuing to build up this asset.

Q. So the company's core development area is located within Lea County, New Mexico; is that correct?

A. That's correct.

Q. And your acreage position is focused entirely on the Northern Delaware Basin?

A. That's correct.

Q. Now, this proposed AGI unit indicated as the blue dot here on this map, that's approximately centrally located within your core development area?

A. It is. It's really centrally located in our development area and it's also pretty centrally located relative to a couple of the other operators in that area.

Q. So, Mr. Hammond, will you just briefly review for the examiners, give us a little background on what the need is for gas treating and disposal in this area of your

core development.

A. Sure. So, you know, currently we are connected to three different operators in this area. We are connected to Energy Transfer, Lucid and DCP. And between those three we've never been able to move more than about half of our gas to, uhm, for sales, and so we have a number of wells that are currently shut in or curtailed.

We have currently 17 wells on production. Of those, seven were shut in, two are curtailed currently. And then we, in addition to that, have six wells that are waiting on completion.

And that's just our operation. You know, we have a lot of conversations with the guys around us, and in those conversations they're very concerned about the ability to treat gas, and those guys are curtailing development, if not having to shut in wells, as well.

So there's a substantial need currently.

And I might add also, that there are hundreds of locations in this area that are held hostage by the need for acid gas disposal.

Q. So I just looked down on the next page of this Exhibit 2, and there are some bullets here that outline what you just went over.

In your opinion is the fact that these wells are shut in and unable to produce due to these

capacity issues, do they give rise, in your opinion, to concerns about waste and your ability to produce your gas on your leases?

A. Absolutely.

Q. And you have mentioned that there's hundreds of other locations and positions. Does the company have wells planned currently that are on hold due to the inability to treat and dispose of acid gas in this area?

A. We do. We have -- we currently have 89 approved permits, and we are -- we would like to be able to execute on those, but we are currently not running a rig until we have line of sight.

Q. Now, the proposed AGI well would serve not only Ameredev's gas but would also serve gas of others in the area, as well; is that correct?

A. It would.

Q. Have you had some discussions with those offsetting operators, as well?

A. Yes. We've had discussions -- we have had pretty extensive discussions with several of them and then some additional discussions beyond that. We definitely talked to, you know, Tap Rock, to Franklin Mountain, to Willis, and then, you know, a few other guys beyond that for (inaudible).

(Note: Reporter interruption.)

Q. Now --

A. I --

Q. My problem. I thought you were done.

Now, as part of this plan to drill an AGI you also need to construct a treating facility; is that correct?

A. That's correct.

Q. Now, for planning purposes, in order to proceed to, you know, construct that facility you need first to know that you have an approved permit to dispose of the resulting treated acid gas; is that right?

A. That's correct.

Q. So Ameredev is unable to proceed with its plans to build out this treating facility until you've got an approved AGI in place, so this approval here is sort of the bottleneck or the threshold issue for you proceed to address this overall capacity issue.

Is that a fair statement?

A. Yes. We've got a fair amount of the engineering work and have determined a lot of the long-lead items that we are going to need to acquire, and we have those, you know, teed up depending on the result of this hearing.

Q. So you won't be able to proceed until you have this Order on getting those other issues resolved on your treating plant, right?

A. That's correct.

Q. Now tell me a little bit about this overall capital investment necessary to construct both the plant and the AGI here. What are the costs, what are the capital that you're looking at here to get this whole project underway?

A. First, the AGI itself will cost about $10 million to construct. The treating facility associated with that will cost about $50 million.

Q. So I think you kind essentially answered this question already, but if you would just explain why it is that now Ameredev is proceeding with this plan to proceed with this treating plant facility and the AGI? Why now?

A. Sure. Ameredev entered into an agreement with another gas gatherer in conjunction with drilling our first wells out, and that gas gatherer was contracted to drill an AGI and build a facility. And in conjunction with telling us that they had, uh, no government approval to drill the AGI, they let us know that they would be unable to perform on their agreement.

At that point we started working very quickly going down this path to get up to speed on drilling an AGI. We knew that that was the solution. You know, we have H2S here, we also have some CO2, so a lot of the other solutions that exist, while they may be a solution for one of those components, they're really not the best solution when you have both.

So it's a pretty clear path that we needed to go down here to get an AGI in place to support the area.

Q. So they weren't going to be able to do that, so you needed to be able to do it yourself, essentially.

A. That's correct.

Q. And that's -- really the AGI and the treating plant is the only option available for Ameredev to proceed to develop these wells and get these wells that are currently shut in back on.

A. That's correct.

Q. Now, tell me approximately what is the injection capacity proposed for this proposed well?

A. It is up to 12 million a day of TAG gas.

Q. And Mr. Hammond, if you would, if you could translate what benefit that injection capacity will have on production in the offsetting area.

A. Sure. Obviously it depends on the composition of the gas coming into the facility, but that probably provides a solution for at least 200 million a day of gas (inaudible).

Q. Now, assuming you were to get an approved for an AGI well today, how much of that 12-million-cubic-foot-per

day injection capacity can Ameredev itself commit from day one?

A. Just the shut-in production, just the existing production without completing any additional wells is about 1.5 million a day of TAG.

Q. Now, right here, as far as this application is concerned Ameredev is proposing just one AGI well. Does Ameredev have plans to drill a second AGI well that can be operated either in conjunction with this initial well or as a redundant backup well?

A. Yes, that's correct. We've intended to drill a second well and we've worked together with the OCD on the time for that.

Q. And what was -- what's the agreement as to the time frame and the sequencing for the proposed second well?

A. So within 12 months from the Order being issued we will apply for a second well based on the same parameters as the first well.

Q. Now, in the interim, during the time between which you got your first well approved and operating and the time the second well comes on, how will Ameredev deal with any operational or maintenance issues that might arise in the first AGI until a second well is permitted, approved, and completed and operational?

A. Well, we will continue to shut in wells as needed. We currently deal with some of these issues. Our current takeaway options are interruptible, and so we're kind of mostly exposed by each of the third parties that we deliver gas to currently. So, you know, we -- you know, those companies may lose a compressor or have some kind of an issue. That, you know, happens generally once or twice a week between the three counter parties that we deliver gas to currently, and when it does we shut in gas to avoid flaring.

Q. Now, you have reliability issues, it sounds like, on a regular basis. What symptoms does Ameredev have in place to respond in real time to those interruptions or upsets that enable a company to shut in its wells? Just review for us how that works and the timing involved.

A. Sure. We operate a control room that's manned 24 hours a day, and then we have slam valves on the wellheads. We are able to remotely slam the wellheads and it usually takes about 90 seconds to react.

Q. So the same systems would be in place here for these same wells that would enable you to shut in these wells in relatively seconds in order to prevent flaring should there be any operational issues with this first AGI?

A. That's correct.

Q. And in your opinion will the addition of this AGI and your proposed treating facility, will it increase the operational reliability of the upstream operations of wells and reduce the likelihood of having to shut in wells, and otherwise eliminate potential waste?

A. It will.

Q. Mr. Hammond, the Division has proposed two additional specific conditions of approval which were marked as OCD Exhibit No. 2. Rather than trying to get that here on the screen, have you reviewed what has been marked as OCD Exhibit 2?

A. I have.

Q. And are those specific conditions acceptable to Ameredev?

A. Yes, they are.

Q. Now, the Division has also proposed a set of General Conditions of Approval marked as OCD Exhibit 3.

Have you also reviewed those general conditions and are they acceptable to Ameredev?

A. I have and they are.

Q. Now I'm going to flip my shared screen here to page 3 of this Exhibit No. 2. If you would just give us an overview of the timeline here upon approval and how Ameredev intends to operate this well.

A. As I said, we are ordering -- we will be ordering a number of long-lead items as a result of this hearing.

The timeline to spud the well is probably in a three- to six-month range by nature of getting all the long-lead items, but as soon as we have that, we will commission a rig and drill the AGI well.

So we are intending to, in conjunction with drilling this well, contribute this to joint venture partnership with another entity. And Ameredev has the expertise and ability to complete wells, we are not experts in necessarily running gas-treating facilities, so we put together that, and we are forming this joint venture along with the team that Ameredev has put together in order to do two things: One, bring in some additional capital to support building the asset; and two, to have a third-party agreement where we can work with other third parties to bring their gas in, and basically make the solution bigger.

And those third parties, as well as Ameredev, need to have the common assurance that they would have a (inaudible) arrangement, and in order to provide that we thought it best to set this up in a separate entity so that people don't view it as just an extension of Ameredev.

Q. And if you would, Mr. Hammond, just what would be the initial capacity of your treating plant, and then will it be expandable?

A. Yes. So we are setting -- the first train we are setting for 40 million a day -- for 80 million a day, I apologize. We are setting at least enough compression for 40 million a day from Day One, and we will continue to expand that to handle the gas that is delivered.

Q. And once you have this new entity, this joint venture created and set up with the Division as an overview, will you then seek to transfer operatorship of this AGI well to that new entity?

A. Through the joint venture, yes.

Q. And that will be contingent upon the Division or Commission approval of the transfer?

A. It will be.

MR. RANKIN: Mr. Hammond, at this time I have no further questions.

Madam Chair, I would move the admission of Exhibit 2 into the record and will pass the witness for questioning.

COMMISSION CHAIR SANDOVAL: Okay. Any objections from the parties regarding exhibits?

MR. AMES: No objections.

MR. BIERNOFF: No objection.

COMMISSION CHAIR SANDOVAL: Commissioners, any objections?

COMMISSIONER ENGLER: No objections.

COMMISSIONER KHALSA: No objections.

COMMISSION CHAIR SANDOVAL: Ameredev Exhibit 2 is entered into the record.

Mr. Ames, would you like cross the witness?

MR. AMES: Yes. I just have a few questions for Mr. Hammond, please.

COMMISSION CHAIR SANDOVAL: Go ahead.

CROSS EXAMINATION

BY MR. AMES:

Q. Good morning, Mr. Hammond.

A. Good morning.

Q. Great. I just have a couple of questions for you just to clarify a couple of things you said.

If I understood correctly, you said that Ameredev currently sends its gas to three processing plants. And I heard Lucid and Energy Transfer but I didn't hear the third. I couldn't hear it clearly. Who was that?

A. DCP.

Q. Okay. Which DCP plant?

A. The Eunice plant.

Q. Okay. Thank you.

And I heard you say, as well, that the projected capital expenditures for the facilities would be 10 million for the Independence AGI and 50 or so for the plant itself.

What do you antipasto the cost for the second AGI well to be?

A. 10 million.

Q. Okay. It's going to be built essentially the same at the Independence; is that right?

A. That's correct.

Q. And Ameredev did factor those costs into its analysis?

A. Yes.

Q. Okay. Excellent.

And then I heard you acknowledge that Ameredev accepts or agrees to the specific conditions regarding a redundant well and well construction. That's correct?

A. That's correct.

Q. Okay. And Ameredev is aware that the condition states in essence that if Ameredev doesn't build that redundant well or tries to back out of the agreement to build that redundant well, it must shut down Independence AGI, as well?

A. That's correct.

Q. And then finally, with respect to the specific condition regarding well construction, are you aware that that condition gives to OCD the discretion to decide whether the final design for the Independence AGI is acceptable?

A. That's correct.

MR. AMES: Okay. That's all I have. Thank you, Mr. Hammond.

COMMISSION CHAIR SANDOVAL: Thank you.

Mr. Biernoff, would you like to cross the witness?

MR. BIERNOFF: Thank you, Director Sandoval. I don't have any questions for Mr. Hammond.

COMMISSION CHAIR SANDOVAL: Thank you.

Commissioners, do you have any questions for the witness?

COMMISSIONER ENGLER: Yes, I do. This is Tom Engler.

Good morning, Mr. Hammond. Can you hear me?

THE WITNESS: Good morning. Yes.

COMMISSIONER ENGLER: I have a quick follow-up on what Mr. Ames said.

CROSS EXAMINATION

BY COMMISSIONER ENGLER:

Q. You've talked or had conversations with those midstreamers, Lucid, DCP, and, what, Energy Transfer. Correct?

A. That's correct.

Q. Are you aware that at least several of those are proposing or have approved additional AGI capacity?

A. Yes. We've been working pretty closely with Lucid on what they're proposing.

Q. Is it possible, then, with their additional capacity that maybe you'll find a secondary possibility of using their facilities to dispose of your AGI?

A. That's not the plan. We are actually working with them to potentially take some of their gas into this facility for treating in the interim.

Q. I'm sorry. Let me stop you. So you're -- say that again, please.

A. I said that's not the plan. We are actually working with them to take some of their most-sour gas that's in this area into this facility for treating.

Q. Okay. So you --

A. I --

Q. Sorry. So some of their gas is going to go to your proposed well, your Independence. Is that what you're saying?

A. Potentially, yes. If you look at what they were proposing, their blend is almost entirely CO2. They are really focused on treating CO2.

This area has a lot more H2S, and so there are other challenges associated with moving this gas several miles across the Basin, and I think collectively we would prefer to treat it closer to the location where it's produced.

COMMISSIONER ENGLER: Thank you.

COMMISSIONER KHALSA: This is Commissioner Khalsa.

CROSS EXAMINATION

BY COMMISSIONER KHALSA:

Q. Mr. Montoya, I just have one question for you. Maybe I missed it in your testimony, but does Ameredev have any other AGIs that it operates?

A. We do not.

COMMISSIONER KHALSA: Okay. Thank you.

CROSS EXAMINATION

BY COMMISSION CHAIR SANDOVAL:

Q. Building off of Commissioner Khalsa's question: Have you ever operated a treating plant before?

A. I have, but I'm not really the expert. We have brought in a team of guys who have built, I think this will be their eighth treating facility.

Q. And do they also have experience operating the

treatment and then injection?

A. Definitely.

Q. Okay. So you feel confident that Ameredev can operate it, but are you then saying it's going to be transferred to a third party?

A. Well, the joint venture is the team that Ameredev has put together.

Q. So it would be consistently operated by the same people.

A. That's correct.

Q. Okay. Do you have any -- so you said you have already dealt with, you know, kind of operational issues affecting the gathering and production side. So do you guys have like a notification plan for if this AGI or the treatment facility goes down so as to prevent any potential impacts to safety, health on the production sides since they would likely be flaring?

A. Well, the information will all come into the control room, but we have an H2S contingency plan for our current facilities, and we are working along with the front-end engineering on this project to develop the H2S contingency plans for this facility and the associated equipment.

So in reality, yes, we have a plan, but the plan is not to go to flare or vent.

Q. So what would the option be, then? If your treatment or AGI facility goes down, the gas has to go somewhere. Are the wells going to shut in?

A. The wells shut in. That's what I'm saying.

We have slam valves. It takes about -- it takes about 30 seconds for those slam valves to close, but generally by the time that we see that the takeaway is down and the pressure starts to build, then it takes, you know, a few seconds to react, but then we have it set up where you can shut down -- you know, start shutting down wells in a matter of about 90 seconds is usually what we're averaging. If we have to shut down the whole field, maybe that takes three or four minutes.

But that's what the set-up is.

And we do have emergency flares and what have you, but we try not to use those.

COMMISSION CHAIR SANDOVAL: Okay. Thank you.

Mr. Rankin, would you like to redirect your witness?

MR. RANKIN: Madam Chair, no. I have no further questions.

COMMISSION CHAIR SANDOVAL: Thank you. Please call your next witness.

MR. RANKIN: Thank you, Madam Chair. If it please the Commission, we would like to call our next witness, Mr. Alberto Gutierrez.

ALBERTO A. GUTIERREZ,

having been duly sworn, testified as follows:

COMMISSION CHAIR SANDOVAL: There's a lot of echo from you, Mr. Gutierrez.

MR. RANKIN: Okay. I think -- we'll try to address that echo hopefully.

DIRECT EXAMINATION

BY MR. RANKIN:

Q. Mr. Gutierrez, will you please state your full name for the record.

A. Alberto A. Gutierrez.

(Note: Pause in proceedings to discuss sound issues.)

MR. RANKIN: We'll see how this works.

