STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

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

ORIGINAL

APPLICATION OF FRONTIER FIELD SERVICES, LLC FOR AUTHORIZATION TO INJECT, LEA COUNTY, NEW MEXICO.

CASE NO. 15193

REPORTER'S TRANSCRIPT OF PROCEEDINGS

COMMISSION HEARING

September 25, 2014

Santa Fe, New Mexico

BEFORE: JAMI BAILEY, CHAIRPERSON
TERRY WARNELL, COMMISSIONER
ROBERT S. BALCH, Ph.D., COMMISSIONER
BILL BRANCARD, ESQ.

This matter came on for hearing before the New Mexico Oil Conservation Commission on Thursday, September 25, 2014, at the New Mexico Energy, Minerals and Natural Resources Department, Wendell Chino Building, 1220 South St. Francis Drive, Porter Hall, Room 102, Santa Fe, New Mexico.

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

APPEARANCES

FOR APPLICANT FRONTIER FIELD SERVICES:

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

FOR NEW MEXICO OIL CONSERVATION DIVISION:

GABRIEL WADE, ESQ.
STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
Office of General Counsel
Wendell Chino Building
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
(505) 476-3451
gabriel.wade@state.nm.us

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EXHIBITS OFFERED AND ADMITTED

(9:04 a.m.)

CHAIRPERSON BAILEY: We now have Case Number 15193, which is the application of Frontier Field Services, LLC for authorization to inject acid gas and carbon dioxide from its Maljamar Processing Plant into the proposed Maljamar AGI Well Number 2, to be drilled at a surface location in Section 21, Township 17 South, Range 32 East, in Lea County, New Mexico.

Call for appearances.

MR. BRUCE: Madam Chair, Jim Bruce of Santa Fe representing the Applicant. I have two witnesses.

MR. WADE: Good morning. Gabriel Wade representing the Oil Conservation Division. There will be one witness, Mr. Phil Goetze.

CHAIRPERSON BAILEY: Mr. Bruce, do you want to make an opening statement?

MR. BRUCE: I don't think so. I think the first few slides on the PowerPoint presentation will suffice.

CHAIRPERSON BAILEY: Mr. Wade, would you like to make an opening statement?

MR. WADE: No, other than the OCD does not oppose the application of Frontier. We do have some conditions we would like to discuss with the Commission.

CHAIRPERSON BAILEY: If you would call your witness and have him sworn in.

MR. BRUCE: First let me start with the first few PowerPoint slides, and then we'll get Mr. Bryant to come up.

CHAIRPERSON BAILEY: So you have no witness to --

MR. BRUCE: Just for a few introductory remarks.

CHAIRPERSON BAILEY: Okay.

OPENING STATEMENT

MR. BRUCE: As you said, Madam Chair, we're here for the application of Frontier Services for its Maljamar AGI Well No. 2. Today we will be presenting two witnesses. One of them is Mr. Coy Bryant. He is the director of Operations at Aka Energy Group, LLC, which is the parent of Frontier. And, of course, Mr. Gutierrez of Geolex, who you have seen before you many times, will be the geologist testifying on behalf of Frontier.

The goals of the presentation today, Mr. Bryant will testify about the history and the benefits of Frontier's AGI project, a little bit about gas plant operations and information about Frontier's activities in New Mexico. And Mr. Gutierrez will

discuss the geology, hydrogeology system and operation and an analysis and anticipated effect on the injection zone. And he will go through the basics of the C-108 in front of you. He won't go page by page through the C-108. If you have specific questions, feel free to ask, but the PowerPoint presentation, in effect, presents the highlights of the C-108.

And with that, I would call my first witness Mr. Bryant.

CHAIRPERSON BAILEY: Would you please stand to be sworn?

COY BRYANT,

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

MR. BRUCE: Madam Chair, I don't intend to introduce Mr. Bryant as an expert, although we will go back into his educational and employment background very briefly.

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Mr. Bryant, could you state your name and city of residence?

A. Coy Bryant, Durango, Colorado.

Q. And your title is Director of Operations at Aka?

A. Correct.

Q. Could you describe briefly for the Commissioners your educational and employment background?

A. I have a bachelor of science in civil engineering from Texas Tech University and a master of science in nuclear energy from the University of Texas at Austin. I've worked for ExxonMobil, Kinder Morgan and CO2 Company and now, most recently, with Aka Energy.

Q. And as the director of operations, what are your typical duties?

A. To support our ongoing operations from an reliability, safety, environmental compliance perspective.

Q. Looking at slide four, could you go a little bit into the Maljamar Gas Plant and its benefits and the basic reason why you need this redundant gas well --

A. Okay.

Q. -- gas injection well?

A. So our Maljamar Gas Plant is located near Maljamar, New Mexico, down in southeast New Mexico. We employ approximately 35 full-time Frontier Field Services employees, not including contractors.

THE WITNESS: Sorry. Am I going too fast?

(The court reporter responds.)

THE WITNESS: We serve about 70 producers in the area and approximately 1,500 wells that deliver into our facility. The plant currently produces about 95 million cubic feet of sour gas, feet [sic] gas and about -- of that, we generate about 1.4 million cubic feet of treated acid gas, which has a composition of about 12 percent H2S and 88 percent CO2.

Q. (BY MR. BRUCE) Now, the AGI No. 1 well, which you previously got permitted, that is in operation?

A. Correct. Yes.

Q. What would happen if that well goes down?

A. We would have to cut back our inlet gas, which means we'd have to cut back producers substantially.

Q. So it would not only affect Frontier, it would affect a number of operators in the area?

A. That's correct.

Q. Moving on to the next one, could you discuss slide five?

A. Sure. So back in August of 2011, we received approval to drill our first AGI well. We put that into operation in the summertime of 2013. We expected lower than expected permeability in the injection zone, which caused our surface injection pressure to be much higher than originally designed for, so we had to upgrade our facilities to achieve that higher injection pressure.

And the well is functional, and all facilities are in operation right now. We're injecting our 1.4 million cubic feet of acid gas per day. We recently had our annual MIT that was successful on September 17th, and we continue to operate within the permitting -- permitted guidelines.

Q. And could you move to the next slide and discuss the reasons why you want the redundant No. 2 well.

A. Okay. So as stated earlier, if we lose our well, the AGI No. 1, we will have to cut back substantially on our inlet gas, which not only affects us but affects our customers, the producers in the area, and it -- with the redundancy, it will allow us to more effectively maintain our air quality permit guidelines. That's the purpose.

Q. Now, what is the current maximum allowable injection rate?

A. Of our current well?

Q. Of the No. 1 well.

A. I believe it's 2 million cubic feet a day.

Q. Is it 1.8 million?

A. Okay. 1.8 million.

Q. And you're requesting two million in this well?

A. That's correct.

Q. And is that to be used by either well or both wells together?

A. I'm sorry?

Q. The 2 million rate, would that apply to either well --

A. Right.

Q. -- being used solely, or could it be used for both wells together?

A. It could be used for both wells, correct.

Q. And I suppose one final question: Have there been any operational issues other than the permeability being less than what you thought it was at the operations of that well at the plant?

A. They [sic] have.

MR. BRUCE: Madam Chair, I have no further questions of the witness.

CHAIRPERSON BAILEY: Mr. Wade, do you have any questions?

MR. WADE: No questions.

CHAIRPERSON BAILEY: Commissioner Warnell?

COMMISSIONER WARNELL: Yes. I have a few questions.

CROSS-EXAMINATION

BY COMMISSIONER WARNELL:

Q. Good morning, Mr. Bryant.

A. Good morning.
Q. How long have you been with Aka?
A. I'm on my fifth week (laughter).
Q. Fifth week (laughter). Well, welcome aboard.
A. Thank you. It's good to be here.
Q. This is quite an orientation for you.
Okay. Well No. 1 is permitted right now at 1.8 million, and you're asking for that to be increased to 2 million?
A. No, sir. The injection rate on our AGI No. 2 is the 2 million cubic a day.
MR. BRUCE: Let me correct that, Mr. Examiner.
COMMISSIONER WARNELL: I'm confused.
MR. BRUCE: We're asking two things. Number one, to approve the No. 2 well and to increase the maximum injection rate for both wells together from 1.8 to 2 million. And Mr. Gutierrez will discuss the reasons for that.
COMMISSIONER WARNELL: Ah, yes, Mr. Gutierrez. That's probably my third question because I'm really curious as to why the permeability in this well is going to be better than the No. 1 well.
MR. BRUCE: And he's going to discuss that.
COMMISSIONER WARNELL: Thank you.

COMMISSIONER BALCH: I have a follow-up question from Commissioner Warnell.

CROSS-EXAMINATION

BY COMMISSIONER BALCH:

Q. The current Maljamar No. 1 has a panel [sic] of 1.4 mmcfs per day.

A. Right.

Q. And that's after upgrades surface facilities to allow that prior injection rate -- prior injection pressure at the surface. Will those upgrades allow the 2.0 that you're now requesting for that well?