Q. Mr. Gutierrez, will you state your full name for the record.

A. Alberto A. Gutierrez.

Q. Mr. Gutierrez, by whom are you employed?

A. I'm employed by Geolex, Incorporated.

Q. And what is your position with Geolex?

A. I'm the president of Geolex.

Q. Have you permitted AGI wells or acid gas wells in the past?

A. I have. I have aided in the installation and operation of every one in this state.

Q. Have you testified before the Division and the Commission and had your credentials as an expert in petroleum geology, AGI operation and design, hydrology and groundwater contamination accepted and made a matter of record?

A. Yes.

Q. Did you prepare the C-108 that has been marked as Exhibit No. 1 provided to the Division and filed with the Commission?

A. Yes. Geolex prepared that C-108 under my direction and supervision. I prepared it, as well as Mr. White.

Q. And will your testimony address the relevant aspects of the C-108, as well as the overview of the site geology, hydrogeology in the proposed AGI wells as to the design, operation, as well as your analysis of the effect of the injection zone?

A. Yes, it will.

Q. And have you prepared a Power Point presentation summarizing your analysis and opinions regarding the proposed well?

A. Yes, I have.

MR. RANKIN: At this time, Madam Chair, I would move -- or, rather, tender Mr. Gutierrez as an expert in petroleum geology, AGI operation and design, and hydrology and groundwater contamination.

COMMISSION CHAIR SANDOVAL: Any objections from the parties?

MR. BIERNOFFb: None from the State Land Office.

MR. AMES: No objection.

COMMISSION CHAIR SANDOVAL: Commissioners, do you have any questions or objections?

COMMISSIONER ENGLER: No objections.

COMMISSIONER KHALSA: No objections.

COMMISSION CHAIR SANDOVAL: Mr. Gutierrez is tendered as an expert in this area. Please proceed.

MR. Rankin: Thank you, Madam Chair.

Q. Now, the C-108, Mr. Gutierrez, that you prepared, does it contain all the information that you believe is required to approve the application?

A. Yes, it does. And in fact it also -- in addition we carried on some negotiations with the OCD and incorporated some additional changes that are reflected in the presentation.

Q. Mr. Gutierrez, at page 31 of the C-108, Exhibit 1, is there an affirmative statement that you signed stating that there is no hydraulic connection between the proposed injection zone and known sources of drinking water?

A. Yes, that is correct. And there is none.

Q. Mr. Gutierrez, I'm going to share my screen, and if you would, will you walk the commissioners through your presentation summarizing the C-108 application and your analysis supporting its approval.

A. Yes, I'd be happy to do that.

MR. RANKIN: Madam Chair, just one point of housekeeping here. I intend to present Mr. Gutierrez for the bulk of the presentation, but then I would like to recall him at the end to summarize, so I propose that once Mr. Gutierrez finishes this portion of his testimony that the Commission and other parties cross examine him on those aspects. And if no one else objects, I would like to recall him just to provide a summary at the end, and then, of course, if there are any other questions or issues then the parties and the Commission certainly could, uh, present any additional questions at that time.

COMMISSION CHAIR SANDOVAL: That's fine.

Q. Mr. Gutierrez, let me just share my screen.

As we proceed if I have any questions or ask for any clarification, I may interrupt you, but please proceed.

A. Okay. I think the first few slides in here we can just dispense with because we've already dealt with them. Let's start with slide No. 5, which is the Key

Elements of Ameredev's C-108 Application.

I'm going to go through this presentation. Please feel, anyone, to stop me at any point and ask any questions that may come up.

But what I would like to do is give an overview of the proposed project and all of the considerations that have taken place in development of the C-108 and subsequent work to come to this point with Ameredev's application.

One of key elements of this and any other AGI project is that they have substantial environmental benefits because of the sequestration of CO2 which would otherwise be released in the atmosphere, and because, as Mr. Hammond described in his testimony especially, in a case like this where their area is underserved by treating capacity, it will help reduce waste and air emission by eliminating unnecessary flaring or shutting in of wells, or, of course, operating an SRU, which is trouble in and of itself.

We looked at all of the nearby oil and gas wells, water wells, surface water in the area, and we have designed the AGI and looked at the geologic conditions of the reservoir in order to be able to protect all of those resources, both the fresh-water resources, as well as other oil and gas resources and correlative rights.

We did a very detailed interpretation of the seismic, in the area and available log, and made allowance for an accurate delineation of the reservoir, and assuring that nearby salt water disposal wells and producing wells will be adequately protected by the design of the well and by the geology in the area.

In addition, this provided the basis for some detailed fault-slip probability analysis, which was -- the results of which indicate that there is a very low-to-nil probability of induced seismic events resulting from the proposed well.

Additionally we did some additional slip probability simulations which both excluded and included the proposed AGI, and included and excluded some additional wells in the area, as well as varying disposal rates on already permitted wells.

Next slide.

The injection simulations, we did very detailed injection simulations initially that are presented in the C-108, and then subsequently, which have been provided to the agency, which includes some additional wells which are under consideration now but which were not information on -- the potential existence of those wells was not available to us, and wasn't available to anyone, really, in terms of the Division's data base, because they were applications that were pending.

The C-108 includes all the required information needed to approve the well. And I want to emphasize about the H2S contingency plan which was a subject that was raised earlier.

Clearly the treatment facility, as well as the AGI, will require a fully approved H2S contingency plan that's consistent with Rule 11.

We've done these plans for every one of the facilities that we've worked on previously, and of course the plan will include coordination with all the state and local emergency planning committees, including the representatives of the City of Jal, which is the nearest population center to the proposed facility.

And we've done this before on three other AGI plans that are located close to the City of Jal for both Targa Energy Transfer in that area, and for Monument.

So it's certainly something that we are well familiar with, and we will make sure that it gets done and that it is approved before any injection takes place. That is anticipated as a condition of the Order.

Basically from the administrative point of view, all of the parties that are stakeholders in the area have been provided Notice in advance of this hearing and have been provided complete copies of the C-108 back in July when it was filed with the agency.

So let's talk a little bit about the location of the project, talk about the background.

As Floyd mentioned, the gas treating facility will be located in Section 20, 25 South, 36 East in Lea County. You will see the map on the next slide.

Right now they've got approximately 320 acres of land on which they can build both the treating facility and the AGI #1, as well as the subsequent AGI #2.

This AGI will be drilled about approximately 829 feet from the north line and 1443 feet from the west line, approximately, of Section 20, and it will be drilled as a vertical well, completed approximately from about 16,230 to about 17,900 feet. And I emphasize "approximately" because we don't have very close control of the specific depths, but we are confident that they will come in plus or minus a few feet of those depths.

Next slide.

There you just see the location map. It's very similar to the one that Floyd showed you, but you can see it's kind of located approximately six or so miles west of the City of Jal south of Route 128.

The overall site, as I mentioned, is about

320 acres. You see kind of the west half of Section 20 there is what is affected. Those lands are owned by a wholly owned subsidiary of Ameredev II.

And the sweetened gas is intended to be sweetened by amine units which will comprise the treating facility, and then piped to the AGI compressors and then to the AGI well.

All of the proposed facilities will be located within the plant area on Ameredev's plots.

The calculated -- based on the procedure which OCD has outlined for requesting maximum allowable pressure, which came to 4,779 psi for the proposed Independence AGI #1. This MAOP, as you can see on the right there, using the approved methodology which OCD has used for an initial determination of MAOP without a step-rate test. Of course we will do a full step-rate test in follow-up, but we don't anticipate any need for getting anywhere close to this MAOP; in fact we are anticipating our injection to be running somewhere approximately less than half of the pressure of the MAOP.

Next slide.

Let's talk a little bit about the system design. It's pretty similar design to many of the other AGIs that are being put in. For this particular AGI, the anticipated and modeled composition of TAG is approximately 70 percent CO_2 and 30 percent H_2S, with some trace nitrogen and light hydrocarbons which we always see as a kind of holdover, sometimes from the amine unit.

The treated acid gas will be transmitted to the amine system and then to the compressors on the well site via a low-pressure pipelines. We'll see a diagrammatic representation of that on the following slide.

Let's just go to the following slide and I can point out the rest of these items here.

You see here on the -- I don't have a pointer but on the right-hand side at the top you see the low-pressure line that comes from the sweetening system along with two automatic safety valves that will shut off the compressors, if need be. Those go into the compressor facility located there at that box diagrammatically. Furthermore, we have safety valves on the downstream side of those.

Then we go to the wellhead and then we also have, as we know, a subsurface safety valve at approximately 250 feet in the tubing of well. The well is constructed as -- and we'll look at the detail design later, but it's a four-string design that will separately isolate the Salado and the Capitan Reef.

Those are some changes to the design that were made as a result of consultation with the agency, and we will be working with OCD to get a final approval. I think the design has essentially been submitted already which I think is capable of being approved, but we may have some little variations depending on material availability that we hope to have the flexibility for the agency to review and approve.

As you can see we will have a packer above the open hole interval and we will open hole the completion in the Devonian.

Let's move to the next slide.

This gives you a detailed design of the well itself as we have submitted, and I think in general agreed with the agency. We haven't gotten specific feedback from the design but maybe we'll hear that from the Agency's testimony today.

But this design adds a fourth string of casing in which -- all of which are cemented to the surface. The surface casing used to isolate all of the fresh water resources down through the red beds.

Subsequent intermediate casing, the first intermediate 20-inch casing will take us through the Salado and isolate that zone.

The second intermediate casing, 13 5/8 will take us through the Capitan Reef and the Wolfcamp, and it will isolate the Capitan Reef.

And then -- I'm sorry, not the Wolfcamp. The shallow producing unit.

Then the third intermediate will protect the deeper producing units of the Bone Spring, Strawn, Wolfcamp and Atoka.

Then we will run the final production string down to the top of the injection zone and set it in the Woodford immediately above the Devonian.

The bottom 300 feet of that production stream will be CRA casing to set the packer in, as will the bottom 200 feet of the tubing, to prevent the corrosion.

All of those strings will be cemented to the surface verified by 360-degree CBL.

So, as I mentioned, this is the basic design that we've agreed upon, I think, with the agency, to isolate those zones. While there may be some minor modifications either in materials or when we get to purchasing the materials, we will stick with this basic design.

A very important part of these well installations for AGIs are the logging reservoir testing and monitoring that will take place, and this is especially important in this case where we will have a significantly greater data base to be able to plan and design the second well, because we will have direct data developed from the first well right on the site about the reservoir and what it actually will do or not do.

Certainly we will conduct mud logging, detailed mud logging at all depths below the conductor casing. We will -- from 1400 feet on, which is the bottom of the surface casing, we will log the well with a full triple combo gamma ray formation density resistivity, neutron density and sonic to allow us to have a complete geophysical log sweep of the entire well.

The actual injection zone and caprock will be also logged, using an anti (inaudible) or equivalent formation microimager to give us very detailed information on the caprock and the reservoir.

In addition we intend to collect sidewall cores from selected intervals that will be selected based on the geophysical logging for getting a good idea of the porosity and permeability of the borehole itself, and lack thereof of the caprock and zones isolating the injection zone.

Following a slight acid treatment in the injection zone, we will install bottom-hole PT sensors and run a detailed injection and step rate and warm-back test, which will include a 10-day fall-off test which will allows us to get a much better sense of the condition of the structural and potential structural barriers in faults in the area of the injection zone.

We will also outfit the well with permanent bottom-hole PT sensors that will allow for long-term monitoring of the reservoir behavior.

So we've got a very robust logging and testing and monitoring program planned for the well, as we do for all AGI.

Next slide.

From an administrative point of view, I want to emphasize the complete C-108 was sent to all of the adjacent stakeholders in the AOR within a mile of the proposed well via Certified Mail. We received all of the return receipts, and I believe at this point we have an exhibit that we would like to show the Commission with respect to those Notices.

Q. Mr. Gutierrez, I'm going to switch screens here and ask you just to review, if you would, some of the Notice issues.

Mr. Gutierrez, who was the surface owner of the location of the proposed well?

A. Ameredev.

Q. And is what's been marked as Exhibit 4 on the front page, is this a copy of the letter that was sent to

all affected parties within a one-mile radius of the proposed location, including the surface owner in this case?

A. That's correct. This was sent to all of the surface owners within the AOR, as well as the other stakeholders, lessees, operators, mineral owners, et cetera. And also along with this letter went a complete copy of the Application.

Q. And the letter identified that the hearing was to be set originally on September 17th and that that case had been continued to a special hearing date.

Did the green card receipts come back form every affected party within the Area of Review?

A. They did.

Q. So every interest owner, operator, or if there was no operator then a working interest owner, actually received a copy of the Application as well as a Notice of the hearing?

A. They did. This is what we are looking at on the screen right now. You're going through the receipts.

Q. Thank you very much, Mr. Gutierrez. No further questions on Exhibit No. 4 at this time.

A. Okay. If we could switch back to the slides. Okay.

Obviously the Notice of the Application and the original hearing and then the subsequent rescheduled hearing were published by the Commission, and there were no and are no outstanding objections to Ameredev's application.

And I think that it's worth mentioning again that the AGI project is critical to supporting the production in the area by allowing for increased production capacity of these sour gas resources; also by allowing for increased reliability of the treatment of already existing gas, plus bringing new wells on so thereby increasing royalties paid to the State, as well as protecting fresh water resources and correlative rights.

And it also -- the fact that we're going straight to the Devonian avoids concerns that the agencies may have about DMG as a disposal zone.

So in general all of the adjacent operators and stakeholders have been notified and there have been no objections, and in fact it's a project that's supported by not only Ameredev's production but the desire of other producers to have a more reliable treatment of their gas.

Let's talk a little bit now about the technical details of the geology in the area.

The proposed well is located on the northeast margin of the Delaware Basin just off of the west/northwest portion of the Central Basin Platform.

The deposits in this area at the surface are basically unconsolidated aeolian and alluvial deposits with some local exposures of underlying redbeds. Those are the deposits which contain any fresh water resources, if they exist in the area, and those will be protected by the surface casing.

Approximately then we've got about 9,000 feet of Permian overlying about 8,000 feet of Paleozoics that include the Pennsylvanian all the way through the Devonian and Silurian section. The Devonian Woodford Shale is about 300 feet thick in this area and provides a very good caprock that seals the injection reservoir with an additional 6- or 900 feet of overlying Mississippian units that are also very low porosity and permeability.

Our targeted injection zone is the Upper Devonian, Wristen, Fusselman, and ending with the top of the Montoya, or just above the top of the Montoya.

Our analysis of the seismic in the area indicates good potential reservoir in this area, as do the results of the model.

The local structures include a few normal faults which are oriented parallel or sub-parallel to the trend in the Central Basin, and my colleague David will talk about these things in more detail.

But we generally found that these are

faults that are contained within the Devonian and peter out above it in the Woodford and the Mississippian, even though some structural elements may continue.

Next slide.

This just give you a very quick review of kind of the Delaware Basin, as opposed to the other units that comprise the Permian Basin as a whole. And here you can see, where I have got red stars on the zones, those are zones that are either productive or potentially productive in the Delaware.

Next slide.

The well which is the West Jal Deep Well was used as the key log well for this evaluation, because it is fully penetrating of the injection interval. There are only a couple of wells that penetrate the injection interval in the (inaudible) area. This well was used not only to calibrate our seismic and do porosity and permeability modeling for the area, but also to give us some detailed stratographic control on what to expect.

Next slide.

The structural geology in the area is fairly straightforward. You see a couple of faults that identified in review of the 3D seismic data, and a cross section between the two wells that penetrate the injection zone and our proposed AGI as shown from north to south

A/A-prime here.

You can see this on the next section, next slide that is shown. Be aware that we are going down dip from A on our well and then up dip to the other well. And this is obviously vertically exaggerated, but you can see our injection zone shown here in blue, and comprising the permeable and porous units that you see outlined in yellow in the upper portion of the Devonian and then within the lower portion of the Devonian Fusselman. That's really where we anticipate the major porosity based on what we have seen on the model in this area.

As I mentioned -- just go back one second.

You don't see all of the overlying, but you see the brown which represents the Woodford Shale, and then there's about 900 feet more of low porosity, low permeability precipitated carbonate. We've got good protection.