A. Yes. The current facilities?

Q. Yes.

A. Yes, they will.

Q. Okay.

A. We're in the process of -- well, we have a project ongoing that we want to install additional facilities, but, again, for redundancy.

Q. And how close are you now to the maximum injection -- surface injection pressure on that No. 1 well?

A. We are well below, if I'm not mistaken.

Q. Well below? I presume Mr. Gutierrez will have more data?

A. Yes. He'll provide those details.

Q. Thank you.

CROSS-EXAMINATION

BY CHAIRPERSON BAILEY:

Q. You mentioned that if the current well should go down, then there wouldn't necessarily be shut-ins in the wells that contribute gas to your plant?

A. There will be, yes.

Q. I'm looking at the surface ownership by tract in Appendix C, and I'm seeing that it appears as though most of the wells that contribute gas to your plant are located on BLM land. Are you aware of land ownerships or --

A. I apologize. I'm not as familiar with the land ownership for the surrounding -- or for the producing assets. I'm not.

Q. So you don't know where the gas comes from, is what I'm trying to get at?

A. I don't. Mr. Gutierrez can probably provide those details. I apologize. You know, I'm still trying to get my hands around everything going on out there. I've been focusing on the plant, not necessarily the field.

Q. And you have a steep learning curve.

A. I do have a steep learning curve.

Q. Thank you. I don't have any other questions.

CHAIRPERSON BAILEY: Do you have any other questions?

MR. BRUCE: No, I don't, Madam Chair.

I would say that if you -- Mr. Gutierrez can testify. His office did a lot of the land ownership stuff. This is a heavily federal minerals area, and if you'd like more information on that, I can certainly obtain some of that, some BLM plats and stuff like that that you can see the type of operations in that area.

CHAIRPERSON BAILEY: Page 4 of Appendix C gives me a pretty good idea of land, surface ownership and mineral owner by tracts.

MR. BRUCE: Yeah. So --

CHAIRPERSON BAILEY: That's all we have. You may be excused.

THE WITNESS: Okay. Thanks.

MR. BRUCE: Call Mr. Gutierrez to the stand.

ALBERTO A. GUTIERREZ,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Mr. Gutierrez, where do you reside?

A. I live in Albuquerque, New Mexico.

Q. And what is your relationship to Geolex, Incorporated?

A. I'm the president of Geolex.

Q. What is Geolex's association with Frontier?

A. We are a consultant to Frontier. We located, designed and permitted and oversaw the construction of the AGI No. 1, and then we were retained to identify a location for a redundant AGI, No. 2, which resulted in this application.

Q. And have you previously testified before the Commission?

A. I have.

Q. And were your credentials as an expert geologist accepted as a matter of record?

A. Yes, as a petroleum geologist and hydrogeologist.

Q. And are you familiar with the application, especially the C-108, submitted to the Commissioners for this application?

A. Yes. I prepared the C-108 in conjunction with other folks in my office.

Q. And you're obviously familiar with the geologic matters involved in this application?

A. Yes, sir.

MR. BRUCE: Madam Chair, I'd tender

Mr. Gutierrez as an expert geologist.

CHAIRPERSON BAILEY: He is accepted.

Q. (BY MR. BRUCE) Mr. Gutierrez, rather than interrupt you too much and slow you down, why don't we start with slide seven, the Executive Summary, and let's move on from there?

A. Sure.

Frontier's requesting a permit to construct a second acid gas injection well into the same reservoir that the current well is designed and is operating. The well would be injecting into the lower Wolfcamp at approximately 10,000 feet -- roughly between about 9,900 and about 10,150 feet in their No. 1 well, and we believe it will be essentially the same general depths in the No. 2 well, even though the No. 2 well will be located approximately half a mile -- the bottom-hole location will be located approximately half a mile away from the No. 1 well.

There are no active wells that penetrate the lower Wolfcamp within the half-mile radius area of review. There are -- well, within the one-mile area of review, there is another well that is a saltwater disposal well, which I'll discuss a little bit in the context of the question which Commissioner Balch raised about the permeability. And I'll talk about that in a

little bit.

Then there is only one plugged and abandoned well within the half-mile area, and that is the Queen B 036, which was already evaluated as well in the previous application because it was within the area of review of the No. 1 well as well. And that's properly plugged and completely isolated in the proposed injection zone.

After we take into account the irreducible water and with the information that we have the No. 1 well, we were able to refine our estimate of the extent of the plume after 30 years of injection, and that extent is approximately 140 acres and with a radius of about a quarter mile from the well. It's not too different than what we anticipated for the No. 1 well.

When you look at the 100 percent safety factor, we're still well under half mile with a radius of about 3.7 miles.

Q. One question on this chart. It talks about the maximum operating surface pressure of 3,200 psi. What is the currently approved maximum pressure?

A. 3,200 psi.

Q. It is?

A. Yes, sir.

Q. So it's slightly above the 3,200 psi preferred

depth?

A. It is, because we did a step-rate test and were able to obtain an increase in the allowable pressure.

So we don't get any further without answering the question that was asked earlier about the operating pressure, we're currently injecting at about 2,400. And it was originally anticipated that the well would probably be able to inject at about 15- or 1,600 psi given the bottom-hole pressure, but what happened, basically, is we got lower permeability than we expected. The porosity is good, but we got a little bit less permeability than we anticipated. And I'll go into that in more detail later and why we think the new well will be better.

Q. Okay.

A. We have designed -- and the last well was designed -- now, the difference between 1.8 and 2 million cubic feet a day really doesn't make any difference in the design of the well. We have requested this about ten-percent increase in the injection rate and have modeled the injection at this higher rate, and that's because what we're seeing is we're seeing a little bit more increase in CO2 associated with this gas than what we anticipated originally. And as these wells come online, what we're seeing is that -- actually, the

ratio is skewing a little bit more towards maybe 89 percent or maybe 90 percent CO2 and 11 -- 10 to 11 percent H2S. We're just getting a little more CO2 than anticipated and that's what would make up the bulk of that 200,000 additional cubic feet a day.

The injected fluid composition, roughly, right now is about 12 percent H2S and 88 percent CO2. The injected fluid compatibility has been determined and preexisting by looking at the available information on the formation fluids, and then, obviously, with our injection experience into the No. 1, we have anticipated -- haven't encountered nor do we anticipate any problems with compatibility of the formation fluid.

We've got a maximum allowable operating pressure of 3,200 psi for the current well.

Q. And just to be perfectly clear, you're not seeking a 2 million cubic feet injection rate for each well individually?

A. Absolutely not, no. The sum total will be 2 million.

Just so you can see where the plant is located, the gas plant is located right here (indicating) just a few miles south of Maljamar, right after the main road there. It's pretty easy to see. It's an area, as Commissioner Bailey mentioned, is

largely federally owned surface and federally owned minerals, although there are some state minerals. And the gathering system extends quite a bit further than the immediate vicinity of the plant and does tap a number of state leases as well and fee leases.

I just want to mention that on this slide and the following slide -- and I'd be happy to make this electronic version available to the Commissioners -- I highlighted in red. It looks kind of like dark brown, but on my screen, it's red, this bullet about the H2S contingency plan, and it's different than what you see in your presentation because the H2S contingency plan -- in your presentation, the original H2S contingency plan was submitted in May of 2011 and that's correct, but it was subsequently modified when the well was put in. And before it went into effect, it was approved by the Division in November 2012. So that's -- the well really didn't get started until December or January -- December of 2012, January 2013 because of the requirement to upgrade those facilities. So I just thought it would be more useful for the Commission to know when the plan was approved rather than when it was submitted. So that's why I changed these slides, so you would have that information. And the same comment goes for the statement on the next slide.

Basically the reason why Frontier wants a redundant well is basically because their plant depends on this AGI No. 1 in order to be able to operate. They have the ability to do a very limited amount of flaring in an emergency situation based on their air permit, but, fundamentally, if there was a real problem with the AGI No. 1, which we haven't encountered one to date, but if there were to be a problem, basically the plant's dead in the water and so are 1,500 other wells in the area. They would have to be shut in very quickly. They be able to flare for a day or something like that, but beyond that, they'd have to shut them in.

And that's particularly important because unlike many other gas processors in southeast New Mexico, this is Frontier's only plant there. So they do not have the ability to shunt that gas to another plant in order to be able to keep those wells online. So it's a critical -- critical well. And when we experience the lower than anticipated permeability and this being the major asset that Frontier has in New Mexico, the president of Frontier, Mr. Briscoe, contacted me and said, Look, we need to find another well because we want to make sure that if we have some challenges with the first well, that down the road we have another well that we can rely on.

And so they asked us originally to try to find another zone that might have better permeability. Unfortunately, in this area, there just isn't. I mean, there are better zones that have better permeability and better porosity that are shallower, but fortunately for the producers, unfortunately for us, they're producing, so we really can't use those zones. And deeper than the Wolfcamp there, there is some potential for future production, and also there's just not very good information about what those reservoirs are. So we're basically in the same reservoir.