The ground water conditions in the Area of Review, is there's basically very little ground water. There are two wells within the area that have gone to a depth of about 500 feet or 550 feet. Both are operated by NGL, and those are wells that are pretty lousy water-well producers but as good as you get in this area, and they do produce from both alluvial and aeolian.

Those zones will all be protected, and we will have surface casing that will extend at least 800 to 900 feet below the base of any fresh water.

Next slide.

We obviously did a review of all of the wells within a two-mile zone and then within a one-mile of the AGI. This is what is shown on this slide.

There's six existing wells within the one mile, including one active well, one permitted well, and four plugged wells.

There also -- there is another well under consideration which the Agency asked us to include in the modeling and we will, the Cobra well, which we will talk about that a little bit later, and David will cover in his presentation.

Only two of these wells penetrate the injection zone. One was properly plugged way back in '84, which is the West Jal Unit #1. And then the West Jal B Deep Unit #1 is currently an active salt water well. It's operated by BC&D. They've been notified of the project, it's about a mile away, and they don't have any objection to the proposed well.

Next slide.

So let's just take a break and stop for a second and just refocus and review on what are the ideal characteristic that we look for in any reservoir for permanent disposal of acid gas. Well, of course, one, and most importantly: Do we have a reservoir that has got a geologic seal that's permanently able to contain the fluid? Is it well isolated from fresh ground water? Is the structure and the design of the well such that it will have no potential effect on existing or potential production in the area?

Then we want a reservoir that is laterally extensive, has good permeability and porosity so that we have good capacity in the hopes of having excess capacity for the anticipated injection well.

Then compatible fluid chemistry, which is something that we have seen consistently throughout the Devonian and Fusselman in this area.

Bottom line? Ameredev's proposed AGI ticks all these boxes, so we are in pretty good shape on all of these.

Next slide.

I'm going to turn over my computer here to David White from our office who has done the detailed work on evaluating the slip potential and the evolution of the plume, as well as the potential for excursion of fluid out of zone in this area. He's done those detailed analyses, and I will be turning over the presentation to him now so that he can make that part of the presentation, and then

I'll try and come back and hopefully tie it all together at the end.

MR. RANKIN: Madam Chair, at this point I thought it might make sense to allow the other parties and the Commission to ask any questions of Mr. Gutierrez based on his testimony to this point, unless the Commission would rather wait till the end to ask those questions.

COMMISSION CHAIR SANDOVAL: I think we prefer to wait.

And let's take a five-minute break, too.

(Note: In recess from 10:34 a.m. to 10:40 a.m.)

COMMISSION CHAIR SANDOVAL: All right. Looks like we have everybody the.

We will hold our questions for Mr. Gutierrez until the end.

MR. RANKIN: Thank you, Madam Chair. Sounds like everybody's here, so with permission I'll proceed to introduce our third witness, Mr. David White.

DAVID WHITE,

having been duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. RANKIN:

Q. Mr. White, will you please state your full name for the record.

A. David Alan White.

Q. By whom are you employed?

A. Geolex, Incorporated.

Q. What is your position with Geolex?

A. I'm a geologist and project manager.

Q. Have you previously testified before the Oil Conservation Commission?

A. Yes, I have.

Q. At the time of your previous testimony did you have your qualifications accepted as a matter of record as an expert in petroleum geology?

A. Yes, they were.

Q. Did you contribute to the analysis supporting the C-108 application that has been identified as Exhibit No. 1?

A. I did.

Q. And will your testimony address the potential for induced seismicity, subsurface pressure conditions that were used to assess reservoir containment of the proposed injection, and will you also be testifying regarding the treated acid gas modeling that was done?

A. Yes, I will.

Q. Did you also prepare a portion of the Powerpoint presentation for today's hearing that is marked as Exhibit No. 3?

A. I did.

MR. RANKIN: At this time, Madam Chair, I would retender Mr. White as an expert in petroleum geology.

COMMISSION CHAIR SANDOVAL: Any objections from the other parties?

MR. AMES: No, ma'am.

MR. BIERNOFF: No objection.

COMMISSION CHAIR SANDOVAL: Commissioners, do you have any questions or objections?

COMMISSIONER ENGLER: No objections.

COMMISSIONER KHALSA: No objections.

COMMISSION CHAIR SANDOVAL: Great. Mr. White is accepted as an expert in this field.

Please proceed, Mr. Rankin.

MR. RANKIN: Thank you, Madam Chair.

Q. Mr. White, will you please pick up where Mr. Gutierrez left off, and starting here at Slide No. 24, Exhibit No. 3, where you address the potential fault-slip potential analysis that you conducted. Thank you.

A. Yes. So moving along, continuing with our work in support of the Ameredev AGI, Independence AGI Ameredev application, Geolex did conduct an induced seismicity risk assessment in the area of the proposed well to evaluate the potential for induced seismic response to the proposed injection.

COMMISSION CHAIR SANDOVAL: Mr. White, we are having a hard time hearing you. You may have to yell at your computer --

THE WITNESS: Sure thing.

COMMISSION CHAIR SANDOVAL: -- or get real close.

Thank you.

THE WITNESS: I'm going to try turning up the mic just a little bit. Okay.

COMMISSION CHAIR SANDOVAL: Okay. Thank you.

A. (Continued) So the components of this induced seismicity risk assessment first included review or interpretation of licensed 3D seismic survey data in order to identify subsurface features in the area of the proposed well followed by fault-slip probability modeling of an eight-well, 30-year acid gas injection scenario that simulates both operation of the proposed AGI well as well as considers nearby SWD operations; produces an associated assessment of risk of induced seismic event in response to that proposed injection scenario.

This work, the slip-probability simulations were completed utilizing the Stanford Center for Induced Triggered Seismicities fault-slip potential model.

We can go to the next slide.

As noted in the introduction, the first component of this assessment includes evaluation and interpretation of seismic, and 3D seismic survey data to identify subsurface faults in the area to be included in the simulations.

In total eight faults, typically trending north/south were identified in the area. These features are shown on the map included to the right annotated numerically. The nearest faults to the proposed AGI well lie approximately one mile to the north, which is denoted as Fault No. 2 in the map and one mile east of the proposed well location and denoted as Fault No. 4.

(Note: Reporter inquiry. Discussion on sound.)

So I'll continue and just and remain leaning forward towards the microphone.

But in this fault slip, as I mentioned in the introduction this fault slip probability assessment, I included eight injection wells, including the proposed AGI that were simulated. The SWD is included in the model simulation to reflect active, approved and previously operated wells within eight miles of the proposed location.

These wells included are shown in the map to the right and include those wells demoted by blue and green icons within the red eight-mile radius, as well as including active and approved wells.

We also included in our simulations the

proposed Cobra SWD #1 well which currently does not hold an approved injection Order, however it was included due to its proximity to the proposed AGI well location.

Upon completion of our review of the seismic survey data and understanding of the subsurface features in the area of the proposed well, the fault slip potential model first utilizes those input parameters describing local stress conditions and fault geometries to determine the required core pressure increase -- the required increase in core pressure to induce motion along each simulated fault feature included.

In general faults in the vicinity of the proposed AGI well were observed to be steeply dipping in seismic survey data, and the majority typically trending approximately north and south in the area of review.

On the table shown to the right we included all of the assumed model input parameters that were utilized for simulations presented today.

With this understanding of subsurface features in the area, in order to accurately characterize those in the fault-slip probability modeling software, those eight main faults identified were subdivided into 29 fault segments for the slip model simulations. We can see in the map shown to the right how those eight faults were subdivided into 29 fault segments.

As I mentioned previously, the initial step by the simulation model, based on local stress conditions and fault geometries, is to estimate what types of pressure conditions would be required to induce slip along these features, and in the map shown to the right the color of those fault segments from cool to warmer colors indicates the model simulation's assessment of the pressure increases required, with cooler colors representing a higher pressure increase to induce motion and warmer colors requiring lower pressure increases to induce motion.

And in this slide I include the table of the specific model-generated estimates of core pressure increase required to induce slip in the 29 fault segments included in the model simulations. We see that these estimations range from about 1100 psi to almost 7000 psi across all fault segments.

When we take a closer look at these data in comparison to their orientations we see that typically faults generally striking closer to the maximum horizontal stress direction North 75 East generally are estimated to require less pressure increase to induce slip than those commonly striking north to northwest.

The specific segments exhibiting the lowest predicting pressure increase to induce slip correspond to those main eight faults, 1, 2, 5 and 6 that were shown in the map included on Slide 25.

New slide.

Including the proposed AGI well, eight injection -- eight Devonian injection wells were identified within eight miles that were included in the fault slip probability simulations. These wells are summarized along with their simulated daily injection volumes and their beginning and end of injection modeling that are simulated in the FSP platform.

To provide a conservative estimate of the risk associated with the operation of these wells all wells were operated at or above their maximum anticipated daily injection rate as recorded in their respective C-108 applications.

We see, looking at the data summarized in the table, that these daily injection volumes range from 5,000, to 50,000 (sic) barrels per day, and we should note that contribution volumetrically of the AGI represents approximately less than 3 percent of the total volume proposed for injection in this area.

It should also be noted that model limitations of the FSP platform require that the AGI be simulated as if it were an SWD well due to the platform's inability to consider multiple fluid types; however, this provides additional assurance that the estimated risk associated with this injection scenario is arrived at as water -- uh, typical of an SWD injection -- exhibits greater viscosity and is significantly less compressible than acid gas which will be injected via the Independence AGI #1.

Shown in this slide are the results of the hydrologic simulation portion of the FSP model in which the pressure effects within the reservoir of the eight wells operating are evaluated. Specifically in the top panel we see a map view of the result in pressure conditions after 30 years of AGI operation, but as we saw in the detailed summary table of the injection wells, it is actually at the completion of a 40-year injection simulation, as some wells were in operation prior to the current anticipated start date of the AGI well, and their volume, the injection-volumes contributions of those wells were included in the simulation.

So after 40 years of injection simulations, the model estimates pressure increases experienced along the 29 faults range somewhere between about 20 and 550 psi or so, give or take, and when we compare those to the model estimated core pressure increases required to induce slip for each fault segment that was presented in the previous slide in a tabulated summary, we see that the model-predicted actual changes in pressure appear to be falling significantly short of the model-determined pressure requirement to induce slip.

More generally, along most faults the actual pressure change estimated by the model lies somewhere between 1 and 47 percent of what the model predicts is going to be required to produce slip.

This relationship is shown in the figure, the lower figure, which we have plotted model-predicted pressure change at all end points plotted against time for each of 29 fault segments included in the simulation.

So taking a look at that, we actually only see a couple of fault segments kind of reaching the upper extent, reaching that 47 percent threshold position.

The next step in the FSP simulation moves beyond straight deterministic calculations and attempts to estimate the probability that conditions required to induce slip could be reached when input parameters are varied across a range of uncertainty.

In the figures shown to the right we include the model results of this evaluation where we had the model determine fault-slip potential or fault-slip probability plotted against time in the upper figure, and in the lower-right figure I have included a map view of those same 29 fault segments described previously.

The color scheme in this map currently reflects the results at year 2050 or the end of the simulation, so the cooler colors once again represent lower probability of slip at year 2050 and warmer colors would indicate increasing potential for slip.

Can you stay there?

So just to summarize these results, in response to the eight-well injection scenario conducted, the FSP model does predict a non-zero slip probability estimates for five fault segments, and those segments include Segment 4, 5, 16, 17 and 18, which are annotated with their associated probabilities of slip in the lower-right-hand view of the area.

In general these slip probabilities range from .01 to .13, and it should be noted that the majority of fault segments (24) which exhibit or are estimated by the model to exhibit no potential for slip.

So just generally the identified faults included in this simulation and in the area of the proposed well are not predicted to be at significant risk for injection-induced slip in response to this scenario presented.

As we had just noted, the probability estimates range from .01 to .13 after 40 years of injection operations, with the majority of segments exhibiting or being predicted at zero probability of slip.

Once again in the figures shown to the right, I include the same model-estimated fault-slip probability plotted against time that was shown in the last slide; however, in the lower table I include some more detailed specifics of the model estimates or the results of the model simulation, specifically including the five segments that are predicted to have non-zero probabilities of slip at the end of the simulated injection scenario.

Additionally, this table includes the results of subsequent simulations in which the acid gas injection well was removed from simulations and excluded, and we see the impacts of that exclusion when we compare Columns 2 and 3, the predicted change of core pressure versus the predicted change in core pressure without the AGI; and in the final two columns where we show the model-estimated probability of slip followed by the model-estimated probability of slip without the AGI.

So we see essentially changes in the model-estimated core pressure increased between 5 and 25 psi and really no change in the estimated probability.

So just to summarize as simulated, this scenario -- as this scenario was simulated, the proposed AGI can be operated without contributing significantly to the total risk of injection-induced slip, which under these operating conditions remains minimal throughout the total simulation period.

So next, at this point we kind of shift gears a little bit and discuss our efforts made and work completed to evaluate the potential for vertical migration of acid gas out of the target reservoir.

As Mr. Gutierrez discussed in his initial or earlier testimony, we anticipate in this area that there will be at least 300 feet or greater of dense Woodford Shale which we anticipate to serve as excellent caprock for the Devonian Reservoir; however, additional efforts, characterization of local pressure conditions, were made to assure acid gas has no potential to migrate vertically out of the zone.

These efforts include: A review of relevant studies characterizing regional pressure conditions; a compilation of drilling fluid records representing local conditions in the area of the proposed well; as well as consultation with drilling fluid engineers to prepare a preliminary drilling fluids program specific to the acid gas injection well that's proposed by Ameredev.

First we will take a look at regional Delaware Basin conditions through the work of Rittenouse, et al., 2016. From their efforts a regional core pressure model of the Delaware Basin was generated, consisting of 23,700 mud weight recordings and more than 4,000 drill stem tests, fracturing tests data, injection test data.

From these data they identified overpressured intervals ranging from Lower Bone Springs to Wolf Camp strata.

In the figure shown to the right we include an excerpt from Rittenhouse et al's work that shows their mapped extent, present-day extent of the overpressured conditions they observed in these data; and also included in this map denoted by the red circle is where the proposed Independence AGI #1 lies in the framework of this regional core-pressure model.

We can switch slides.

In this slide we see -- this is another excerpt from Rittenhouse, et al. that shows a typical example well log of what types of conditions are observed in these overpressured strata, and specifically for the purposes of this discussion looking at the leftmost panel in this figure, which illustrates the formations across which these data are representative.

And then the final two panels showing the red curve, which is their -- the pore-pressure gradients and associated mud weights utilized throughout these intervals.

So we see from their data they typically see higher density mud weights being required in Lower Wolf Camp to the base of the Woodford Shale, and upon penetrating the underlying strata a return to normal pressure conditions underlying the Woodford Shale, which is the interval of the proposed Independence AGI #1 injection zone. So at least from this regional core-pressure model and the proposed AGI well's location within this framework, we anticipate that this overpressured condition, or the overpressured conditions and overlying strata will as well be present in the proposed AGI location.

In order to verify pressure conditions anticipated by the regional core-pressure model of Rittenhouse, et al., our next step was to compile available drilling fluid records representative of the area of the proposed AGI well. These well data are shown in the map to the right. They are annotated by the well location's API number as well as the average mud weights utilized across zones overlying the targeted Devonian injection interval.

You can see the mud densities utilized range in his area from 12.1 pounds per gallon to 15.1 pounds, with an average density of 13.5, and where available, obviously less available than overlying strata records, Devonian drilling fluids in the area average about 9.0 pounds per gallon.

So generally local drilling fluids that we were able to compile support the expectation that the targeted reservoir will be underpressured relative to overlying zones.

Finally, in this slide we show an excerpt from the preliminary drilling fluids prognosis that was generated specifically for the proposed AGI, the proposed Ameredev AGI well. In these excerpts of the recommendation includes the engineer's recommendation to utilize at least 12.4 to 12.9 pound-per-gallon drilling fluids in zones overlying the targeted reservoir, anticipating high-pressure conditions, and the recommendation to reduce to do 9.0 to 9.2 pounds per gallon prior to penetrating the Devonian Reservoir, and noting the potential for severe loss circulation, which can be confirmed to be a highly potential thing based on our experience drilling Devonian AGI wells.

So, in summary, upon review and compilation of local core-pressure conditions and review of regional core-pressure conditions or assessments, operation of the proposed AGI well is not anticipated to present any risk for vertical migration of acid gas of the intended reservoir. Our records of drilling fluid characteristics, specific recommendations made by drilling fluid engineers for the proposed AGI, and published literature demonstrate the target Devonian Reservoir is likely underpressured relative to overlying producing zones. This anticipated pressure differential between the target injection level and overlying strata will ain in preventing, and potentially act as a barrier inhibiting vertical migration of acid gas out of the intended zone.

Furthermore, were conduits present allowing for communication between overlying producing zones and the targeting injection reservoir, this pressure differential anticipated would likely not be maintained, which would be identified as we are drilling the proposed AGI Independence #1.

Next we'll shift gears once again and discuss our efforts made to characterize and predict the result in acid gas plume after 30 years of operations.

Injection simulations utilizing Schlumberger modeling simulation platforms were conducted. This work was completed in collaboration with ** Stan KLeinsteiner HA. Specifically Schlumberger Petrel was utilized to construct the geologic simulation in representing the subsurface in the area. Injection simulations were conducted utilizing Schlumberger Eclipse and include relevant nearby wells with reasonable potential to affect the resultant AGI plume.

So first utilizing Petrel, a geologic simulation grid was constructed as the simulation space to conduct operations of the proposed AGI #1. The aerial extent of the simulation space is shown in the map to the right showing the extent of the simulation grid.

The grid was constructed utilizing available local well data as well as 3D seismic survey impedance data.

Taking a look at the extent, the simulation area covers a total area of approximately 20 miles in the area of the proposed AGI, and we conducted multiple case simulations considering operation of the proposed AGI well, the West Jal B Deep SWD#1, and, as mentioned previously, we also made considerations and conducted simulations that would include the proposed Cobra SWD#1.

Shown in the figure to the right here is a three-dimensional render of the geologic model constructed, which is comprised of 292 simulation layers characterizing eight discrete zones identified in our review of the injection reservoir. The total simulation includes 923,000 grid cells with aerial dimensions of 500 x 500 feet, and as I mentioned previously the photo simulation aerial extent covers an area of about 20 square miles.

To inform our simulation in our geologic model regarding reservoir characteristics, a detailed review of the injection reservoir was completed. From this evaluation the targeted injection reservoir was subdivided into eight zones based on the interpreted and observed porosity and permeability characteristics.

The results of this evaluation are summarized in the table shown to the right. Average porosity estimates were made based on available well log data, and we see, based on those, average -- total injection interval average porosity of about 3.9 percent.

Additionally, permeability values were estimated based on drill-stem tests and injection-test data, further refined by dolomite permeability studies, Lucia, et al. 1995, as well as data collected in our experience in drilling acid gas injection wells in the Devonian and other projects.

So model porosity distribution was generated from available well log data which specifically included the only available logs from the West Jal B Deep #1 and the West Jal Unit#1, which are wells that lie approximately one mile, or about three-quarters of a mile and one mile from the proposed AGI location, as well as the synthetic log generated for the proposed Independence

AGI #1.

This synthetic log was generated utilizing both available local well data as well as review of 3D seismic survey impedance data. These distributions are shown in the top-left panel with the well log or available well log distribution shown in red, the synthetic log generated for the AGI location shown in green, and the resultant model porosity distribution shown in blue.

From these distributions geostatistical methods were utilized to populate porosity within the 3D simulation space, and model permeability calculated utilizing that porosity grid.

Permeability distribution within the model was generated using the Winland R35 method as initial normal and later distributions generated no instances of permeability less than .1 millidarcies

Included in the lower figure are the resultant porosity versus permeability curves for each reservoir zone identified and included in simulation. As geophysical well log data were only available on two wells 3D seismic survey impedance data were utilized to define key intervals of low porosity observed in the area.

(Note: New slide.)

Here we include two examples of porosity distribution maps generated based on the previously described methods for this simulation. Specifically we include average porosity distribution maps for reservoir zones 1 and 5 as they are predicted, and in our experience correspond with Devonian strata that often are primary receivers of large fractions of acid gas. And shown in these maps as orange squares are the locations of key points where low porosity intervals were defined in the simulation space.

So upon completion of the geologic simulation grid Sclumberger Eclipse platform was utilized to conduct injections simulations.

Here we summarized some of the parameters and characteristics of those simulations. First the simulation considers injection of a mix of acid gas stream of approximately 70 percent CO2, 30 percent H2S for a total simulation duration of 30 years. NIST REFPROP was utilized to determine acid gas properties for these simulations, which is comparable to AQUAlibrium software which has traditionally been utilized or referenced and utilized in AGI well applications.

For the injection simulations, again, these proposed AGI and SWD included were operated at maximum anticipated injection rate continuously throughout the simulation.

The simulations assume the reservoir begins

100 percent saturated with brine and hydrostatic equilibrium. The boundary of the simulation area is that it's closed and the faults are simulated as barriers of flow are nontransmissive. The simulation was conducted in this way as a conservative approach to assess the likelihood that the proposed AGI could be operated as requested without exceeding the maximum allowable operating pressure that is requested in the C-108 application.

As I stated before, we conducted multiple case simulations to evaluate the resultant plume under a variety of conditions that include both continuous and coincident operation of the West Jal B Deep, the proposed Cobra SWD well, as well as when the SWD are not operating.

So in this slide we just summarized in the table shown to the right the four case simulations presented today.

For Case No. 1 the AGI well is operated at 12 million standard cubic feet per day, and for all four case simulations presented these are the operating conditions for the AGI well.

In Case No. 1 with two SWD included, West Jal B Deep, and Cobra SWD are not operated.

For Case No. 2 the West Jal B Deep is added into the simulations, operating at 15,000 barrels per day.

For Case No. 3 West Jal B Deep injection operations are increased to a volume of 30,000 barrels per day.

And the final case simulation, 4, includes all of the wells operating, specifically the West Jal B Deep operating at 30,000 barrels per day, and the Cobra well operating at its requested or proposed in their C-108 application, 50,000 barrels per day.

So in the following slides we will review the results of each of the four case simulations.

Here we look at Case No. 1 -- which, just as a reminder, reflects operation of the proposed AGI well only. In this case we see a maximum lateral dispersion distance of acid gas predicted by this simulation to be about 1.6 miles from the AGI location. This relationship can be observed in Panels A, B and E, which show the respective distribution of the acid gas plume.

Gas saturation distribution shown in Panels A and B demonstrate that reaching this maximum extent of 1.6 miles is only on low concentrations of acid gas or diffuse concentrations with the main body of the plume, or specifically where 20 percent or greater saturation of acid gas is predicted, the plume extends about one mile from the AGI well.

In Panel C and D we can take a

cross-sectional view of the injection reservoir, showing, as we anticipate and as we observe in other injection wells, zones 1 and 5, no strata or equivalent strata, receive the greatest volumes of acid gas.

We look at Case No. 2 the corresponding results for Case No. 2. Once again representing the operation of the AGI well, as well as the West Jal B Deep at 15,000 barrels a day. We see a maximum lateral dispersion distance, as predicted by the model, of 1.8 miles from the AGI location. We see gas saturation distribution as shown in Panels A and B, once again showing more diffuse or relatively low concentrations reaching this maximum extent, and the 20 percent saturation contour only extending about 1.3 miles from the AGI.

Looking at the expression of the resultant plume in Panels A, B and E, we see that operation of the West Jal B Deep is resulting in a somewhat deflection of the plume, the resultant pluming to the northwest, and then again when we look in Panel C and D at the cross-sectional view, we see once again zones 1 and 5 being the primary receivers of injectate under these conditions.

Before we move on to the results of Case 3 and 4 we are going to take a look at the operating conditions at the proposed AGI well for these two cases.

And shown in each of the plots included in this slide are the respective pressure trends and injection trends for the AGI well in both cases.

So initially we see that for both cases, Case No. 1 and 2, the red trend line showing that the AGI well under these conditions successfully is operated at injecting 12 million standard cubic feet per day throughout the total injection simulation.

What we should look at next is if we take a look at the green trend line, we see plotted from the simulation results the surface-hole pressure or the injection pressure required to inject 12 million standard cubic feet per day in each respective case, and for each of the plots I've included the MAOP line reflecting the threshold requested MAOP of 4,779 psi.

We see, looking at the relationship between the green surface injection pressure line and the blue MAOP line, we see that in both Cases 1 and 2 the AGI is able to operate without exceeding the requested maximum anticipated injection pressure.

COMMISSION CHAIR SANDOVAL: Mr. White --

(Note: The witness continued his presentation)

COMMISSION CHAIR SANDOVAL: Mr. White.

(Note: The witness continued his presenation.)

COMMISSON CHAIR SANDOVAL: Mr. White, can you hod on just a second, please.

(Note: The witness continued his presentation.)

COMMISSION CHAIR SANDOVAL: Can you guys hold on for just a second, please. Can you guys hear us?

(Note: The witness continued his presenation.)

MR. BIERNOFF: I can hear you. This is Ari from the land office.

COMMISSION CHAIR SANDOVAL: Mr. Rankin, can you hear us?

(Note: No response.)

(Note: Pause in proceedings to remedy issue.)

COMMISSION CHAIR SANDOVAL: So your Exhibit 3, starting at 47, the updated Exhibit 3 doesn't match what you're presenting right now. We don't seem to have some these slides, or they're different. Like 52 for us -- let's see. Does it match?

COMMISSIONER ENGLER: No.

COMMISSION CHAIR SANDOVAL: It does not.

52 for us is the C-108 application summary. We don't seem to have that.

47 was totally different. Basically 47 on.

MR. RANKIN: Is it marked as Exhibit 3, updated 2?

COMMISSIONER ENGLER: No.

(Note: Reporter inquiry.)

COMMISSION CHAIR SANDOVAL: When did you -- Okay. This is Commissioner Sandoval.

When did you send Updated 2? Was that last -- oh, that came in last night.

MR. RANKIN: I have to double check. I think it would have come in -- I think I would have filed it late. And I apologize. I should have probably raised this as a housekeeping matter.

I did file a motion seeking leave to submit a late-filed exhibit. I believe it was on Tuesday that we filed a late-filed exhibit. In order for us to incorporate the additional model simulations and data from the inclusion of the Cobra well we had to file a late exhibit.

So I believe that we filed those on Tuesday evening.

MR. GUTIERREZ: Tuesday?

MR. AMES: Yes. Adam, this is Eric Ames. It was filed Tuesday at 4:57 p.m. with the hearings clerk, and neither the State Land Office nor OCD opposed the motion. And the document is entitled Ameredev Case No. 21381 underscore Exhibit-3-Updated.

MR. RANKIN: It should be, hopefully, Updated 2, because we originally submitted an updated Exhibit 3 timely last Thursday with our Prehearing Statement and noted that we would have to update it again in light of the additional modeling that was being conducted.

So, Madam Chair, if it's acceptable in order for the Commission to have a copy of what we filed, if you would like we could take a break and I'd be happy to make sure that you have a copy of what we filed late on Tuesday.

MR. AMES: Adam, I believe the exhibit itself is labeled Exhibit 2 Updated, but the .pdf file that was sent to Florene is labeled Exhibit 3-Updated 2.

So a little confusion there, perhaps, but OCD did receive it.

(Note: Pause.)

MR. RANKIN: Madam Chair, I'm just pausing until you give me the green light to go ahead. I apologize for not addressing this at the outset. It was on my list of housekeeping procedural matters to kind of address, and I just skipped over sit.

COMMISSION CHAIR SANDOVAL: It's fine, Mr. Rankin. We were just fixing the logistics of it on our end.

Go ahead and proceed, and I think we have it managed on our side.

MR. RANKIN: Madam Chair, we'll continue where we left off, I think, on these two. Okay.

If you have any questions or would like us to review any of the materials that we previously reviewed that were not on your set of slides, let us know and we'll be happy to go back over it again, but otherwise we will pick up where Mr. White left on our Updated 2 exhibit, page 52. That exhibit.

COMMISSION CHAIR SANDOVAL: Yes, go ahead.

A. (Continued) Okay. So included in this slide we included the initial and resulting pressure conditions for those primary receivers on Zone 1 and Zone 5 for the Case 1 simulation.

Through this simulation period we observed a building of pressure contained in the western portion of the simulation area. Corresponding resources for Zones 1 and 5 for the case simulation -- I guess I should have the specified the upper panels from left to right, the upper panels being representative of initial pressure conditions and the lower panels representing resulting pressure conditions as estimated by the model simulation for Zones 1 and 5 from left to right.

Once again, for Case No. 2 we see increasing pressure conditions resulting from the addition of the West Jal B Deep#2 simulation, the simulation for Case No. 2.

Now we will switch back to present the results for case Simulations 3 and 4.

As a reminder, Case 3 represents operation of the proposed AGI and the West Jal B Deep SWD well. Specifically for this simulation West Jal B Deep is operated at 30,000 barrels per day.

Upon completion of the simulated injection scenario for Case 3, we observe a maximum lateral dispersion distance for acid had gas predicted to be approximately 1.8 miles for the AGI well location.

We see once again in distribution maps Panels A and B showing the lower, more diffuse concentrations characterize the outer limits of this maximum dispersion distance, and that the main body of the plume, over 20 percent saturation or greater, extends approximately 1.3 miles from the AGI location.

For Case No. 4, which considers operation of the AGI well, West Jal B Deep at 30,000 barrels per day, it now adds the proposed Cobra SWD #1 well at 50,000 barrels per day. Simulation results indicate a maximum lateral dispersion distance from the AGI well of about the 1.5 miles from the AGI well location.

Taking a look at the expression of plume we now see that the influence of the Cobra SWD well to the west more confines the resulting plume, slightly elongates it in the north/south direction.

Gas saturation distribution maps demonstrate that once again relatively low concentrations are observed at the maximum extent of the plume, and the main 20 percent saturation or greater portions of the plume extend about one mile from the AGI well.

As we did with Case 1 and, 2 we'll now take a look at the AGI operating conditions in response to cases -- the simulations for Case 3 and 4.

Again we're seeing that the AGI well in both cases is able to successfully inject 12 million standard cubic feet per day throughout the total simulation period, as shown by both the red trend line showing the AGI injection volume during this simulation in comparison of the green surface injection pressure trend and the blue proposed MAOP trend, showing that the AGI can operate consistently at 12 million standard cubic feet per day in both of these cases.

It should be noted that the expression of the surface injection pressure trend varies a bit, more so than we saw in Case 1 and 2 of these simulations. In those trends we see earlier on in the simulation period a more rapid increase in pressure conditions experienced by the average AGI well, and that is reflected in showing the West Jal B Deep at 30,000 barrels per day and the Cobra

SWD well injecting at 50,000 barrels per day both essentially pressure themselves out for both Cases 3 and 4.

So we see rapid increases in pressure increases experienced by the AGI in these cases, which level off as those respective SWD wells have to cease injection in order to not exceed their anticipated maximum surface injection pressures.

Again, for cases 3 and 4 we include here tables summarizing the distribution of acid gas by zone. For Case No. 3 we see an injectate distribution within the target reservoir that remains relatively unchanged from the West Jal B Deep being operated at 15,000 barrels per day, and, as we saw in the map view of the results, under those conditions we mainly get flexion to the northwest of the resulting acid gas plume. However, for case No. 4 when the AGI location is bounded by this SWD to the northeast and this SWD to the west, we do see significant increase in the total fraction of acid gas accepted by zones 7 and 9 in response to those result-in-pressure conditions.

In the next couple of slides we include initial and resulting pressure conditions estimated by the model for Cases 3 and 4. Once again the initial conditions shown in the upper panels and resulting conditions shown in the lower.

As anticipated, we observe that -- we observed increasingly increased pressure buildup or continued increase in pressure buildup in the western area of the simulation space as we increase injection volumes of West Jal B Deep.

And similar results for Case No. 4 when we both increase the injection of volume of West Jal B Deep, as well as introduced the 50,000 barrels per day Cobra SWD#1 well.