However -- and we'll go into this when we go into the geology in detail -- after we had our first well permitted and we were in the process of drilling it, Cimarex requested and applied for a saltwater disposal well to be located about a mile and a quarter to a mile and a half to the southwest of the plant and into the same reservoir that we're injecting into. And the Division at the time contacted us and said, you know, You should take a look at this and see if you have any concerns or whatever.

So we met with Cimarex, and we exchanged information. And we were convinced that their well would not negatively impact our -- it was sufficiently far away, and there are some structural issues closer to

their well that we thought would prevent there being any real effect from their injection to our well. So we didn't object to that application.

And, in fact, it's been a very cooperative effort. We gave Cimarex our logs and our core data, because we cored the first well and we logged it in detail, and they used that. And when they completed their well about a year ago, they found that their zone looked -- on the logs, it looks almost identical to ours, but -- and so the porosity's essentially very similar, identical, but their permeability is a lot better.

And so clearly we had data from -- old data from the Queen B 36, which is between where our new proposed bottom-hole location is and where Cimarex's well is, and that also had better permeability. So we know that diagenetically the permeability increases in that southwesterly direction.

And so consequently we talked to Cimarex and said, Okay, here's what we want to do. We want to put a well closer to your well, take advantage of the better permeability. And we put our heads together and decided okay, how close can we get to the well where we feel that we're not interfering with yours and you're not interfering with ours? And we came up with not any

closer than half a mile. And so we agreed. That's why Cimarex has no opposition. In fact, they support the project. So that's how it came to be where we had located the well.

So I think I've covered some of these things in the slide, but I will mention that the injection reservoirs, we have evaluated them not only with the existing wellbore data but also with 3D seismic, because there was a lack of very detailed data because there are not too many wells that penetrate that zone in the area initially. So we had found a location for the No. 1 well with seismic, and we did the same thing and reviewed that seismic again. But, of course, by the time we did the second well, we had core data and very detailed log information from our first well that's been particularly helpful.

So furthermore, I just want to mention that we have also submitted -- because this well is on BLM surface and BLM minerals, it requires an APD from the BLM, and we submitted that in June, and really it's still pending review. The BLM is way backlogged in terms of their review of APDs. And generally, for AGIs, they don't do much on them until this body acts. So that's kind of where we are.

All the parties have been individually

noticed as required, and originally the hearing was set for September 11th. It had been moved to today, and we advised all the people who were noticed of that change as well, and there have been no objections. In fact, the producers really support the project.

So as I mentioned, just to give a little further information about the notice, we noticed all of the surface owners, operators and leaseholders within a mile radius of the proposed well. Also, there was a notice of the application that was published in the Hobbs News-Sun, and we have not received any objections. As I mentioned, in fact, the producers are quite happy that this is going on because they were not happy when we had struggles with our permeability in the first well, and it took longer than anticipated to get that first well going because we had to upgrade the surface facilities to provide a higher surface injection pressure.

Of course, the H2S plan, which is currently approved for the facility, has a single well in it. The new H2S plan will not change substantively. We've already spoken to Carl Chavez of the OCD about that, and we will, of course, resubmit a new plan for approval that incorporates a second well.

But because the surface location of the two

wells will be relatively close together, about 450 feet apart, there's not going to be much of a difference in terms of the ROE for the new H2S contingency plan. In fact, instead of having just one circle around the amine unit and one around the old well, we'll have three circles, one around the new well, one around the old well and one around the amine unit. We don't anticipate any significant challenges there.

And I'm sure -- I apologize in advance to the Commissioners because they've heard a lot of this before, and I'll try to make it as interesting as possible. And I think you will enjoy this one because we do have some seismic, and it's a little different than our normal evaluation.

But the bottom line is we're still looking for the same kind of reservoir. We're looking for one that has the ability to permanently contain the gas that is being injected and disposed of in the reservoir. It's isolated from fresh groundwater. We are looking for a reservoir that's not going to create an effect -- a negative effect on existing or potential production. We want something that's laterally extensive and, of course, permeable with good porosity, and we want some excess capacity for the anticipated injection volumes, and, of course, a compatible fluid chemistry. And both

the AGI No. 1 and the AGI No. 2 meet all those criteria, but obviously for the No. 2, we're looking for a little better permeability to result in a little lower surface injection pressure.

Q. What records did you search when you were looking for this geologic structure you wanted to use?

A. Well, we used all of the available well log information from the area. We used -- we obtained three-dimensional seismic, which we analyzed. It was part of the analysis for the permitting of the AGI No. 1. And furthermore and perhaps most importantly, we had the data from two wells that didn't exist when we first permitted the No. 1, which is our own No. 1 well, and then the Cimarex Pearsall SWD well.

Q. Was that a new well?

A. Yes, it was. They drilled that well as a new well for saltwater disposal.

As I mentioned, you know, there are a lot of wells in this area, but most of them are shallow wells. So within two miles of the proposed AGI or within two miles of the plant, if you will, there is about 780 wells in that area of which there are 31 wells that penetrate the Wolfcamp. Twenty of those are active wells, and 11 are plugged and abandoned.

Within a half mile of the AGI No. 2,

there's only two wells that penetrate the Wolfcamp. One is the Queen B 36, which was plugged and abandoned a long time ago, before we ever drilled the No. 1 well, and then the second one is, of course, our own No. 1 well.

Based on the stratigraphic information that we have and the 3D seismic, we have identified the zone. It's an excellent acid gas reservoir. It could have a little better permeability in the area of No. 1, but it's still a very good reservoir and meets the criteria that we're looking for.

We got this information, as I mentioned, based on all of the sources that I just went over, and we feel comfortable that this injection is not going to negatively affect either current or potential production and certainly not surface or groundwater.

Q. Are there many freshwater ground -- freshwater sources in this area?

A. There are not, and I'll go through that a little bit later in my presentation.

But there's basically just a couple of shallow wells in the area, and, frankly, there is just not very much groundwater there. But whatever there is is in the shallow alluvium and a little bit in the Dockum Group.

The general structural features -- I'm sure all the Commissioners are very familiar with this, but just so you know where we are, we're off the northwestern shelf, and we're in a series of kind of detrital carbonates that come off of that shelf in the Wolfcamp. And you'll see how those things show up and how those porosity fairways show up in the seismic when we get to that.

Generally, this is what we're looking at (indicating). We're kind of looking at the Maljamar Plant having been, essentially, on a shelf margin, and we get some of these detrital carbonates that are coming off of the shelf, coming off of the shallow waters across reefs and onto the shelf there.

You can see this, a long strike in the Wolfcamp. You tend to have these little hills and canyons. And if we look at this cross section here (indicating), it's a structure section through the interval in the -- the permal [phonetic; sic] pen interval, and you can see that that interval is approximated by the red bar that we have in there. And you've got a series of wells that show varying degrees of porosity interbedded throughout the section here. And these are some wells -- it doesn't include the well -- our well because it's off of this section line

(indicating), but what we see in our well is very similar to what is shown in the COG Operating Federal B No. 1.

I will also mention that the Division has -- we did not submit it for just trying not to kill any more trees, but we have about a seven- or eight-inch thick end-of-well report, which we submitted to the Division, that has all of the detailed information from the No. 1 well, including all of the core analyses and all of the detailed log interpretation. And the Division has that detailed information on the No. 1 well.

Well, originally, when we first evaluated this area, we just had a real scarcity of good logs to characterize the Wolfcamp because there just weren't that many penetrations in this area. So what we did is we obtained 3D seismic over this cup for about one-and-a-half square mile area of the facility. And we took three wells that we had sonic logs for, and we constructed synthetic seismic profiles of those logs and those wells in order to key in our 3D seismic for our interpretation there.

When you look at what we found in the seismic in cross section, what we found is in the -- you can see right here (indicating) we've got the lower

Leonard and then the top of the lower Leonard; then we have the top of the Wolfcamp. And then down here in the lower Wolfcamp, these areas that are -- these red areas (indicating) are the, kind of, porosity sweet spots that we see in the -- in the seismic. We saw a couple here (indicating) in the lower Leonard, and then we see some really good development here (indicating).

Now, if you go all the way down towards here, this area (indicating), this is where -- it's a little further off this cross section, but you can see some pretty good development of those zones right in this area. And this out here (indicating) is where the Pearsall Cimarex well is located. Our well is actually located more off of this -- this really nice zone right here (indicating), our well is located here to the east.

Q. The No. 1 well?

A. The No. 1 well, that's correct.

And this is that plugged Baish well, and you can see there is some very good -- it goes right through the center of this sweet spot (indicating). Now, you might ask, Why didn't we drill in this location the first time? Well, I mean, I will mention that, you know, as a geologist, we're just interested in what is the best situation in the subsurface, but our client was particularly interested in having their well on the east

and north side of their plant and the east side as well because they really didn't have room anywhere else on the plant to put the well, and they had obtained this lease from the BLM. And so we drilled -- our original recommended location was west of the plant, but he ended up drilling the well and proposing it on the east side of the plan because we thought okay, we still have a good enough reservoir. It's not the sweetest spot. But we probably should have -- in hindsight, we probably should have angled the well further to the west, the first well, and we may not have had these permeability issues. But still we would have the need for a second well just for redundancy purposes.