So in summary the Silorian/Devonian Reservoir in this location is fully capable of receiving and sequestering target 12 million standard cubic feet per day of acid gas in all case simulations presented and conducted here today.

The injection simulations to characterize the resultant plume after 30 years of were conducted utilizing Schlumberger platforms, specifically Petrel and Eclipse. All wells included were simulated at their maximum anticipated daily injection rates or a greater rate, as well as increased rates, and including addition of the proposed Cobra SWD#1 well.

Four case studies were simulated to estimate the resulting gas plume when nearby SWD were operating coincident with the AGI and when they were offline, and in all cases the AGI well can inject 12 million standard cubic feet per day, and that injection rate can be maintained for the 30-year simulation period without exceeding their maximum anticipated operating pressure of 4,779 psi, even in simulations where SWD are anticipated to essentially pressure themselves out.

Briefly summarized, for Case No. 1 injection simulations predict the maximum lateral dispersion distance of 1.6 miles to the northeast of the AGI well; however, the outer margins are characterized by diffuse concentrations in the main body where 20 percent saturation or greater is expected, extends approximately one mile from the AGI wellbore.

When West JAL B Deep is introduced into the simulations at either 15,000 or 30,000 barrels per day reflecting Cases 2 and 3, the pressure influence from this well inhibits northeast dispersion and deflects the resultant plume north to northwest and south of the AGI location, and we see the main body of the plume, where 20 percent or greater saturation is observed, extending 1.3 miles from the wellbore.

Finally, when all wells simulated are included in Case No. 4, that's West Jal B Deep at 30,000 and the Cobra SWD operating at 50,000, we see a slightly north/south elongated resulting plume that extends approximately one mile from the AGI wellbore when considering the main body of the plume where 20 percent of greater saturation is observed, and more diffuse concentrations extending out to 1.5 miles.

For all cases simulated zones 1 and 5 are predicted by the simulations to be the primary receivers of acid gas, which is in agreement with injection patterns observed in our experience with Devonian injection wells.

Q. Mr. White, just to summarize your opinions here, in your opinion, will the proposed injection pose an unreasonable increased risk of induced seismicity as a result of the proposed AGI injection?

A. No, it will not.

Q. Based on your analysis and review does the target interval have the capacity to accept the volumes of AGI proposed at the rates proposed for the life of the well?

A. Yes, it does.

Q. In your opinion will the injection zone contain the proposed injection volumes and prevent them from going up into other upper levels, upper intervals or -- to impair other zones?

A. Yes, it will.

Q. In your opinion will the granting of Ameredev's application be protective of human health and the

environment?

A. Yes.

Q. And in your opinion, will operation of the AGI at the rates and volumes proposed result in waste or impair any correlative right?

A. No, it will not.

MR. RANKIN: At this time, Madam Chair, I would pass the witness for questioning. And I know it's now quarter to noon, and if the Commission and other parties would like, I'd be happy to take a break now and allow Mr. White to be crossed after everyone has a break and we have lunch, or we can try to push through and complete everything before we break for lunch.

MR. BIERNOFF: This is Ari Biernoff from the State Land Office. Unless the Commission has a different preference, I'd suggest that we proceed. I don't have -- I have a few questions but I don't think mine will take that long.

COMMISSION CHAIR SANDOVAL: I agree. I think we would prefer to cross now and then take a break.

Mr. Ames, do you have anything for this witness?

MR. AMES: I do not.

COMMISSION CHAIR SANDOVAL: Mr. Biernoff, would you like to proceed?

MR. BIERNOFF: Thank you, Director.
And my questions are for Mr. Gutierrez. Is he still available?

COMMISSION CHAIR SANDOVAL: I think we are bringing him back. We will ask him questions at that point.

MR. BIERNOFF: Oh. Okay. I didn't realize he had additional testimony that he was going to provide. If that is the case I'll wait until Mr. Rankin completes his direct examination of Mr. Gutierrez and then I will pose my questions to him.

COMMISSION CHAIR SANDOVAL: Okay.
Commissioners, do you have questions for the witness?

COMMISSIONER KHALSA: Yes. I have a couple of questions for the witness. This is Commissioner Khalsa. I have a couple of questions.

CROSS EXAMINATION

BY COMMISSIONER KHALSA:

Q. I want to ask about your fault-slip potential model that you used.
In a previous case you had included a table that showed the different fault dips that were used in your simulations, and I would just like to know what the range of fault dips were used when you ran this model for

this case, since that table is missing from here.

A. Sure. And those -- in that case we presented multiple case simulations in order to address a specific uncertainty about the dip of faults in that area, so we wanted to make sure we covered at least a reasonable range of possibilities for that case.

For this case the faults were all very steeply dipping, as observed in the three-dimensional seismic survey data. And if preferred, we can submit those full simulation parameters to the Commission and the OCD, but faults were set to be 80 degrees plus or minus 10 degrees for the Monte Carlo probability estimate, estimations.

Q. Great. Yes, I would like to see those if possible.

A. Absolutely.

Q. Then the other question that I have, not really a question, it's just something that I think would be helpful for me personally.

You have -- on page 57 of your updated No. 2 exhibit, you have your distribution of gas by zone. It would be helpful for me so see the data hung on a well log just to visualize this a little bit better, which is something that was included in a previous case that I found very useful.

So if that could be included, it would be helpful.

A. Okay.

COMMISSIONER KHALSA: It would just be this data with the well log. (Note: Pause.)

COMMISSION CHAIR SANDOVAL: Do you have any more questions?

COMMISSIONER KHALSA: No.

CROSS EXAMINATION

BY COMMISSIONER ENGLER:

Q. Mr. White, this is Tom Engler. Can you hear me?

A. Yes, sir.

Q. A couple of questions. I would refer to your Slide 27 first. It's your model input parameters.

A. You said 27?

Q. 27, yeah.

On your table, on the bottom of that table is the acid gas properties and density viscosity.

Are those inputted into the fault-slip probability model?

A. No, sir. Those were included only as a comparison to show how the operation of the AGI well in the Stanford fault-slip probability model is more conservative, as I made in the statement that being operated as an SWD well is more conservative because water is less compressible and higher density, more viscous. This is just a comparison of what the acid density and viscosities would be.

Q. Yes.

A. I have --

Q. To follow up on that, that's on your slide 30. You state in your bullet points exactly what you just mentioned about water with higher viscosity and less compressible. Could you explain to me, I guess within the fault-slip probability model, how that is a more conservative estimate, how that works?

A. Well, so within the Stanford fault-slip potential model one of the input parameters that is shown in the previous table we discussed is the density of the fluid that your model is simulating. So obviously if you have more dense fluid it's going to have greater impact on pressure than compressible fluid or less viscous fluid.

Q. Have you tried within this FSP model putting in a density closer to the acid gas and seeing what happens? And viscosity?

A. I have not, because typically when we are simulating this there are often many SWD wells in the area that are going to be providing significantly greater volumetric contributions. So I have not had an instance where that was necessary.

Q. I agree with that statement. I guess my concern is mobility of gas is significantly greater than water, and you're predicting a probability at a distance away from a well. So that's my question relative to -- again I know you're limited in this model, but something with a much lower viscosity is going to travel much farther.

Would you agree?

A. Yes.

Q. And that would have maybe more impact on a fault that's farther away. Would you agree?

A. It may have more potential interaction but I don't think it will have nearly the same pressure influence.

Q. Okay. Back to your Slide 30, another question on that.

In this update that you have the Cobra and Breckenridge, in your first draft you had two other wells the Screech and the Shoal.

What happened to those?

A. So you said the Screech and the Shoal?

Q. Correct. In the first draft of your report, the early one, those two were included. Now in this one they are not.

A. Yes. That's because those two particular wells no longer hold a valid order giving them authority to inject.

Q. Oh, thank you. That I didn't know. Thank you.

On Slide 31 on the bottom-right-hand graph, each one of those curves represents one of the fault segments; is that correct?

A. Yes, sir.

Q. So in 2015, the first pressure train change, that must be relative to the water injection well with the fault -- the segment closest to that?

A. I'm sorry. To which well?

Q. In the time, in the year 2015 you're seeing a pressure change at a fault midpoint. Which fault segment is that?

A. So I don't think it's specifically identifiable in these records, but I can provide you with, just as we would with the fault data that the previous commissioner requested, we could provide those full data that outline those.

Q. Yeah, because in 2015 -- and then you have a pretty large spike in 2020 in one of those fault segments, and it would be nice to know which one that is.

A. Uh-huh. I would suspect that they correspond to two of the faults which the model predicts the non-zero estimates of slip.

The well that comes on line in 2015 would be the West Jal B Deep well, located -- if you look at one those maps showing the fault segments or the subdivision of fault segments, it is the well located just to the south/southeast of Fault Segment 5. So I would assume that corresponds to at least include Fault Segment No. 5.

Yeah, we could definitely pull up those data and check it out with you guys, provide you with the full breakdown -- which was provided in the initial C-108, full breakdown of all faults, even those that do not, or are not predicted to have any probability of slip. The full tabulated breakdown was included with the original C-108, however it was not included to reflect the additional wells being presented.

Q. And, again, I guess on the modeling, on this figure you have here, so is it correct that the highest segment, the highest probability is that segment that is closest to your AGI well?

A. It is one of two faults that are relatively equidistant from the AGI well. It's the fault to the north approximately one mile.

Q. Do you have, in your experience -- and since you've worked on this several times, is there some critical probability that if you exceed that threshold that becomes a serious problem from this FSP model?

A. Well, I don't think I've ever had any results to this point which there has been significant concern. Those that have had higher potential probabilities of slip had significant unknowns about them. For example, the previously heard Lucid Red Hills AGI#2 case. And in that case we predict -- produced and presented a range of simulations to attempt to address that uncertainty, and presented that as it was to be evaluated as it was.

Q. Does Zoback at Stanford provide a guidance that says if you hit a certain probability you will have slip?

A. Not that I have viewed or seen in any resources.

Q. Going to your reservoir simulations, your case -- your Cases 3, 4, you had saturation maps. I don't have those exact slide numbers but it's closer to the end.

A. You said Case 3 and 4?

Q. Yeah, 3 and 4. And, yeah, the saturation maps.

That one.

So am I correct -- these saturation maps, these high gas saturations would be overlapping with the Cobra well?

A. Yes.

Q. And I believe -- I can't remember which one of these -- I can't remember between the 3 and 4 now. Did they both have the Cobra well or just one of them? I can't remember now.

A. No, only Case No. 4 included the Cobra well.

Q. Because of that you basically flattened out and moved the gas plume more north/south; is that correct?

A. I'm sorry. Could you repeat that? I didn't catch the...

Q. Yeah. So again your Case 4, does the Cobra well -- your gas saturation is more in a north/south direction; is that correct?

A. Yes, sir.

Q. And, again, what did that exasperate more gas towards that fault to the north which has the highest fault slip probability?

A. It would certainly reduce the north/south elongation based on the results of the simulation; however, you'd -- we see, looking at the details of the gas saturation maps that the model predicts the majority of this area to fall within gas saturation values of less than 10 percent.

COMMISSIONER ENGLER: Thank you. No, more questions.

COMMISSION CHAIR SANDOVAL: Anything further?

(Note: No response.)

All right. Let me go back to your slides.

CROSS EXAMINATION

BY COMMISSION CHAIR SANDOVAL:

Q. Is there any concern about the West Jal B Deep?

That one also seems to be in the general vicinity.

A. Concern with what? I'm sorry.

Q. The West Jal B Deep well.

A. To my knowledge we have no concerns about it. The well is active and operating, and the -- a review of the OCD records regarding this well shows requests made to expand their injection interval and to open up different -- I believe it's more historic and not recent, but -- and we were requested to simulate this well at a higher injection rate. And in all cases which we have done, their -- both at 15,000 barrels per day and 30,000 barrels per day we see that their fluids significantly -- or deflects the plume away from that well to the northwest.

Q. So if they started injecting a higher volume, would there be a concern that -- it looks like they're injecting into the same, or both injecting into the same intervals.

A. They are. If they begin injecting at a higher volume, that would mean, or that would result in more northwest deflection of the acid gas plume, which currently does not appear to have any wells penetrating the injection interval along that (inaudible).

Q. Okay. Do you have any concerns with installing a seismic monitor onsite to monitor seismic activity in

the area?

A. I believe that is one of the special conditions that has been accepted by Ameredev.

Q. Has there been any seismic activity in the immediate area?

A. Not that I am aware of.

Q. So you didn't really answer the question before, though. It is a condition that's proposed. My question is: Are there any concerns with doing that?

A. No.

Q. Do you know what the composition of the gas that's going to be injected is? Is it predominantly CO_2, predominantly H_2S, a mix?

A. Wait. I'm sorry. Did you ask do we know what the composition of the gas being injected is.

Q. Yeah. It looks like potentially 70/30.

A. 70 percent CO_2, 30 percent H_2S is the anticipated acid gas composition.

Q. Would there be any objections to reporting the amount of CO_2 and H_2S injected to the OCD on a regular basis?

A. I think that it is already part of the quarterly reporting. That can be confirmed, but I believe that is already part of the quarterly reporting requirements for AGI wells.

Q. Okay. So it sounds like you wouldn't. That's great.

A. No, I wouldn't.

Q. Would Mr. Gutierrez be the more appropriate person to ask about the H2S contingency plan?

A. Yes.

COMMISSION CHAIR SANDOVAL: Okay. I will save that question on that for him, then.

I have no further questions.

Do you have any redirect, Mr. Rankin?

MR. RANKIN: Thank you, Madam Chair. I have no further questions of this witness.

COMMISSION CHAIR SANDOVAL: Okay. It is 12:10 almost. Let's take an hour break for lunch, coming back at 1:15.

I will just note that at 2:00 o'clock we will also have to take a 30-minute break, 2:00 to 2:30, so plan accordingly.

MR. RANKIN: Madam Examiner, if I might just interject a moment. I don't know that we have much left to go over. I think we could probably finish Mr. Gutierrez' testimony in about five minutes or so. So depending on the extent of the cross examination questions, I think we probably can finish in about 30 minutes, if you wanted to just wait to break until we could wrap up the entire presentation of the case.

MR. BIERNOFF: For what it's worth -- this is Ari Biernoff for State Land Office. For what it's worth, I would endorse Mr. Rankin's proposal. I don't think that our cross questions for Mr. Gutierrez will take more than a few minutes.

COMMISSION CHAIR SANDOVAL: Okay. That's fine. Let's wait to break, then, and go ahead and get through the remainder of your case, Mr. Rankin.

MR. RANKIN: I appreciate that. Thank you, Madam Chair. Assuming it's okay with the court reporter, we'll proceed to try to complete the case right now.

Thank you.

ALBERTO GUTIERREZ,
having been previously sworn, testified
further as follows:

FURTHER DIRECT EXAMINATION

BY MR. RANKIN:

Q. Mr. Gutierrez, you are still under oath and still sworn in, so we'll proceed with the rest of your presentation. I think we are picking up at Slide 62.

Will you please review for the examiners what the slide shows, and your final analysis, a summary of the application in this case.

A. Sure. Just to summarize all of the testimony that has been given and to the key aspects, uhm, and to bring it all together I'd like to say that Ameredev is requesting the authority to inject acid gas at a concentration of approximately 70 percent CO_2, 30 percent H_2S to a maximum rate of 12 million cubic feet a day, which turns out to be a little over 5,000 barrels a day in the reservoir from 16,230 to about 17,900 feet generally, from the top of the Devonian through the Fusselman at a maximum allowable operating pressure of 4,779 psi.

The well and surface facilities are being designed and have been designed to provide a safe and efficient injection system, a proven system which has been utilized in 20-other-plus wells in this state.

Similarly, all of the surface mineral owners and operators within a mile of the AGI have been properly noticed and notified of this application, and there are no current objections.

There is no current or anticipated production in the Siluro-Devonian within at least two miles of the proposed site.

The proposed injection zone, as has been demonstrated by the seismic and stratographic analysis is well capable of permanently containing the injected fluid due to the nature of the caprock above and below the injection zone, and it has adequate capacity to sequester the anticipated volume of acid gas being disposed of.

Clearly all fresh water resources are clearly protected by the well design, including 1400 feet of surface casing and then multiple strings carrying on down to the injection zone.

Only two wells penetrate the proposed injection zone within a mile. One of them which is active, and is the only one that's active as an SWD well currently, is approximately one mile away west, the West Jal B Deep, which importantly is an open-hole completion, as well, and as David mentioned its own injection helps deflect acid gas from that area.

The fault slip probability simulations that were conducted evaluate the potential for seismic events, and clearly they show that the AGI well can be operated without presenting any significant risk of injection-induced seismic.

As a matter of fact, if we refer back to the fault slip probability slide that showed the effect of the removal of the AGI well from the scenario of fault-slip probability -- if we could get back to that slide, I could show that. (Note: Pause.)

Right there.

If you take a look at this slide you can see that essentially the possibility of slip only increases by 1 percent with the AGI on one of the fault segments, Fault Segment No. 18. For the rest of those there is no measurable increase in the probability of slip with respect to the AGI at all.

So what this basically says is that any induced seismicity that would be detected here is going to be resulting from the injection of salt water disposal wells rather than the AGI, and that is even when we simulated the AGI, as David mentioned earlier, in a very conservative fashion because it is simulated to inject brine instead of acid gas. And while Dr. Engler is correct in saying that the lower viscosity of the acid gas allows it to travel further, especially when deflected by salt water disposal, it's pressure effect, which is what results in the increase of potential for induced seismicity, is essentially nonexistent, because it is really a very low-viscosity fluid which is pushing against a much higher-viscosity fluid, and it just doesn't create the pressure changes that would be required to create a risk of induced slip.

So the injection simulation modeling that the resultant plume shows us that it's going to extend, the bulk of it, of the gas saturation within approximately the main body of the plume of about 1 to 1.3 miles, and then a very low diffuse saturation of less than 20 percent extending out another half to -- about another half mile, from 1 1/2 to 1.8 from the AGI location.

Furthermore, a review of the pressure conditions and local drilling records clearly indicates that the desired injection reservoir is underpressured relative to the zones above it and therefore will confirm that there is very low or no likelihood of escape of acid gas from the injection zone into other overlying strata.

I want to emphasize that there were extensive discussions that took place between the State Land Office and the Division with respect to various aspects of this application, and I think a very cooperative process that allowed us, while on kind of a rush timetable, though, to make revisions to our proposed plan to ensure that the concerns that both the State Land Office and the OCD expressed would be resolved. And this was accomplished through a change, a significant change in the well design, some significant changes to the input parameters and the wells that were going to be considered in both the fault-slip probability modeling, as well as the plume migration, even to the point of including wells significantly injecting salt water close to our well that are not even permitted at present.

And one of the points that was raised by the State Land Office and the Division is a desire and a need to coordinate the Rule 11 H2S Contingency Plan and the implementation of that plan with all of the stakeholders, in particular the local emergency planning council and emergency services in and around the Cities of Jal and Eunice. And those will be prepared. We've done it many times, and we have not yet had a situation where we haven't been able to reach an acceptable H2S contingency plan that's approved by the agency prior to injection.

And, furthermore, and to close it out, we've agreed on an aggressive schedule that will allow us to, while we can incorporate the data from the AGI #1 drilling and completion in the application for the second well, that we will do it on a very timely basis and submit it within a year; and, again, a second well in place within two.

So those negotiations were very useful and very constructive, and I think they improve the overall product that's being reviewed by the Commission today.

So as a last slide here, what I'd like to do is just, in very four short bullets, let you know what we want from you as a commission.

We want permission to drill, test, complete and operate AGI #1, Independence AGI #1, as specified in the C-108 and subsequent submissions that have been presented today. We want to be able to inject approximately 70 percent CO_2, 30 percent H_2S at an MAOP of 4779 psi for a maximum daily rate of approximately 12 million cubic feet a day for 30 years.

This well will increase the treating capacity and reliability for sour gas assets in the area, and the project is supported by adjacent producers, and the indications are that it will very rapidly be effective in reducing the reliability issues in those areas.

And finally and most importantly, the proposed well will dispose of acid gas safely and effectively, it will improve the environment in the sequestration of greenhouse gasses, and will assure the protection of surface and ground water resources, as well as the protection of correlative rights of other operators, including Ameredev themselves, in the area.

MR. RANKIN: Madam Chair, at this time I would move the admission of Exhibits 1 and 4 and ask that the Commission accept the late-filed Exhibit 3-Updated 2, that we've been using as our presentation today.

COMMISSION CHAIR SANDOVAL: Any objections from other counselors?

MR. BIERNOFF: No objection from the State Land Office.

MR. AMES: No objection.

COMMISSION CHAIR SANDOVAL: Commissioners, any objection?

COMMISSIONER ENGLER: No objection.

COMMISSIONER KHALSA: No objections.

COMMISSION CHAIR SANDOVAL: All right. Ameredev Exhibit 1, Updated No. 3 and 4 are now entered into the record.

MR. RANKIN: Thank you, Madam Chair. At this time I would pass the witness for questioning.

COMMISSION CHAIR SANDOVAL: Mr. Ames, do you have any questions?

MR. AMES: I have no questions for Mr. Gutierrez. Thank you.

COMMISSION CHAIR SANDOVAL: Mr. Biernoff, do you have any questions?

MR. BIERNOFF: I do, Director. I do have a few questions for Mr. Gutierrez. I'll proceed if I may.

CROSS EXAMINATION

BY MR. BIERNOFF:

Q. Mr. Gutierrez, you mentioned in your direct testimony that Ameredev was working on a rushed timetable.

Remind us when you filed the C-108 on behalf of Ameredev. (Note: Pause.)

Mr. Gutierrez, you're muted.

A. I'm sorry. July 10, 2020.

Q. When did you provide Notice to affected parties of the application?

A. We did so 30 days prior to the original date set for the hearing.

Q. Are you sure about that?

A. Well, they were provided on -- as you can see from these, 20 days prior to the hearing date. I'm sorry, not one month. Twenty days.

Q. Okay. Why did you wait a month and a half from the filing of the C-108 to provide notice to the State Land Office?

A. Well, I'll tell you exactly why: Because this has always been the practice. We cannot really provide a Notice of the hearing and submit the application to all of the individuals that have been noticed until we have a case number and a hearing date set to provide that Notice.

So that has been the procedure at least since I've been doing this for the last 18 years.

Q. So is your answer that you did it this way because you've always done it this way?

A. No, the answer is that we are typically required to be able to provide, as part of the individual Notice, when the hearing date is going to be, and we can't get that until we submit it to the State and the State sets a hearing date.

Q. There is nothing that prevents you from filing a copy of your C-108 to the Land Office or other affected parties, right?

A. That's correct.

Q. Okay. When were you retained to provide professional services in this matter?

A. I don't know the exact date but I would say it was in early 2019.

Q. Okay. And when did you complete your analysis for this application?

A. Well, we turned in the application in July, 20 -- I'm sorry. I keep getting 2019 and 2020 confused.

We were retained in the early part of 2020 to do this application, and we completed the analysis on July 10th of 2020 when we submitted it to the OCD.

Q. Did you have any contact with anyone at the State Land Office prior to your August, I believe 26th, 2020 Notice that we have on the screen in front of us about this application?

A. Not that I'm aware of, no. I don't know whether Ameredev may have had some discussions with the Land Office, but we did not.

Q. You're not aware of any contact that Ameredev had with the Land Office about this application prior to this Notice that we are looking at in Exhibit 4, right?

A. That's correct.

Q. Okay. Have you had any contacts, "you" meaning Geolex, any contact with the Oil Conservation Division about this application prior to the Exhibit 4 Notice that we're looking at here?

A. Yes, absolutely. When we submitted the application to the OCD, we also followed up with several emails to the agency to inquire as to whether they had any concerns with the application, and to determine kind of what the status of it was and when it would go to hearing.

Q. Did you send a copy of this Exhibit 4 Notice to the Oil Conservation Division? I didn't see that on the green cards displayed on the screen.

A. No, we do not, because the Division is notified by receiving the application itself. We don't ever Notice the Division, per se, as part of this, since they are the recipients of the original application, in this case two and a half months before the hearing.

Q. So you provided Oil Conservation Division with your C-108 but not the subsequent Notice. Right?

A. That is correct.

Q. And you provided the State Land Office with no notice of the C-108 but with this subsequent Notice that's displayed here in Exhibit 4. Right?

A. We provided the State Land Office with the

Notice at the time when we provided to all affected stakeholders in the area, which is 20 days prior to the hearing.

Q. Okay. And again there was nothing that prevented you from sharing with the Land Office your C-108 that was submitted around the time that you submitted it.

A. That's correct. There's nothing that prevented us from doing that.

Q. Okay. Mr. Gutierrez, can you describe that changes that Geolex and Ameredev have made to the well design regarding protection of the Cambrian Reef?

A. You mean the --

Q. I'm sorry, the Capitan Reef. Excuse my mislocution there.

A. Sure. If we can go back to a slide in my presentation that shows the design of the well, then I can show you exactly what we did.

There we go. (No. 13).

In this diagram you'll see four strings of casing: A surface casing, first, second, and third intermediate and the production string.

I seem to not be able to count. That's five.

But, in any case, what is substantively different here is in our original design we anticipated putting in --

(Note: Reporter interruption.)

THE WITNESS: Let me start over and try to speak or enunciate more clearly.

A. (Continued) The design has five strings of casing; the original design had only four. And the first intermediate string would extend to where we now show the second intermediate string, and would have encompassed both the Salado and the Capitan Reef.

Now what we have done is put in a first intermediate string that isolates the Salado, and then a second intermediate string that serves, in conjunction with proper cementing and DV Tools, to isolate the Capitan Reef.

That's the most fundamental change in the design that resulted from the discussions with the agency.

MR. BIERNOFF: Okay. Thank you, Mr. Gutierrez.

I don't have any further questions for this witness, Director.

COMMISSION CHAIR SANDOVAL: Sorry. Now I'm muted.

Commissioners, do you have any additional questions for Mr. Gutierrez?

COMMISSIONER ENGLER: Yeah, I have two real quick, simple ones.

CROSS EXAMINATION

BY COMMISSIONER ENGLER:

Q. Mr. Gutierrez, interestingly when you were discussing today on your Slide 14, you state, and I think this is a good thing, about running an FMI over the injection zone and overlying caprock.

Isn't the overlying caprock going to be behind a 7-inch pipe?

A. I'm sorry. I did not hear. Would the overlying caprock was what?

Q. Isn't the overlying caprock, it's going to be behind the 7-inch pipe?

A. Yes, it would be behind the pipe. Absolutely.

Q. So you won't be able to run an FMI over that.

A. No, we will. We'll run the FMI before we run the casing.

Q. Oh, before you run the 7-inch you're going to run the FMI?

A. Yeah.

Q. Okay. Another quick question on your Slide 23.

A. Let me just clarify one thing, though, and it's so that you understand. I mean, obviously we are going to have to run the FMI before we set the production string for the caprock, but we will separately have to run the FMI when we drill out the open-hole section.

So there will be actually two sections that will be covered by that FMI.

Q. Yes, I understand that, and I'm glad you said that to clarify for the record.

On Slide 23 you present some very good points about ideal characteristics for acid gas disposal, these six points. Correct me if I'm wrong, but these are usually the same six points that you presented in other cases; is that correct?

A. Yes, sir, it is.

Q. So No. 5, I believe for all these have: Excess capacity for anticipated injection volumes. Is that correct?

A. Yes, sir.

COMMISSIONER ENGLER: Thank you much. I'm done.

COMMISSIONER KHALSA: This is Commissioner Khalsa. I have a couple of quick questions or clarifications I need.

CROSS EXAMINATION

BY COMMISSIONER KHALSA:

Q. No. 1, you did say that Ameredev would be working with the City of Jal on the H2S contingency plan. I just want to know if Ameredev has been in contact with the City of Jal already about this project.

A. I am not aware that Ameredev has been in contact with the City about this project.

Q. Okay. Thank you.

The second thing is just a matter of clarification on your C-108, page 7 of Exhibit 1.

Okay. So in paragraph 2 it says that 12 million standard cubit feet per day, or approximately 4,436 barrels per day equivalent, but then down in paragraph 6 it says "Each million standard cubic feet of TAG will occupy a volume of 24,908 cubic feet or 4,436 barrels.

So my question is: Is the equivalent of barrels for each or for the full 12? Because that's the discrepancy that I saw.

A. Yeah, you're correct. It's not clear here.

Let's go to the page that has the actual calculation and you'll be able to see it there.

It will be in a table. No, keep going.

There. Here we go. This table right here. Keep on going down. (17).

Okay. Right here. Go back. Right here.

You can see that the full 12 million is what is going to occupy, as I mentioned, about 5,000 barrels at the surface but at the reservoir it will be about 4,446 barrels. That is the entire 12 million.

COMMISSIONER KHALSA: Right. Thank you.

CROSS EXAMINATION

BY COMMISSION CHAIR SANDOVAL:

Q. Mr. Gutierrez, have you reviewed the OCD exhibits?

A. Yes, I have.

Q. So in Exhibit 3-7a, does Ameredev have any concerns with certifying that the operator has contacted appropriate representatives of the City of Jal, the County and the local Emergency Preparedness Committee?

A. I did not understand that this indicated that it had already contacted them. It's just that we haven't even begun the preparation of the Rule 11 plan because we need to have the full parameters of design for the facility in order to be able to do that. And when we get to that point, that's when we would begin those discussions with the City and with the local Emergency Preparedness Committee.

We have to have something to be able to show them.

Q. Understood. That's not what I was asking. I was merely asking: As the condition reads, are there any concerns. Not that you had to have done it already, just that you're willing to certify in your H2S Contingency Plan that you have met with the appropriate representatives.

And I'd like to go so far as to --

A. We'll certify it.

Q. Okay. Would you be willing to provide them with regular updates at some sort of time period on how operations are, where you are in the project, et cetera?

A. Uhm, yes, I would be pleased to communicate with them to whatever extent they would wish. I mean, we've done so previously with other AGIs. As a matter of fact, Energy Transfer has one much closer to the City of Jal, and we incorporated them in those initial discussions 12 or 15 years ago when we got that one approved.

So we would do the same here.

Q. Were they provided Notice or were they outside of the noticing requirements that this AGI is --

A. I'm sorry.

Q. Was --

A. Yes, they were outside of the Area of Review.

Q. So can you restate that.

A. They are six miles away.

Q. So they weren't Noticed.

A. (Note: Pause.) No, they were not Noticed.

Q. Okay. Do you think in the future it might be prudent to do that, since that's a population center?

A. Well, there's very specific guidelines as to what -- who has to be provided Notice, and we follow those on a regular basis. I mean --

Q. That's not what I'm asking you Mr. Gutierrez.
I just asked --

A. -- discussing the --

Q. Mr. Gutierrez.

A. -- procedures that will be followed in an H2S Contingency Plan. But for an AGI or an SWD or other well application there's pretty specific determinations of who needs to be Noticed, and we follow those.

Q. Understood. That wasn't my question, though.
My question is: Do you think in the future, because it is a population center in the near vicinity of the well, even though, yes, I understand it is outside of normal Notice conditions and requirements, do you think in the future it might be prudent to notify City representatives of an impending AGI well outside of their city?

A. Uhm, I don't know, Director. I mean, it depends on the distance away. I mean, if it was going to be very close, yes; if it was going to be within the either 100 or 500 (inaudible) of the OER for the hydrogen sulfide release, then it, I think, would be appropriate.
But, I mean, I think the Rule 11 plan in putting that together is the appropriate forum for involving the stakeholders in an evaluation of that when

you're at the point that you can begin to make specific calculations and tell them exactly what they can and might expect.

So I believe there is always --

Q. Okay. Well, let's --

A. -- do that.

Q. -- proceed and --

A. That's usually reserved for that process of putting together the Rule 11 plan.

Q. Okay. Well, let's move on.

So the second AGI that was referred to earlier in the presentations, can you remind me again on the timing of this?