But one of the things we did is take time slices in the lower Wolfcamp, and you can see that while there is some pretty good development here (indicating), when you are looking at where the Baish well is over here (indicating), you're kind of in this holiday [sic], in this zone, and this had quite a bit of better permeability than we see in our well.

Currently what we're proposing for the new well is going to have a bottom-hole location in approximately this -- this area right here, just west of the plant (indicating). The surface location will be about here (indicating). And we'll go into that in more

detail in a minute.

We also identified -- and I haven't covered these in this presentation, but in the original presentation, in the lower Leonard above the Wolfcamp, there was also a potential injection zone. When we drilled through it, we elected in the first well -- even though we were permitted to inject into both of those zones, in the first well, we elected not to exploit the lower Leonard because it looked like it might be even a little bit tighter than the lower Wolfcamp. So we left that behind pipe and when -- we actually came back to the Commission and requested that we not complete in the lower Leonard but only in the Wolfcamp, and that's what we did in this well.

You can see the area that -- we completed our first well in here (indicating). And, you know, just strictly on the seismic, it doesn't look as porous here to the west, but we know that the permeability is better there because of the Baish Number 36 and the Cimarex well, which is a little further.

So this is a structure map (indicating), and we also show the area of highest porosity within this dashed line (indicating). The dip is towards the south here (indicating), and, again, our new well -- you can't just rely on the seismic because what we see is

that the permeability just really does -- the porosity stays pretty similar, but the permeability tends to increase in this direction (indicating). And then we actually lose some porosity, and we pick it back up towards the southwest here. We haven't extended it that far, but we know that from the Pearsall well.

So the proposed Maljamar No. 2 location is in this area right here (indicating). And you can see that when we combine all of the zones, we have some significant excess capacity, but, again, we're only going to use the lower Wolfcamp. So that is the largest capacity from porosity of any of these (indicating), which has a porosity total of about 24 million barrels in the area.

So when we look at the calculated volume of TAG after 30 years at this 2 million rate, we're looking at filling up something like about 38 percent or so of the reservoir that we would occupy, and that translates to about 139 acres and a radius of about .26 miles.

This is a composite log section of the Wolfcamp SWD well that was -- that was drilled to the west. This is not the -- this is not the Pearsall well, Cimarex well but another well that is drilled south, and we've got quite a good zone in that well with, you know, porosities that range from about 10 to 18 percent in

this area. And this zone is not laterally connected to our wells, but it is similar in geology to what we've seen.

This is a type section (indicating), if you want, for the lower Leonard and the Wolfcamp, and these are the zones up here (indicating) that we left behind pipe and elected not to perforate. And this is our reservoir (indicating) that we're using at the present time. This is, again, in that Baish B36, which is really the closest well that we have logs for that would be closest to our new bottom-hole location.

When you look at the calculated radii after 30 years of injection, you'll see our surface location here (indicating). By the way, the Maljamar No. 1 well is located here (indicating), and the Maljamar No. 2 is going to be located about 450 feet to the northwest of it, right next to the flare at the -- at the plant.

Q. The surface location?

A. The surface location. That is correct.

And then the bottom-hole location about 2,500 feet away here in this location (indicating). Again, the Baish well is located in about this area right here (indicating), and the Cimarex well is down here in this area (indicating).

The detailed locations, by the way, are

shown on this last graph. So the surface is about 400 feet from the south line and 2,100 from the east line of Section 21, and the bottom hole is about 350 feet from the south and 650 feet from the west line, about 2,500 feet of deviation.

The conceptual design is shown in Figures 4 and 6 of the C-108, but basically we have a design that we have refined in our current acid gas injection program, which will have corrosion-resistant L80 threaded tubing. It will have an automated subsurface safety valve. This is a dry injection well, so it will have a corrosion-inhibited diesel, with pressure monitored both at the surface and in the -- at the bottom hole. And it will have, of course, a corrosion-resistant packer and corrosion-resistant casing that that packer will be set into.

And, of course, there will be -- and I'll talk about the metering and monitoring, but we will be recording volumes and pressures and temperatures of the injected gas, as well as the pressure and temperature of the annulus and the pressure and temperature of the injection zone at the base of the well.

So, in general, there is -- you know, we've got the compression facility. We will have a line from there which will have an ESP valve downstream of the

compression facility. And by the way, we are going to use the same compression facility that goes to the existing wells, so we're just going to T off of that line and go to the new well, which will have a subsurface safety valve set at approximately 250 to 300 feet, depending on how the tubing lays out. And then we will have an inert fluid above the packer. We'll have a retrievable acid gas-resistant packer set in acid gas-resistant casing, and we're targeting this Wolfcamp zone from about -- it's actually about 9,800 -- 9,850 to about 10,130. And it just depends on what our logs show when we drill the new well, but we anticipate it won't be far different from that.

This is a schematic of the well (indicating). Again, it is an inclined well, so be aware that we have got a set of, basically, four strings of casing. We've got a conductor casing. We've got surface casing down to about 890 feet.

Just before our meeting here, Mr. Goetze had brought to my attention that the district office had sent me an e-mail this morning -- which I had already left to Albuquerque and didn't get -- that they were wanting to have either -- they were requesting that this intermediate casing be raised up a little bit more to protect a certain -- to protect the Santa Rosa area that

they would like to protect. And what we will probably do is lower the surface casing rather than raise the intermediate. Because one of the things we encountered when we drilled the first well is that -- especially in this area right below about 5,000 feet and right around 5,000 feet (indicating). We had some horrible problems drilling the first well there in terms of getting stuck. There are some really depleted reservoirs and zones in those areas, and we were having a lot of problems getting stuck in the hole in those areas. And so we've got a different approach we're going to use when we drill it to avoid that, but also we wanted to extend the immediate across those zones so when we get into the deviated portion of our well we wouldn't have those kinds of issues to deal with. So I'm sure we will be able to work that out with the district office and modify that accordingly.

There is only one water well within the area of review, and that is this Reliant processing well that's got a total depth of 158 feet, and it's going to be protected by the surface casing, which will be extending well below that depth.

The surface casing, like I said, is to be set at about 890 feet below the deepest fresh water and cemented to the surface. We're going to have

intermediate casing set over 5,700 feet, and it's well below the deepest fresh water and all of the shallow productive units, and cement back to the surface as well.

And then our tubing design and subsurface safety valve will ensure the integrity of the inner portions of the well, and we will fill that, of course, with a corrosion-inhibited inert fluid. Of course, we've got a design in quite a few similar wells that has worked quite well in both southeast New Mexico and actually northwest New Mexico, Texas and in Canada.

In terms of the geology, the summary is that there are no faults or structural pathways that have been identified in the area of review. The caprock we know has got very low porosity and is very impermeable, and it provides a very good barrier to the injection zone. As I mentioned, in the Well No. 1, we record not only the caprock but also the various units within the injection zones, and we are very happy with that outcome.

And I will mention, also, that -- it's not in the slides, but as a part of the whole BLM process, since this is a federal well and they have primacy, they have required us, of course, to do -- when we originally drilled the first well to demonstrate that there were no

recoverable hydrocarbons in that portion of the Wolfcamp. And so we did a detailed analysis and provided that, and the BLM was satisfied there and allowed us, obviously, to proceed with our injection and completion.

Q. And that data is included in the C-108?

A. Yes, it is. And it's also included in much more detail -- the whole demonstration is included as a separate appendix to that end-of-well report for the No. 1 well.

So what are the key elements of our C-108? I think that the AGI project has substantial environmental benefits, greenhouse reduction and also the safety handling of the H2S. It reduces waste and air emissions by eliminating the need to flare.

Just to give you a little bit of history because you Commissioners did not hear this first case, this plant used to flare all of its acid gas. They had a grandfathered permit that allowed them to flare the entire amount of acid gas from that plant. But, of course, that kind of air-quality problem is no longer acceptable, and so that's what caused them to seek the acid gas injection for the first well in the first place.

The data provided by the drilling, testing

and operating of AGI No. 1 informed our design and drilling procedures for AGI No. 2, as did the results from the Pearsall well, which we worked very cooperatively with Cimarex and traded a lot of data and information. And they gave us some additional -- we made them aware of some of our nightmares in the shallow zones, just drilling problems, and they were able to avoid some of theirs in their wells through using some different drilling technologies, which we're going to employ in the No. 2 well as well.

And 3D seismic has allowed the accurate delineation of the reservoir and assuring that nearby disposal and producing wells will be fully protected.

We have provided the Commission with all of the information that's necessary to approve the AGI well. The contingency plan -- I guess I didn't change this one, but you can have the information. It was originally submitted in May 2011 and was ultimately approved in November of 2012. And, of course, an updated plan will be submitted prior to bringing on the AGI No. 2.

The adjacent operators and the OCD support the project. We've discussed a number of issues with the OCD, and the operators and the surface owners have expressed real support for the project.