A. Uhm, I think Mr. Hammond testified to that, but I think we're looking at preparing the application within 12 months of the approval, and then within two years or 24 months of this Order having it ready to inject.

Q. So within two years it will be injection ready, not drill ready. I just want to confirm that.

A. It says it will complete the redundant well within 24 months. So I believe that that means the well will be completed and ready to inject.

Q. All right. Okay.

So Mr. White earlier, when I asked him if Ameredev would have concerns about providing a regular

report to include composition and volume of acid gas, he said that was already included, but I don't think that those actual specifications are already in the report. So adding those specifications, is there a concern with that so that we can understand how much CO2 is being permanently sequestered?

A. No, there's no problem with providing that information, and in fact when we provide the quarterly reports they show the injection rate, and the total amount injected is very easily calculated.

And it's also provided as part of the C-115 reporting, although it doesn't segregate CO2 and H2S, it just reports the total amount of TAG injected.

But I don't anticipate that there would be any problem in providing a calculation along with that of what amount of CO2 was sequestered. It would just be by taking the composition and applying it to the total amount injected in that quarter.

So I don't see that that would be a problem.

COMMISSION CHAIR SANDOVAL: Great. I have no further questions.

Mr. Rankin, would you like to redirect?

MR. RANKIN: Thank you, Madam Chair. I actually don't have any additional questions to ask of

Mr. Gutierrez at this time. I would ask that at this point we -- I guess we --

One point of clarification. I ask that the case be taken under advisement. I understand that the Commission has asked for a few items which we can provide during the lunch break, I believe, and we would like to do that, and if those items are necessary for the Commission to make its decision or to come to a decision as to whether to approve this application we'd ask we be provided an opportunity to provide them during a lunch break, and if possible that the Commission be able to deliberate during break or after break so that we can have a decision today so we could prepare a Draft Proposed Order to present to the Commission in advance of maybe not it's next regularly scheduled meeting but as soon as possible.

COMMISSION CHAIR SANDOVAL: If you can provide those exhibits promptly, I don't think we would have a problem.

MR. AMES: Madam Chair, OCD does have a witness to present.

COMMISSION CHAIR SANDOVAL: Yes. We will get there.

MR. AMES: Okay. Thank you.

COMMISSION CHAIR SANDOVAL: I'm just talking about giving updated exhibits.

MR. RANKIN: With apologies to the Division's counsel for attempting to shortcircuit the process, we will present the, submit the additional exhibits to all parties during lunch break, and will be prepared for OCD's witness following that break.

COMMISSION CHAIR SANDOVAL: Okay. Hold on just a moment. (Note: Pause.)

Okay. So we are going to take a quick break, come back at 1:10, go to 2:00, break from 2:00 to 2:30, and then continue as necessary.

So we will be back at 1:20 to proceed with the Division's case.

Oh, I just said two things. I don't know why I said that. We will come back at 1:10, not 1:20.

So 20 minutes from now we will pick back up, will go till 2:00. We will break from 2:00 to 2:30, and then we will continue.

(Note: In recess from 12:50 p.m. to 1:16 p.m.)

COMMISSION CHAIR SANDOVAL: All right.

Mr. Ames, would you like to present your first witness.

MR. AMES: Yes, thank you. OCD calls Baylen Lamkin.

BAYLEN LAMKIN,

having been duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. AMES:

Q. Good afternoon, Baylen.

A. Good afternoon.

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

A. Baylen Lamkin.

Q. And where do you work, Baylen?

A. I work for the Energy, Minerals and Natural Resources Department at the Oil Conservation Division.

Q. What is your position with the division?

A. I am a petroleum specialist in the UIC Group.

Q. What are your responsibilities with the UIC Group?

A. I review the technical aspects of UIC permits, provide recommendations to district offices regarding UIC wells, act as a hearing examiner on behalf of the Division, and provide input for process design and rulemaking.

Q. Have you prepared a CV for this proceeding?

A. Yes. It's OCD Exhibit No. 1.

Q. In the CV do you describe your educational background?

A. I do.

Q. Could you please explain for the Commission or

describe it for the Commission.

A. So I graduated from the New Mexico Institute of Mining and Technology in 2017 with a Bachelor's of Science in petroleum and natural gas engineering, and currently I'm attending the University of New Mexico's Andersen School of Business & Management for an MBA, and my graduation date is in 2022.

Q. Thank you. Can you describe your work experience.

A. So I have worked in the petroleum industry in some capacity for the last nine years, currently for the OCD for the last year as the petroleum engineer of the UIC Group.

Before that I worked in the Permian Basin as a field engineer for Halliburton and Calfrac Well Services, primarily in completions and stimulation.

Prior to that I worked as an academic research assistant on a post-doctoral research project regarding artificial lift.

And prior to that I was an engineering technician for a small mom-and-pop company that has wells in Colorado and Kansas.

Q. Baylen, have you testified before the Commission before?

A. I have not.

MR. AMES: At this point I would like to move the admission of OCD Exhibit 1, the CV for Mr. Lamkin, and ask that Mr. Lamkin be qualified as an expert in the field of petroleum engineering and underground injection.

COMMISSION CHAIR SANDOVAL: Any objections from the parties?

MR. RANKIN: No objections from Ameredev.

COMMISSION CHAIR SANDOVAL: Commissioners, do you have any objections?

COMMISSIONER ENGLER: No objection.

COMMISSIONER KHALSA: No objections.

COMMISSION CHAIR SANDOVAL: Mr. Lamkin is certified as an expert in his field.

MR. AMES: Excellent. Thank you.

Q. Now, Baylen, have you reviewed Ameredev's application for the OCD?

A. Yes, I have.

Q. What is OCD's opinion of the application?

A. The OCD does not oppose the application providing that the Commission adopt the specific and general conditions described in OCD Exhibits 2 and 3.

Additionally, the Division favors injection into the Devonian and Silurian Formations, as opposed to shallower injections, and supports the efforts to reduce the amount of gas that is flared through similar projects.

Q. Has OCD discussed specific and general conditions with the State Land Office?

A. Yes. OCD staff worked closely with the State Land Office to develop these conditions.

Q. Did OCD discuss these conditions with Ameredev?

A. Yes, we have.

Q. Has Ameredev agreed to these conditions?

A. Yes. Ameredev told the OCD and the State Land Office that it would accept and comply with these conditions.

Q. As you said, these conditions are set forth in our Exhibits 2 and 3, correct?

A. Correct.

MR. AMES: Thank you.

OCD moves the admission of Exhibits 2 and 3 at this time.

COMMISSION CHAIR SANDOVAL: Are there any objections to entering Exhibits 1, 2 and 3 for the Oil Conservation Division?

MR. RANKIN: No objection, Ameredev.

COMMISSION CHAIR SANDOVAL: Commissioners, do you have any objections?

COMMISSIONER ENGLER: No, I have no objection.

COMMISSIONER KHALSA: No objections.

COMMISSION CHAIR SANDOVAL: OCD Exhibits 1 through 3 will be admitted into the record.

MR. AMES: Thank you.

Q. Baylen, what standard does the Division apply when it evaluates whether to oppose or not oppose an application to construct an AGI well?

A. Typically we employ the same standards as we would for any application, and that is the prevention of waste, the protection or correlative rights, the protection of public health and the environment, including underground sources of drinking water.

Q. And in your opinion if the Commission were to impose the general and specific conditions in Exhibits 2 and 3, will Ameredev's proposed well comply with those standards?

A. Yes, I believe so.

Q. Let's review the specific conditions in OCD Exhibit 2.

The first two specific condition concern the redundant well. Why does the Division believe a redundant well is important here?

A. Well, because in the event that there is a mechanical integrity issue with the Independence #1 or maintenance needs to be conducted on the well, there would be no need to potentially shut in area production or flare the gas allocated to the AGI well. This would essentially prevent the waste associated with flaring and protect correlative rights in maintaining area production.

In addition, redundant wells are a well-established and proven approach to mitigate these potential hazards associated with AGI wells.

Q. Can you explain the two specific conditions regarding the redundant well.

A. The first two conditions outline the timeline for the submission of the C-108 and subsequent construction of the redundant well, plus the effect on the Independence AGI #1 permit status if these deadlines are not met.

Q. And the third specific condition concerns well construction; is that right?

A. Correct.

Q. Why does the Division believe that this condition is necessary?

A. Well, because of incidence of hydrologic flows in the Salado, the fact that the Capitan Reef is a protectable water source, and the historic problems of getting cement returns at the surface for long intermediate casing strings, the OCD feels it is necessary to construct the well in such a manner as to protect these intervals.

Q. And how does the third specific condition do

that?

A. Well, according to that condition, Ameredev will have to set in cement an intermediate casing string isolating the Salado before drilling into the reef, and then there would either be a DV tool placed on the next casing string at the base of the Capitan so that cement can be placed in a manner to isolate the reef from the Delaware Mountain Group, or they will add an additional casing string.

Q. Okay. Thank you.

Let's talk about the general conditions in OCD Exhibit 3 briefly. Are these the same general conditions that the Commission has adopted in the Salt Creek midstream and Lucid Energy cases?

A. Yes. They are essentially the same conditions, including the requirement for a seismic station.

But there was one substantive change.

Q. What was that?

A. The added notification requirement for the H2S plan.

Q. Any other changes? Is the Division proposing any other changes to the general conditions?

A. Yes. The OCD reorganized the conditions chronologically, merely for readability and ease of use.

Q. Is that just simply part of OCD's effort to

advance the state of regulation for AGI wells?

A. I believe so.

Q. Did the Division identify any other issues or concerns regarding the Ameredev application?

A. Yes. Originally Ameredev submitted a fault-slip potential and plume-dispersal model that the OCD did not consider to be adequate. The Division wants to ensure that the model is as conservative as possible for the variables that are utilized, and as a result OCD identified two main issues with the model.

Q. What were those issues?

A. With the fault-slip potential model, Ameredev originally did not include some wells in the modeling that OCD believed should have been included. The NGL Cobra #1, and the Solaris Breckenridge Stake.

And for the plume dispersion modeling the existing West Jal B Deep, Ameredev constructed the model so that that well was injecting 15,000 barrels per day, which was based on their original C-108 applications, rather than the historical maximum injection volume seen, which was approximately 30,000 barrels a day.

Q. Do you have an exhibit showing the proximity of the West Jal B Deep and the Cobra 1 wells to Ameredev's proposed AGI well?

A. Yeah. OCD put together some maps labeled OCD

Exhibits 4 and 5. In those -- uh, in Exhibit 4 you can see the Cobra 1 is approximately .3 miles to the west of the proposed Independence 1 location; and the West Jal B Deep is approximately one mile away to the northeast.

MR. AMES: Thank you. OCD moves the admission of Exhibits 4 and 5 at this time.

COMMISSION CHAIR SANDOVAL: Any objections from the parties?

MR. RANKIN: No objection from Ameredev.

MR. BIERNOFF: No objection from the State Land Office.

COMMISSION CHAIR SANDOVAL: Thank you.

Commissioners, any objection?

COMMISSIONER ENGLER: No objections.

COMMISSIONER KHALSA: No objections.

COMMISSION CHAIR SANDOVAL: Thank you.

Q. Why did OCD believe that Cobra 1 should be included in the FSP and plume-dispersion modeling, Baylen?

A. Well, even though the Cobra 1 is proposed but not approved, it is likely to be approved before Ameredev finishes the construction of the Independence #1; therefore the Division believes that in order to meet its statutory obligations the Commission should be advised of the potential effect of the Cobra 1 on the proposed AGI well.

Q. Did the Division discuss these issues with Ameredev and the State Land Office?

A. We did. Over the past week or so the Division, State Land Office and Ameredev had several meetings to discuss these issues.

Q. Has Ameredev addressed these issues to OCD's satisfaction?

A. Yes. Ameredev reran the model again with actual volumes for the West Jal B Deep and the proposed volumes for the Cobra 1.

Q. Does the Division have any residual concerns regarding modeling?

A. Uh, yeah, the Division accepts the new modeling but still has a few residual concerns about certain model assumptions, such as porosity, permeability, water saturation, the definitions of the delineation of the zones used in the model, and the reasoning for the belief that the model faults are sealed.

Q. How would the Division recommend the Commission handle these uncertainties going forward?

A. In order to ensure the accuracy of the model and to improve our confidence in both the fault-slip potential and plume-dispersion modeling, the OCD supports general condition No. 13 which requires Ameredev to recalculate their model using observed operational data five years after the well commences injection.

Q. Okay. Does the Division have any more exhibits to present today?

A. One final exhibit is Exhibit No. 6. It's the list of AGI wells that the Division is currently tracking.

Q. And why are we presenting that exhibit now?

A. Just so the Commission can get the full picture on the approved AGI wells thus far.

MR. AMES: Thank you, Baylen.

I now move admission of OCD Exhibit 6.

MR. RANKIN: No objection from Ameredev.

MR. BIERNOFF: No objections.

COMMISSION CHAIR SANDOVAL: Commissioners, any objections?

COMMISSIONER ENGLER: No objection.

COMMISSIONER KHALSA: No objections.

COMMISSION CHAIR SANDOVAL: OCD Exhibit 6 is admitted into the record.

MR. AMES: Thank you, Madam Chair. OCD rests.

COMMISSION CHAIR SANDOVAL: Mr. Rankin, do you have questions for OCD?

CROSS EXAMINATION

BY MR. RANKIN:

Q. Mr. Lamkin, just so the record is clear, as to the inclusion of the Cobra SWD #1 well, is it your

understanding that Ameredev didn't originally include that in its modeling because that well was not yet approved?

Is that right?

A. That's my understanding, yes.

Q. And as to the Breckenridge well that you identified, is it your understanding that that well was not included because the information that Ameredev had reflected that that well had been canceled, the SWD for that well had been canceled? Is that your understanding?

A. That's my understanding, yes.

Q. So as soon as when the Division requested those wells be included, Ameredev made those adjustments to include those in the model. Correct?

A. Yes, they did.

Q. And then on your concerns about the data that went into the modeling, on the porosity and other parameters, is it your understanding that Ameredev and Geolex included all available data within the area to define those parameters?

Is that correct?

A. Yes, I believe so.

Q. So the concern is simply the fact that there's just not much well control or data control within that area at this time.

A. Correct.

MR. RANKIN: No further questions.

COMMISSION CHAIR SANDOVAL: Mr. Biernoff, do you have any questions of the witness?

MR. BIERNOFF: I do not. Thank you.

COMMISSION CHAIR SANDOVAL: Commissioners?

COMMISSIONER ENGLER: Yes, I do.

CROSS EXAMINATION

BY COMMISSIONER ENGLER:

Q. Mr. Lamkin, good afternoon.

A. Good afternoon.

Q. I have some questions/clarifications with Exhibit 4.

A. Uh-huh.

Q. So I guess the well -- just to clarify, what is the status? It's not approved? It's had a hearing? What is the status of that?

A. The current status of the Cobra #1 well is that it has gone to hearing and been taken under advisement.

Q. So we're just waiting for a ruling -- Division is waiting for a ruling on that well; is that correct?

A. Or an Order to be issued. Correct, yeah.

Q. So on your Exhibit 4, then, for the Cobra well its code is -- the status is D-WD. What does that mean?

A. So that's -- if you can look at the exhibit, there's a small sliver at the top of the yellow circle that's red. That yellow circle corresponds to the Cobra SWD #2. That one has been denied and/or withdrawn by the applicant, and so the AOR for the Cobra #1 underlies the AOR for the Cobra #2.

Q. Okay. And that would be the (inaudible) one, I guess, the underlying one. Right?

A. Yeah.

Q. The size of these circles, what does that represent?

A. So the circles surrounding the Cobra wells and the Tornado and the like, are one-mile AORs, I believe, and then on the West Jal B Deep is a 3/4-mile AOR, I believe.

Q. AOR is what?

A. Area of Review.

Q. So what does that mean, Area of Review, in terms of that well?

A. That is the area that the Division requires notification of the offset operators and analysis of fresh water wells; and, uh, leasehold price and operator status. That's basically our notification area.

Q. So in your Exhibit 5 -- well, again look at all the circles. It says 3/4-buffer. What does that mean?

A. Meaning -- yeah, those are 3/4-mile AOR. So then that would make a correction. The AOR on the West

Jal B Deep is 1/2-mile and then the rest are 3/4-mile.

Q. So in your experience with, uh, the -- let me rephrase this.

In your experience with regards to these injection wells, we have the Cobra and we have Independence AGI #1 one third of a mile away, and they're going to inject in the same reservoir. And what would be the expected injection volume in the area, the injection area, that you would think would happen with these wells?

(Note: Pause.)

I think we lost him.

MR. AMES: Uh, yeah, it looks like we lost Baylen. He looks like he may have a band width problem. But I think he may have just come back on.

No? I'm sorry.

COMMISSIONER ENGLER: I'm trying to reach him. Mr. Lamkin, are you there?

COMMISSION CHAIR SANDOVAL: We'll give him a minute if he needs to log off and get back on.

MR. AMES: The little icon says low band width, so he might have just had a glitch at the most inopportune time. I don't think he's avoiding your question, Dr. Engler.

Let me call him on the phone. I'm going to go off line momentarily.

(Note: Pause.)

(Note: Discussion off the record.)

COMMISSION CHAIR SANDOVAL: Baylen, are you on yet? Baylen, are you on?

THE WITNESS: Did that work?

COMMISSION CHAIR SANDOVAL: Yeah, there you are.

THE WITNESS: Okay. Sorry about that.

COMMISSION CHAIR SANDOVAL: No problem.

MR. AMES: Baylen, do you need Dr. Engler to reframe his question or repeat his question for you?

THE WITNESS: Please. Yeah. You cut out a little bit.

COMMISSIONER ENGLER: Can you hear me now.

THE WITNESS: Yeah, I can hear you.

CONTINUED CROSS EXAMINATION

BY COMMISSIONER ENGLER:

Q. Let me rephrase it so it's a little better.

You heard testimony today from Ameredev and Geolex about their Independence AGI #1, and really the saturation profile and how far out that will actually influence. We usually call it the drainage area, so this would be an injection area for this well.

So you heard that, correct?

A. Yeah.

Q. And then for the Cobra well, again there's going

to be a certain injection volume, and one could calculate how far out that well will influence in its radius of investigation from the water injection. Is that correct?

A. Correct.

Q. Are you not concerned or is the Division not concerned that these two wells are only a third of a mile apart and those two areas are (inaudible) for the injection.

A. Well, yeah, there are concerns that that, you know, could be a potential problem. I think one of the benefits on Ameredev's side, if they are going to hearing prior to having an Order written for the Cobra well, is that we could potentially restrict injection volumes on the Cobra well after the fact.

Q. So I guess that will be an option, but also an influence of this particular AGI well on what the Division does in this Order for the Cobra well.

A. Yes, it could be, yeah.

Q. Okay. I have other questions about the redundant wells. You know, these are special conditions for this particular case.

I know in Exhibit 6 there are other redundant wells that have been proposed and/or drilled; is that correct.

A. I believe so. Yeah. I'd have to pull up the list but I believe there are several redundant wells that we have in operation already.

Q. In your experience and in your position as UIC person, has there ever been a case where, you know, the condition or drilling a redundant well, particularly in this case, Special Condition 2 has been violated in year 2?

A. In terms of well construction?

Q. No, in terms of these time deadlines that we are requesting for a second well.

A. To my knowledge I'm not aware of anything like that happening.

COMMISSIONER ENGLER: Okay. Thank you, Mr. Lamkin. No more questions.

COMMISSION CHAIR SANDOVAL: Commissioner Khalsa?

COMMISSIONER KHALSA: No questions.

CROSS EXAMINATION

BY COMMISSION CHAIR SANDOVAL:

Q. Do we have any idea what's going to happen when these two plumes do at some point collide? Just like looking at real basic chemistry here, when you're combining water and CO2 and water and H2S, you're going to get carbonic acid and sulphuric acid, which sounds unpleasant.

So what is that going to do? I mean, do we

have any idea what's going to happen or is this just like a science experiment?

A. I don't think that I can definitively say what the potential issues are going to be, but I would think that that is part of the reasoning behind the continual observation of the operation of the well and the subsequent recalibrating of the model using actual data.

Q. This is a question, okay, on process issues.

So it sounds like the Cobra has already gone to hearing or we are going to hearing on this pending an Order. Does one of them take procedural preference to another?

A. Not necessarily. We take all applications on a case-by-case basis, and in some cases the wells, especially in this economic climate, are not -- I mean, are not a high-end priority with some of these operators.

Q. Okay. Has the OCD received any sort of application with the West Jal B Deep for increased injection? It sounded like Ameredev alluded to the fact that they might submit some sort of application for increased injection.

A. I believe historically they had applied to extend their injection interval. I think that based on the construction of the well and the history, the timeline history of events for that well, I would assume that the

Division would not be likely to grant an increase in volume for that well.

COMMISSION CHAIR SANDOVAL: Okay. That concludes my questions?

Mr. Ames, do you have any redirect for your witness?

MR. AMES: Yes. Just a couple of follow-up questions to what you were referencing, Madam Chair, regarding the Cobra 1 well.

REDIRECT EXAMINATION

BY MR. AMES:

Q. Baylen, NGL is the Applicant on the Cobra 1 SWD; is that right?

A. That's correct.

Q. And NGL got Notice of Ameredev's application?

A. Yes. Yes, they did.

Q. And did NGL enter an appearance in this proceeding?

A. No, they did not.

Q. Does it -- have -- has OCD been contacted by NGL to -- indicating that they are concerned about the effects of this pending application for Ameredev on its pending application for the Cobra 1?

A. Not to my knowledge, no.

MR. AMES: That's all. Thank you.

COMMISSION CHAIR SANDOVAL: Thank you.

It is 1:51. Mr. Biernoff, I believe you have two witnesses.

MR. BIERNOFF: Madam Director, we had designated two witnesses, but in light of the parties' agreement on the conditions that have been presented, we are not going to be calling witnesses at this proceeding.

COMMISSION CHAIR SANDOVAL: Okay. Well, then, do we want to -- I guess let's proceed with closing statements and then see where we are with time.

Mr. Rankin, would you like to make a closing?

MR. RANKIN: Madam Chair, I appreciate the opportunity. I'll just take a few minutes to close here.

I believe Ameredev and Geolex has presented sufficient evidence through its modeling data, analysis of the overlying zones on the pressure conditions, as well as its fault-slip potential model and a plume-dispersion model that it did to demonstrate that the proposed injection volumes and rates through this AGI are not only possible, but the reservoir and receiving zone will have the capacity to accept it, even in the circumstance where the offsetting Cobra SWD #1 well is approved by the Division and where the offsetting Jal -- West Jal B Deep Well continues for -- into 2051 to inject at a rate, at its highest historical rate for that time frame.

The other point I'll make is just in closing that -- well, I'll leave that right there, I guess.

With that, I think I have no further comments to make it. I appreciate very much on behalf of Ameredev the Commission's willingness to set this special hearing, and I also note that I appreciate the cooperation of the State Land Office and the Division to confer with Ameredev on the technical issues and to agree to the special hearing date so that we can get the matter presented to the Commission in the most timely manner. And we appreciate the Commission's consideration of the application.

And I'll note that we did submit, during the break or actually right after the break, information that was requested by the Commissioners for consideration.

One, the TAG or treated acid gas distributions within the zones identified by the log data, and then also identified the fault segments in the fault-slip modeling that reflected an increase in pressure in 2015 and 2020. It's just for the -- if it's helpful to understand, that's when certain wells within the area resumed -- undertook their injection operations.

So with that, unless there's any other

questions from the Commission, we request that the case be taken under advisement; and if it pleases the Commission to deliberate today, and then if at all possible we would be more than happy to prepare a Proposed Order for the Commission's consideration at its next regularly scheduled meeting.

COMMISSION CHAIR SANDOVAL: Thank you.

Mr. Ames, do you have a closing statement?

(Note: Pause.)

I think you're muted, Mr. Ames.

MR. AMES: Thank you. Just a couple of points. I'll keep it short. Time is short.

OCD does not oppose the application provided that the special and general conditions set forth in Exhibits 2 and 3 are adopted. We also would like to suggest to future AGI applicants who might be represented by parties here or witnesses here, that they come and consult with OCD much earlier in the process, certainly before the application is filed, so that we can try and identify and iron out these issues more than a week in advance of a hearing.

Thank you.

COMMISSION CHAIR SANDOVAL: Thanks.

Mr. Biernoff, do you have a closing statement?

MR. BIERNOFF Just a brief one, Director.

First of all I want to just note that the Land Office appreciates the commitments that the Oil Conservation Division has shown to ensuring that this well, if it's permitted, adheres to appropriate conditions for health, safety and protection of correlative rights. We also appreciate Ameredev being willing to come to the table, and believe that the company has shown a seriousness of purpose in addressing our concerns, and so we are grateful for that and do not oppose Ameredev's application for that reason. Like Mr. Ames I'm concerned by Ameredev's relatively short notice to all parties. And I'm not accusing Ameredev of violating any rules with respect to the Land Office, but I think it was clear from our discussion earlier that the company has known about this project for many months. It filed its C-108 in early July, I think, didn't tell the Land Office about it until the very end of August, Notice that we got in September to our general mail box. So relevant oil and gas staff that needed to look at this application and evaluate it didn't have Notice until literally a few days before the hearing.

I don't think that's constructive, I don't think that's conducive to parties working together to resolve differences and develop applications, submissions, to the Commission in this case, that are going to meet all of the requirements and protect everybody's interest.

So I don't know if what's called for is a rule change requiring greater notice, but that's something we are certainly going to look at, because we don't think this is good practice on behalf of applicants, and we've certainly shared that view with Ameredev.

COMMISSION CHAIR SANDOVAL: Thank you, counselors.

The record of this application hearing is now closed.

All right. So now that the record of the application is closed the Commission will take a break and then begin deliberating at 2:30 so as to reach a final decision on the application.

I will now entertain a motion that the meeting be closed pursuant to the Administrative adjudicatory exception to the Open Meetings Act, Section 10-14-1(H)3 to deliberate in Case No. 21381.

Is there a motion?

COMMISSIONER ENGLER: I motion.

COMMISSION CHAIR SANDOVAL: Is there a second?

COMMISSIONER KHALSA: I second the motion.

COMMISSION CHAIR SANDOVAL: May I have a roll call vote, please.

MS. MALAVE: Commissioner Engler?

COMMISSIONER ENGLER: Approve.

MS. MALAVE: Commissioner Khalsa.

COMMISSIONER KHALSA: Approve.

MS. MALAVE: Commissioner Sandoval?

COMMISSION CHAIR SANDOVAL: Approve.

The motion passes unanimously. The Commission will now close the session and the record.

The public may remain on the meeting during the closed session and wait for the Commission to reconvene. Thank you.

(Note: In recess from 1:59 p.m. to 3:15 p.m.)

3:15 p.m.

COMMISSION CHAIR SANDOVAL: I think we will go ahead and get restarted at 3:20 p.m.

The Commission meeting on the record is now open at 3:21. The discussions in closed session was limited to the deliberations in Case No. 21381.

Are there any motions on the case?

COMMISSIONER KHALSA: Yes, Madam Chair. This is Commissioner Khalsa.

I make a motion that the Commission adopt OCD's Recommended Specific Conditions of Approval as presented in OCD's Exhibit 2, 1 through 3; and that the Commission adopt OCD Exhibit 3 Recommended General Conditions of Approval changed as follows:

Items 1 through 6 to be adopted as presented.

Item 7A: After the line that says "...certifies that Operator has contacted appropriate representatives of the City of Jal, Lea County, and local Emergency Preparedness Committee," we add this language, "and will provide regular updates to the same at least annually."

Items 7B through D adopted as presented.

Items 8 through 12 adopted as presented.

The second paragraph of 12 is hereby No. 13, and we add this language at the end of that paragraph: This report shall include composition and volume of acid gas injected into the well.

Item 13 is hereby renumbered 14 and adopted as presented.

Item 14 is hereby renumbered 15 and adopted with the following change: Seismic monitoring station or stations.

Item 16 is added as follows: In the event Ameredev transfers ownership of the well, Ameredev shall seek approval of such change in ownership from OCD pursuant to 19.15.9.9 NMAC.

Item 17 is added as follows: After 30 years from the date of the Commission's Order in this case, the authority granted by this Order shall terminate unless Applicant or its successor-in-interest shall make application before the Commission for an extension to inject.

Item 18 is added as follows: The injection authority herein granted shall terminate two years after the effective date of this Order if Ameredev has not commenced injection operation. The OCD Director upon written request of Ameredev submitted prior to the expiration of this Order may extend this time for good cause shown.

That's what I have.

COMMISSION CHAIR SANDOVAL: Is there a second to the motion?

COMMISSIONER ENGLER: Yes. Tom Engler. I second the motion.

COMMISSION CHAIR SANDOVAL: Is there any discussion by the Commissioners?

COMMISSIONER ENGLER: Yes, Madam Chair.

This is Tom Engler. A couple of points I'd like to bring out.

The evidence and testimony today supports the concept of preventing waste, particularly for those wells that we do not want shut in but producing.

Also today's testimony and evidence

provided good support for mimimizing environmental health risk by injecting acid gas instead of doing venting or flaring.

So if we feel like that, that was a few key points that were presented today.

Another couple of comments: We appreciate the effort by all who are putting together a very good technical program, as good or maybe even better as we've been going through these now for the past year and a half. And we learned a lot a lot and the people who are testifying I think are learning more, as well. I think this is good.

I would also like to give thanks and appreciate this interaction between OCD, State Land Office and, in this case, Ameredev. I think it's a good thing, and I would encourage, as we heard some today, that we continue this effort -- maybe a little earlier and a little better so we can improve even more-so all our plans and our actions.

I think I will leave it, as that's the key points I would like to state. Thank you.

COMMISSION CHAIR SANDOVAL: I agree with Dr. Engler.

I think the additional conditions are also aligned with previous orders that have been issued by the

Commission lately, so it creates consistency. And all of those conditions are designed to ensure that we prevent waste and protect correlative rights both now and in the future.

Ms. Malave, would you do a roll call vote, please.

MS. MALAVE: Commissioner Engler.

COMMISSIONER ENGLER: I approve.

MS. MALAVE: Commissioner Sandoval.

COMMISSION CHAIR SANDOVAL: Approve.

MS. MALAVE: Commissioner Khalsa.

COMMISSIONER KHALSA: I approve

COMMISSION CHAIR SANDOVAL: The motion passes unanimously.

Mr. Rankin, would you please draft and circulate a Proposed Written Order and send to the Commission clerk at least 10 days prior to the October 15th -- Oh. Uhm, the November 4, 2020 hearing.

MR. RANKIN: Madam Chair, I will be pleased to do so.

If it would be at all possible if the Commission would be willing to share with me their written changes and modifications to the conditions and additions, then I would be able to do that without having to wait for the transcript of the hearing. That way I could turn it around more quickly. If it's possible, I would appreciate that. I would be happy to prepare a Draft Order and circulate it prior to 10 days before the November 4th regular commission meeting.

COMMISSION CHAIR SANDOVAL: Yeah, we'll send out a note later this week with those conditions.

MR. RANKIN: Much appreciated. Thank you very much.

COMMISSION CHAIR SANDOVAL: Thank you.

(Time noted 3:25 p.m.)

STATE OF NEW MEXICO)

: SS

COUNTY OF TAOS)

REPORTER'S CERTIFICATE

I, MARY THERESE MACFARLANE, New Mexico Certified No. 122, DO HEREBY CERTIFY that on Thursday, October 8, 2020, the proceedings in the above-captioned matter were taken before me; that I did report in stenographic shorthand the proceedings set forth herein, and the foregoing pages are a true and correct transcription to the best of my ability and control.

I FURTHER CERTIFY that I am neither employed by nor related to nor contracted with (unless excepted by the rules) any of the parties or attorneys in this case, and that I have no interest whatsoever in the final disposition of this case in any court.

/s/ Mary Macfarlane

MARY THERESE MACFARLANE, CCR
NM Certified Court Reporter No. 122
License Expires: 12/31/2020