And we met by phone yesterday with the Division to discuss their conditions, and generally I'll mention just two items. One is that the Division has indicated to us that it's their policy not to accept adjacent wells no matter how close in terms of a deviation from the maximum allowable pressure without a step-rate test, and so the Division has recommended a pressure of approximately 3,028 pounds as a maximum pressure. We believe 3,200 is appropriate, and we believe -- we demonstrated that with a step-rate test, but we intend to do a step-rate test on this well as well. So what we would request from the Commission is that they allow us the 3,200, contingent on the Division's review of that step-rate test.

Q. Mr. Gutierrez, the conditions that the OCD required were set forth in the pre-hearing statement?

A. They were, that's correct. And we reviewed those yesterday.

Q. Yes.

A. The only other -- and then there are a number of conditions, and we really don't have a problem with any of them, just these two that I mentioned, the pressure that I just discussed.

And then there is a request that we provide quarterly reports on the injection data, pressure, flow

rate and temperature, and, of course, we -- and daily monitoring of that. We do that monitoring continuously, not just daily. I mean, it's minute to minute, and will be for both the top and the bottom hole.

However, we would prefer to be able to do that reporting on a quarterly basis maybe for the first year, and then depending on what the Division sees -- what we see is that this stuff just doesn't -- as long as you don't have a problem with the well, it's really quite boring, the reporting, in terms of the information that's provided. So we clearly do collect that information and analyze it, but we would like to be able to report it quarterly, and then based on the Division's review of that, maybe switch to a longer reporting period of maybe annually down the road.

Q. Would you like to be able to request that administratively without coming back to hearing?

A. That's right. That's what we're trying to do, and the same thing with the pressure, of course. We're trying to just set it up so that we don't have to take the Commission's time and our time and expense to come back to hearing for those modifications if the Division concurs.

Q. And one other item -- and this was an objection, I believe, on their part, but condition

number four was the daily monitoring of pressure data, diesel replacement activities, atmospheric H2S and the safety measures in place. Would you comment on that?

A. Sure. As I mentioned, we don't just do daily monitoring. We're monitoring continuously. Actually, the SCADA System samples those sensors on a continual basis, every 20, 30 seconds, and records those measurements.

But with respect to the diesel replacement activities, I just wanted to clarify for the Commission, and I mentioned this to the Division, we don't routinely replace the diesel at all. I mean, that's a sealed system. And all that we do is every time we do an MIT, we do have to relieve the pressure from there to bring it down to zero, and the way we do that is by letting some diesel flow out into our pump truck so the pressure goes down to zero. Then we pump it back up to 500 pounds, do the MIT, and then release it back down to about 200 pounds, which is where we try to keep the pressure for monitoring the back side.

So in that process, we typically maybe pull out a quarter to a half a barrel of diesel and then maybe put in another quarter to half a barrel of diesel when we're done with the testing. But other than that, we usually don't fool with that diesel at all.

Q. You don't mind monitoring or reporting that? It's just --

A. Oh, no, absolutely not. We record it, and we will do that. But I just wanted to make sure that the Commission understood that that is not a routine practice, to replace that diesel. It's only if you were reworking the well and had to do something like that.

Q. And finally, could you summarize Frontier's request?

A. Fundamentally, we want to drill and test and complete a well as specified in our C-108 at this location. The surface that I mentioned earlier, 400 feet from the south line, 2,100 feet from the east line, Section 21, and then bottom hole, 350 feet from the south line, 650 feet from the west line in the same section.

Now, I will emphasize that as far as the bottom-hole location is concerned, you know, this application is still under review by the BLM, and sometimes they have some quirks about where they want a location based on their own lease boundaries. And it could require some slight movement of that bottom-hole location, but if it does, it would certainly be well within the unit letter -- the same unit letter. So I just would ask that the Commission take note that these

are pending the final approval by the BLM. And they haven't indicated any need for that yet, but I have seen that happen before.

Q. And it will probably take another several months to get the APD from the BLM?

A. Yes, sir, unfortunately. We submitted it three months ago, and, you know, they have a -- they're supposed to give you a ten-day letter, they call it, which gives you -- tells you whether or not the application is administratively complete. And it's been 90 days, and we still don't have our ten-day letter, so that's kind of where we are there.

As a matter of fact, when I met with Mr. Goetze earlier on another matter for another well, I was complaining about the woes at the BLM and saying that the State should be very proud, because, I mean, people complain that the State doesn't get to things quickly enough. Well, you guys do it at light speed compared to the BLM.

We request a rate of 2 million cubic feet a day, which is a couple hundred thousand more than what we had because of this anticipated additional CO2 and our maximum operating pressure, as I described it, 3,200. And we would like to begin drilling the well and completing it as soon as possible after approval of the

BLM's APD.

Q. And, again, Exhibit 1, which is the C-108, was prepared by you or under your supervision?

A. Yes, it was.

Q. And it contains all of the necessary attachments required by the C-108 and as otherwise required by the Division?

A. Yes.

Q. And you stated earlier notice was given to the surface owner and to all offsetting operators or working interest owners as required by the Division?

A. Not only to the surface owner of the well but to all of the surface owners within the one-mile area.

Q. And is that reflected in Exhibit 2 of my Affidavit of Notice?

A. It is indeed.

MR. BRUCE: And, Madam Chair, just for your information, Exhibit 8 contains the individual letters and certified green cards that Mr. Gutierrez sent out from his office. That included the C-108 and also gave notice of the September 11th hearing. But after it was changed, I sent out notice to all of the same personnel so that they were given notice of the continued hearing date.

Q. (BY MR. BRUCE) And, Mr. Gutierrez, in your

opinion, is the granting of this application in the interest of conservation and the prevention of waste?

A. Absolutely.

MR. BRUCE: With that, Madam Chair, I'd move the admission of Exhibits 1 and 2, and pass the witness.

CHAIRPERSON BAILEY: Any objection?

MR. WADE: No objection.

CHAIRPERSON BAILEY: Exhibits 1 and 2 are admitted.

(Frontier Field Services, LLC Exhibit Numbers 1 and 2 were offered and admitted into evidence.)

CHAIRPERSON BAILEY: Do you have any cross?

MR. WADE: Just one question.

CROSS-EXAMINATION

BY MR. WADE:

Q. Regarding the possible bottom-hole change due to the BLM permitting process, how do you plan to proceed if there is a change? In other words, would you be notifying the OCD?

A. Oh, of course. I mean, we work closely with the Division.

And we did this on the first well. Every -- as a matter of fact, even though the BLM does

not -- even though we're not specifically required, when we take all of the steps on a federal well to -- you know, the cementing of the various strings of casing, all of this is noticed on the 3160-5 form to the BLM. Oftentimes it takes -- it takes a long time to get those to OCD. So on the first well -- and it would be our practice on this second well as well -- even though we weren't required to, we submitted C-103s to the State separately contemporaneously with what we submitted to the BLM and kept them in full apprisal of that.

But prior to the drilling of the well, if there is a need to change that bottom hole, we would obviously contact the Division and let them know what that change was and why the BLM wants it.

Q. And if there was a change, obviously, to the area of review, then we would go through further notification with the Commission?

A. Yes, although -- I mean, as I mentioned, we've had to do this on previous wells even not related to the BLM, where, for some logistical issue, we had to slightly move a location. And it has generally been the position of the Division that as long as that -- you know, if it's 50 or 60 feet or 100 feet and it's still within the same unit letter, we haven't had an issue.

MR. WADE: No further questions.

CHAIRPERSON BAILEY: Commissioner Warnell?

COMMISSIONER WARNELL: A few questions.

CROSS-EXAMINATION

BY COMMISSIONER WARNELL:

Q. Good morning, Mr. Gutierrez.

Permeability. What's the permeability on the No. 1 well? You said you did some cores on that?

A. Yes. It has variable permeability in these various units, but it runs from as high as maybe 1 millidarcy to maybe as low as a quarter of a millidarcy.

Q. And that's derived from core analysis by Core Labs or --

A. Yeah. It was done by Weatherford. Yes, sir.

Q. So Weatherford did an analysis of this core?

A. Yes.

And what we did is -- as I mentioned, these data are included in the -- in the end-of-well report for No. 1. But what we do typically is we'll log the zone -- injection zone and caprock with a -- well, our full suite of logs, triple combo, and then we do formation microimaging. And then based on that log, we pick sidewall core locations, and that's what we did. We did a number of sidewall cores. We did not do a conventional core through the zone.

Q. And you were testifying that the sidewall cores came within 1 millidarcy to a quarter millidarcy?

A. Approximately that. That's the best of my recollection, yes, Commissioner.

Q. And if approved and if completed and drilled, the No. 2 well, I don't see any guarantee that there is going to be better permeability. What would happen to your client if this well came in at the same permeability as the No. 1 well?

A. Then at least they have a redundant well, and they can inject into the current well and can inject -- it's just that it would be a lot nicer if they could inject at 16- or 1,700 pounds instead of 23- or 2,400 pounds. That's fundamentally the difference.

Q. And we could possibly be injecting into both wells?

A. We could. That would -- you know, that's another option, too. Obviously if we split the volume between the two wells, then we might also be able to achieve a lower pressure and be able to put the gas away at a lower surface pressure.

Q. And it's my understanding that Section 21, 17 South, 32 East, that's where the entire east -- that section is where the entire project will be taking place?

A. Yes, sir.
Q. That's federal? State?
A. It's all federal.
Q. All federal?
A. Yes, sir.
Q. Federal and fee or all federal?
A. All federal.
Q. All federal.
A. Well, I'm sorry. The actual footprint of the Maljamar Plant is owned by Frontier, but there are five acres upon which the acid gas injection Well No. 1 is located, and the compression facilities for the No. 1 are on a BLM lease.
Q. I have no further questions at this time.
CHAIRPERSON BAILEY: Commissioner Balch?
COMMISSIONER BALCH: All kinds of questions.

CROSS-EXAMINATION

BY COMMISSIONER BALCH:
Q. Follow-up a little bit on Commissioner Warnell's questions. You're asking for a sum total of 2 mmcfs per day?
A. Yes, sir.
Q. And for both wells, one or the other or a combination of the two.

If there is a failure of one of those wells, essentially you're asking us to permit either of those wells to handle that capacity?

A. That is correct.

Q. Are both of those wells going to be capable -- I'm mostly talking about the AGI No. 1, and I asked this question of Mr. Bryant. But is it going to be capable of taking 2?

A. We believe that it will be. It'll probably be at a pressure that will be somewhere in the neighborhood of about 2,800 versus the 2,400 that we're injecting.

Q. It's permitted at 3,200 right now?

A. That is correct.

Q. Maximum?

A. Yes, sir.

Q. The 1,500 wells that are feeding this plant with gas --

A. Yes, sir.

Q. -- is there a predominant formation of that gas?

A. Yes. Most of it is relatively shallow, Seven Rivers, Queen, and there are some deeper. There are a few Morrow wells out there, but most of them are shallow wells.

Q. So mostly the production is coming from the

northwest shelf?

A. Yes, sir.

Q. The plant itself is kind of on the margin of the northwest shelf and Delaware Basin?

A. That is correct.

Q. Is the primary caprock for the Wolfcamp going to be the Bone Spring at that location?

A. Yes. And actually the upper Wolfcamp itself is very impermeable and very low porosity.

Q. It's secondary -- Bone Spring carbonates?

A. That's correct.

Q. The Bone Spring, of course, has seen a lot of development in the last couple of years. Do you anticipate the Bone Spring developing in this area?

A. No. It really hasn't shown a great deal of potential in this area. Cimarex has looked at it quite a bit, as has COG, and they're just not too excited about it.

Q. Okay.

A. And by the way, we did cores in there, and it doesn't look too good.

Q. So another follow-up on that. On your slide 29, you show the radius of the -- of the impact radius of where the CO2 can go.

A. Yes.

Q. The bottom-hole location is between the Queen B and another well. What's the TD for that Queen B and that other well?

A. The Queen B was drilled to the Devonian, so it's got a TD, I think, of about -- if I remember correctly, it's about 13,000 --

Q. TD?

A. Yes.

Q. And that well was demonstrated in the prior application to be sufficiently close?

A. Yes, absolutely.

Q. What about the other well north of the bottom-hole location of the AGI No. 2?

A. That one does not penetrate the injection zone.

Q. Do you know where it TDs?

A. I think it TDs at about 7,000 feet, somewhere in that range.

Q. That's up in the Permian section?

A. Yes.

Q. All right. Down to your seismic. I have a little bit of interest in that. How was the amplitude interval correlated to porosity?

A. Well, what -- and I'll have to admit that I'm not a geophysicist, and Lou Mazzullo, who I've worked with over 25 years did the geophysical interpretation.

But what we see is that we just see a slower wave through those zones, and it's reflected -- you know, obviously we add these colors to the section to help describe that. But that's my understanding, is that we basically see a slow-up.

Q. It's basically immediately above whatever horizon -- horizon pick, where you have that acoustic and contrasts --

A. Right.

Q. -- especially to give you positive amplitude to negative amplitude?

A. That's correct.

Q. Do you know what that pick is in the Wolfcamp?

A. It's a marker in the lower Wolfcamp. And I don't know that it has a particular name, but it's really just above the zone where we see the primary porosity development.

Q. Do you know what causes the contrast? Is it sandstone? Limestone?

A. No. I think it is a very -- from what we see, it is just kind of a more dolomitized limestone and then -- and a very -- a very, very tight, kind of, silty limestone above it.

Q. Okay. So that's probably where the porosity is coming in --

A. That's correct.
Q. -- as a change.
But sometimes you see an amplitude bright spot like that, and there are a couple of ways you can see that. You can see it with a amplitude versus offset study, where you're looking at a gas lens --
A. Right.
Q. -- on top of the reservoir.
A. Right.
Q. You also see it --
A. Fortunately that's not what we saw here (laughter).
Q. It will be in 30 years.
A. That's right.
Q. The other place where you can see it is the tuning effect. So as you -- if you have something lithologically that's distinct above that marker bed --
A. Correct.
Q. -- and it thins at the edges --
A. Right.
Q. -- you'll see an increase of amplitude as you go across that.
A. Right. And we do see that in those -- in those zones, I think --
Q. So my --

A. -- at the edges.

Q. I guess my concern would be this: You could just be interpreting the structure, not necessarily porosity?

A. Well, yes, except there is just no -- you mean almost like a microstructure, though, right?

Q. An internal structure of the --

A. Yeah. Yeah. It's possible. It's possible, although the porosity numbers that we got were not very different than what we anticipated. It was just that the permeability was lower than what we anticipated.

Q. Okay. I will think on this a little bit.

My only other question really is on the diesel replacement, the request by the OCD. The only time you replace diesel in normal operations is if there was a failure in the wellbore, and that would trigger some other response, I presume?

A. Absolutely.

Q. Such as --

A. Like a work-over of the well.

Q. Right.

Those are all my questions.

CROSS-EXAMINATION

BY CHAIRPERSON BAILEY:

Q. First I'd like to reassure you that geology is

always interesting (laughter).

On what basis are you forecasting a change in the ratio between the H2S and the CO2?

A. On the basis of what the -- you know, there are constantly wells that are being shut in and new wells that come online, and the new wells that come online are showing a higher CO2 concentration than the previous wells, but not so much change in the H2S. And so what the plant is experiencing is a slow increase in the inlet CO2 concentration, which gets translated into more CO2 that winds up in the acid gas, but we're not seeing much change in the H2S.

Q. You're seeing the results, but I'm looking for the cause.

A. I don't know the cause. I really don't. I mean, the only -- the only cause that I can think of is that as some of these reservoirs become more depleted and some of the reservoirs that are being developed have a -- they just have more CO2 dissolved in the hydrocarbons.

Q. If permeability appears to be an issue more than you anticipate, how would you expect to stimulate the wells?

A. What we did in the No. 1 well -- first of all, we don't anticipate any kind of fracking of the wells at

all. We haven't done it even in the No. 1 well. But what we have done is we did a better -- after we perforated the wells and tested them initially, we went back in and reperforated the wells with essentially like a propellant that allowed for a better fracturing, if you will, of the immediate near wellbore condition to get into the zones and get better -- a little more exposure in the immediate wellbore. And we might do that kind of thing.

We've also done some fairly reasonable acid jobs on the well before we started injecting, and we would anticipate the same kind of thing, although -- like I mentioned in the Pearsall well, they really didn't have to do much of anything. And so we're hoping that, you know, if we can get some permeabilities that are, you know, maybe 30 or 40 percent better than what we see in our well, then we will be fine, and we anticipate that we will.

Q. Those are all the questions I have.

CHAIRPERSON BAILEY: Do you have any redirect?

MR. BRUCE: No, I don't.

CHAIRPERSON BAILEY: Then you may be excused.

Mr. Wade, would you like to present your

case?

MR. WADE: Thank you, Madam Chair. The OCD calls Mr. Phil Goetze.

CHAIRPERSON BAILEY: Why don't we take a ten-minute break?

(Break taken, 10:31 a.m. to 10:42 a.m.)

CHAIRPERSON BAILEY: Back on the record.

You have called your first witness, Mr. Wade?

MR. WADE: That's correct. It's Phil Goetze.

CHAIRPERSON BAILEY: Would you please stand to be sworn?

PHILLIP GOETZE,

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

DIRECT EXAMINATION

BY MR. WADE

Q. Mr. Goetze, who are you employed by?

A. I'm currently employed by the Oil Conservation Division.

Q. What are your duties there?

A. I am assigned to the Engineering and Geologic Sciences Bureau, and I've been detailed responsibility to review of the UIC Program-related applications, the

C-108s.

Q. How long have you been at the NMOCD?

A. I'm now at one-and-a-half years.

Q. What is your past education and work experience?

A. I have over 30 years of industry-related, government, private industry, which includes hydrology petroleum and an environmental background, of which my qualifications with the United States Geologic Survey and the Bureau of Land Management as a petroleum geologist or a fluid minerals geologist provides my experience.

Q. And has this Commission admitted you as an expert in petroleum geology and underground injection previously?

A. They have so qualified me.

MR. WADE: And I would ask that the Commission again admit Mr. Goetze as an expert in petroleum geology and underground injection.

CHAIRPERSON BAILEY: He is accepted.

Q. (BY MR. WADE) I think you already stated this, but part of your duties at the OCD is reviewing applications made and brought under Rule 26?

A. That is correct.

Q. Did you review the application before the

Commission today of Frontier Field Services?

A. Correct. I did review it.

Q. And, in general, did you find the application approvable with proposed conditions to the application?

A. The application, in essence, duplicates the prior application made for the existing well with a few changes in design. It is approvable with the conditions that we have recommended.

Q. And are those recommended conditions within the OCD's pre-hearing statement?

A. That is correct.

Q. And after discussion with Frontier, Mr. Gutierrez, did Frontier propose modifications to the conditions found in the pre-hearing statement?

A. As previously testified, there were two items which we had discussion about. The first was the request for a step-rate test for the individual well following completion. The second item being the option to negotiate or review the requirements for the quarterly reporting. With that discussion, I would still say that our feelings at the OCD is that we will still request a step-rate test for determination above the approved administrative gradient that we have.

The second item, with regards to the quarterly monitoring, we would ask the Commission to

provide us with the option, through administrative means, to visit that at such time and make recommendations after a year and see if it is adequate or if it's redundant.

Q. As you described the modifications, those would be acceptable to the OCD as long as they included the other conditions highlighted within the OCD's pre-hearing statement?

A. Correct. The remaining items in the OCD hearing statement, those items have been previously recommended and accepted by the Commission.

Q. So based on your review of Frontier's C-108 application and the modified conditions as the OCD would accept and the remaining conditions, does the OCD find that the application is protective of fresh water, human health and safety and correlative rights?

A. As provided in the application, yes.

Q. And would you recommend to the Commission that the application be approved with the conditions and modifications discussed today?

A. I would so recommend.

MR. WADE: I have no further questions.

MR. BRUCE: I have no questions.

CHAIRPERSON BAILEY: Commissioner Warnell?

COMMISSIONER WARNELL: No questions.

CHAIRPERSON BAILEY: Commissioner Balch?

CROSS-EXAMINATION

BY COMMISSIONER BALCH:

Q. I believe Mr. Gutierrez said the calculated maximum surface injection pressure would be 3,028 based on depth.

A. Well, I believe it was -- correct. That's based on the .2.

Q. And then contingent upon the step-rate test, they're asking for 3,200?

A. Correct.

Q. It seems -- I mean, I'm just asking for clarification for my own benefit. If you do a step-rate test -- that's what it should be, right?

A. That may be the result.

Q. Okay. So it wouldn't be advisable to default it to 3,028 with a step-rate test allowable of 3,200, the injection pressure is dependent upon the results of the step-rate test?

A. Correct. But we have the ability to do the .2 administrative under our agreement, and that's the basis of that calculation.

Q. That's all I have.

CHAIRPERSON BAILEY: And I have no questions.

MR. WADE: I realized -- if I may, Madam Chair, I do have one more question that I would like to bring up, if that's okay.

CHAIRPERSON BAILEY: Okay.

REDIRECT EXAMINATION

BY MR. WADE:

Q. This was something that was in Mr. Gutierrez' testimony and it was regarding -- I'm not sure if I'm going to be able to say it right, but it's regarding where the intermediate string would be placed.

A. There has been a discussion between the district office and the Santa Fe office. Our district geologist, Paul Kautz, has reviewed the setting depths for the intermediary casings. He feels there should be an extension of one to isolate. This has been brought to the attention of both the Applicant and made aware to me. It is something that's not unusual. And in the review process, a change of casing is not necessarily a major modification. The prior setting was a little more shallower for the AGI 1 -- or the No. 1 well, and our district geologist feels it should go down further to cover off that Santa Rosa.

Q. And from what I can understand of the testimony, Mr. Gutierrez came up with somewhat of an alternate to what Paul Kautz had recommended. In

working through these issues, is it possible that the OCD and the Applicant could come up with some agreement?

A. What we would recommend is that the Applicant address the casing issue, that it provide us with a final diagram and provide that the request made by district be addressed in that new design.

Q. Is this something that can be done administratively?

A. It can.

Q. I have no further questions.

RECROSS EXAMINATION

BY MR. BRUCE:

Q. Mr. Goetze, on that one thing that I think Mr. Gutierrez said, rather than raising the intermediate casing, he might prefer to lower the surface casing. Would that be a acceptable?

A. That would be considered an alternative. Again, we would have to have the consent of all parties involved.

MR. BRUCE: That's all I have.

CHAIRPERSON BAILEY: Do we have anything further?

MR. WADE: I'm done this time.

MR. BRUCE: No.

CHAIRPERSON BAILEY: Do you want to make a

closing statement?

MR. BRUCE: No. I think it's pretty clear from Mr. Gutierrez' testimony what is being sought. I won't waste the time.

CHAIRPERSON BAILEY: All right. Mr. Goetze, you may be excused.

THE WITNESS: Thank you.

CHAIRPERSON BAILEY: Then, Commissioners, shall we go into closed session to discuss this case only?

Do I hear a motion --

COMMISSIONER BALCH: I'll make a motion.

CHAIRPERSON BAILEY: -- to go into closed session in accordance with New Mexico Section 10-15-1 and the OCC Resolution on Open Meetings?

COMMISSIONER BALCH: With that said, I'll still make the motion.

CHAIRPERSON BAILEY: Do I hear a second?

COMMISSIONER WARNELL: I'll second that.

CHAIRPERSON BAILEY: All those in favor say aye.

(Ayes are unanimous.)

CHAIRPERSON BAILEY: We will go into executive session and return with a decision on this case.

(Closed Session, 10:52 a.m. to 11:17 a.m.)

CHAIRPERSON BAILEY: Do I hear a motion for the Oil Conservation Commission to come back onto the record?

COMMISSIONER BALCH: I'll make that motion.

COMMISSIONER WARNELL: I second that motion.

CHAIRPERSON BAILEY: All those in favor?

(Ayes are unanimous.)

CHAIRPERSON BAILEY: The only thing discussed during that time is Case Number 15193. However, during those discussions, we did find that there were some questions, and we need to reopen the case in order to settle some of these questions for our deliberations.

I'll ask our counsel, Mr. Brancard, to explain.

MR. BRANCARD: Do we have a motion to reopen the hearing?

COMMISSIONER BALCH: I'll make a motion to reopen the hearing.

COMMISSIONER WARNELL: Second that motion.

CHAIRPERSON BAILEY: All those in favor?

(Ayes are unanimous.)

MR. BRANCARD: Okay. The concerns come with the fact that we have an order for the first well, and now we want an order for the second well, but we want a combined injection limitation here. So are the parties okay with the Commission sort of modifying the first order to make sure that that happens?

MR. GUTIERREZ: Absolutely. I think -- well, I was just -- from a technical perspective, that's what we were -- maybe we should have been more explicit in that as a request, but that's what we would understand be the case, similar to what has been done with Lyman No. 1 and Lyman No. 2.

COMMISSIONER BALCH: And you remember that we added conditions to the Lyman No. 1 as part of that order, right?

MR. GUTIERREZ: That's correct. But I thought that the conditions that were added for the Lyman No. 1 were more specific to deal with the issues that we had had with Lyman No. 1 in terms of the mechanical integrity and those kinds of things, which are not issues that we've had here with this well.

MR. BRANCARD: The Commission has also noted, because of the differences in the timing of the approvals, as the Commission has, over the last several years, added perhaps more detailed conditions to these

AGI approvals, that some of the conditions would be different for the two wells. Say, for instance, I believe the No. 1 well only requires an MIT every two years.

MR. GUTIERREZ: That's correct, although I had already expressed to my client that it was likely that we were going to have MITs annually for all AGI wells, and so that's, I think -- they're expecting that. That's not an issue, I don't think.

MR. BRANCARD: Okay.

MR. BRUCE: And, Madam Chair, is that part of -- will that be in the new injection regulation that you're going to be considering in a couple months? Will that be part of that regulation?

CHAIRPERSON BAILEY: I have not participated in committee discussions.

MR. BRUCE: Neither have I.

CHAIRPERSON BAILEY: So I can't guarantee anything of what will be coming up on that.

COMMISSIONER BALCH: At least on what's proposed.

CHAIRPERSON BAILEY: Right.

MR. BRUCE: Right. That's all I was questioning, whether it was proposed or not.

MR. GUTIERREZ: It is proposed.

MR. BRUCE: There. I got my answer.

CHAIRPERSON BAILEY: Okay. But there are conditions that have evolved over the past several years that ensure that we have consistent and fair requirements for all AGI wells that have come before us. So we are wanting to ensure that Frontier understands that these evolved requirements that we have consistently applied to AGI cases would also be applicable to the first well.

MR. BRUCE: And maybe Mr. Gutierrez can speak to this, but we did discuss this briefly, he and I, and he's been on the committee. And it sounds like if a new regulation is adopted, those will apply. It's trying to -- the new regulation is trying to harmonize the conditions that would be applied to AGI wells so that what has evolved would probably be what would be in the new regulations, if you understand what I'm saying.

COMMISSIONER BALCH: Without anticipating fully what that new regulation would -- we're talking about a lot of conditions.

MR. BRUCE: What Mr. Gutierrez has said is that they're trying to make standard conditions so that each AGI doesn't have different conditions.

CHAIRPERSON BAILEY: That's what we are working toward.

MR. BRUCE: Yeah.

CHAIRPERSON BAILEY: So we just want to have that understanding before we issue an order for this case which would also apply to the first well, and so the order will be an amendment of that first well's order.

MR. BRANCARD: Right.

MR. GUTIERREZ: The second well order would be an amendment of the first well order to allow for the second well in addition to the first? Is that how you envision it?

MR. BRANCARD: We were thinking that might be procedurally the best way to handle this. This would be R-13443B.

MR. GUTIERREZ: Right. I don't see that that would be a problem.

I would just ask -- the one issue that I would request, because we've not had any kind of integrity issues with the No. 1 well and the fact that the No. 1 well actually is already in compliance with the kind of corrosive-resistant requirements that are currently being used for AGI wells, the only difference being and that I would request not be applied to the No. 1 well is the need to go back and retrofit the No. 1 well so that there would be bottom-hole pressure

and temperature measurement in that well.

We will put it in the new well, but that would be a significant cost to the No. 1 well. And we would ask that we not be required to do that, because most of wells -- AGI wells in the state don't have that anyway. We will put it in the No. 2 well. And I guess theoretically it could be put into the No. 1 well if it was ever the worked over, and we wouldn't have an objection to that, but we wouldn't want to have to work it over just to do that.

COMMISSIONER BALCH: Would you object to language that says that, the first time it's worked over, the sensors were added?

MR. GUTIERREZ: No. I don't think my client would object to that.

CHAIRPERSON BAILEY: Do we need to go back into closed session?

MR. BRANCARD: It depends whether you're ready to --

MR. WADE: I do have one concern I'd like to discuss.

CHAIRPERSON BAILEY: Oh, yes. Mr. Wade.

MR. WADE: Regarding amending a past order, it sounds like it could be fairly significant. Is there going to be a due process? Because I don't know exactly

what the application and the notice for this particular case said, but I don't know -- I don't know that it talked about amending a previous order.

MR. BRANCARD: Well, I don't -- I don't think so. I mean, I think adding more conditions -- and we're not -- I mean, this is not a significant change to it.

MR. BRUCE: I mean, it's making things more restrictive with less effect on offsets. That's the way I view it?

MR. BRANCARD: And these wells being so close to each other, the notice would be fairly similar.

MR. GUTIERREZ: Absolutely.

And further, I don't think -- when you really go back and look at the order of the first well, which I'm quite familiar with, I think you'll find there aren't really any substantive differences. Other than the MIT requirement and the bottom-hole temperature and pressure measurement, everything else is pretty much the same as it is in what we requested in the second well. Like I said, I've already talked to my client about the MIT requirement, and, you know, I don't anticipate that that would be an issue.

CHAIRPERSON BAILEY: Okay. So we are --

COMMISSIONER WARNELL: Any concerns about

the injection pressure?

CHAIRPERSON BAILEY: Ask.

Do you want to go back into closed session?

COMMISSIONER WARNELL: No.

CHAIRPERSON BAILEY: Do you want to go back into closed session?

COMMISSIONER BALCH: Yeah. I think that would be a good idea.

CHAIRPERSON BAILEY: Do I hear a motion to go back into closed session?

COMMISSIONER BALCH: I'll make a motion to go back into closed session.

COMMISSIONER WARNELL: I'll second that motion.

COMMISSIONER BALCH: Do you have a question?

MR. BRUCE: Before you go into it, I just spoke with my client, and Mr. Bryant says that for operational purposes, it would be a lot easier for the company to have the same --

MR. GUTIERREZ: Reporting requirements.

MR. BRUCE: -- the same requirements apply to both wells. So with that, I mean, go ahead and go into session, but there is really no issue about -- other than the one Mr. Gutierrez said, about the

bottom-hole location. It will be perfectly fine with us.

CHAIRPERSON BAILEY: Then in accordance with Section 10-15-1 and the OCC Resolution on Open Meetings, we will go into closed session again.

(Closed Session, 11:27 a.m. to 11:38 a.m.)

CHAIRPERSON BAILEY: Do I hear a motion for the Commission to go come onto the record?

COMMISSIONER WARNELL: I'll make that motion.

COMMISSIONER BALCH: I'll second.

CHAIRPERSON BAILEY: All those in favor?

(Ayes are unanimous.)

CHAIRPERSON BAILEY: The only thing discussed is Case Number 15193. We have reached a decision, and we would like for our counsel to explain what the decision is and what we will need from Mr. Bruce.

MR. BRANCARD: Okay. Let me see if I can get this all here. The proposal is to approve a permit for the AGI Well No. 2 at Maljamar as specified in the C-108 and as further amended in this order. The amendments will include those conditions set forth by the Division in their statement of the case with two changes. One is on the second condition that requires a

step-rate test and sets an initial maximum surface pressure at 3,028 psi, the OCD will be allowed to adjust the maximum pressure based on the results of the step-rate test. Okay?

Three changes.

Number four, where it talks about daily monitoring of pressure data and references diesel replacement activities, obviously the monitor of diesel monitoring activities is on an as-needed basis.

CHAIRPERSON BAILEY: Continuous, not --

COMMISSIONER BALCH: It's a default, not a -- which would require the 20 second.

MR. BRANCARD: Number seven, which requires a quarterly reporting of the daily gathered information using a C-103 form. The Division is allowed to change the timing of this quarterly reporting based on the information submitted in the first year of reports. So it can be changed to an annual or semiannual basis if the Division feels that's warranted.

Plus an additional change discussed during -- on the record on casing to protect the Santa Rosa Formation, that the Applicant will make a proposal, and the Division will review what they propose in terms of the casing changes as discussed today.

So then we will also use this order to

amend the AGI No. 1 well approval, first to allow a combined maximum daily injection of 2 million. And then for the AGI No. 1 well, the mechanical integrity test requirement is to be annual. The AGI No. 1 well will have the same reporting requirements as the No. 2 well, except that any equipment required for the daily monitoring which is not now in place should be installed at the first work-over, and then that reporting will come -- requirements will commence from there.

Finally, any changes or conditions placed on the No. 2 well or the No. 1 well by the Bureau of Land Management in their approval will be submitted to the Division. The Division will then determine if those changes are significant enough to require a change to the Commission's orders.

Have I summarized?

CHAIRPERSON BAILEY: And the Division changes can be done administratively rather than going to hearing.

MR. BRANCARD: Right.

CHAIRPERSON BAILEY: I believe that's all.

MR. BRUCE: I think I got it all. Thank you.

CHAIRPERSON BAILEY: And how soon would you like to have that order submitted, Counsel?

MR. BRANCARD: Well, I think we have another meeting coming up rather soon; is that right? October?

CHAIRPERSON BAILEY: We have nothing docketed for October.

MR. BRANCARD: So November may be the next meeting.

MR. BRUCE: I tell you, I will probably --

CHAIRPERSON BAILEY: Then the next time we will be signing an order would probably be November 19th, for the next --

MR. BRANCARD: So we have time.

CHAIRPERSON BAILEY: Probably.

MR. BRUCE: Fortunately I don't have any Division hearings next week, so that's why I'm liberal with my time.

CHAIRPERSON BAILEY: Just don't know what you'll do with yourself (laughter)?

COMMISSIONER BALCH: Bill some hours.

CHAIRPERSON BAILEY: Is there anything else before the Commission today then?

Hearing none, then this meeting is adjourned. Thank you very much.

Do I hear a motion to adjourn?

COMMISSIONER WARNELL: Yes.

MR. BRANCARD: Oh, if I may? I don't know if I've told the Commission this, but the Pit Rule appeal has been submitted to a panel, which means that there are now three judges who are reviewing the briefs, and we could have a decision soon or within a few months. I'm guessing more the latter.

CHAIRPERSON BAILEY: It was heard before a three-person panel, and it took about a year for that.

Do I hear a motion to adjourn?

COMMISSIONER WARNELL: I make that motion.

CHAIRPERSON BAILEY: Second?

COMMISSIONER BALCH: I will second the motion.

CHAIRPERSON BAILEY: All those in favor?

(Ayes are unanimous.)

(Case Number 15193 concludes, 11:44 a.m.)

STATE OF NEW MEXICO

COUNTY OF BERNALILLO

CERTIFICATE OF COURT REPORTER

I, MARY C. HANKINS, New Mexico Certified Court Reporter No. 20, and Registered Professional Reporter, do hereby certify that I reported the foregoing proceedings in stenographic shorthand and that the foregoing pages are a true and correct transcript of those proceedings that were reduced to printed form by me to the best of my ability.

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

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

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