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

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

ORIGINAL

AGAVE ENERGY COMPANY'S AMENDED SECOND MOTION TO AMEND ORDER NO. R-13507, LEA COUNTY, NEW MEXICO

CASE NO: 14720

REPORTER'S TRANSCRIPT OF PROCEEDINGS
COMMISSIONER HEARING

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BEFORE: JAMI BAILEY, Chairman
DR. ROBERT BALCH, Commissioner
SCOTT DAWSON, Commissioner

October 25, 2012
Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Commission, JAMI BAILEY, Chairman, on Thursday, October 25, 2012, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South St. Francis Drive, Room 102, Santa Fe, New Mexico.

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A P P E A R A N C E S

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FOR AGAVE ENERGY COMPANY:

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ALSO PRESENT:

Florene Davidson

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CHAIRMAN BAILEY: It is 9:00. We are in Porter Hall, in Santa Fe, New Mexico. This is the meeting of the Oil Conservation Commission. All three Commissioners are present, so there is a quorum.

To my right is Scott Dawson, designee of the Commissioner of Public Lands. To my left is Dr. Robert Balch, who is the designee of the Secretary of the Energy, Minerals and Natural Resources Department. And to his left is Bill Brancard, General Counsel for the Commission today.

Mr. Dawson, you have something you'd like to say?

COMMISSIONER DAWSON: Yes. I had a question for all parties involved. I'll ask the Commissioners -- first I'll tell you what the problem is, and then I'll ask the Commissioners, and then I'll ask you, the members and the applicant, if there's a problem with my situation.

And the situation is that currently I'm working for the State Land Office. But the Oil Conservation Division has a job opening for a deputy director, and I've applied for that job position.

And I just wanted to make sure with all parties, both the Commissioners and the applicant, if there was any kind of conflict that would arise from the fact of me applying for the Oil Conservation Division.

And first I wanted to ask the Commissioners if they have any conflict with that, with me sitting in on this case and hearing this case?

COMMISSIONER BALCH: Maybe I'm a little simple about it, but right now you work for the State Land Office, and you're designated by the Land Commission, so I don't see a conflict.

COMMISSIONER DAWSON: I haven't been hired yet by the Oil Conservation Division, and I don't know if I will be hired by the Oil Conservation Division, but I have applied with the Oil Conservation Division.

COMMISSIONER BALCH: Again, you're working for the State Land Office and you're the designee, and you're not working for the OCD. I don't see a conflict.

CHAIRMAN BAILEY: I have absolute faith that you will discharge whatever duty there is in this case with the understanding that you are working for the Land Office and primarily looking out for the beneficiaries of the state trust.

So I am confident that you have that ability to discharge the responsibilities that you have been given as the designee of the Land Office.

COMMISSIONER DAWSON: Okay. Mr. Larson, do you have a rebuttal?

MR. LARSON: I see no conflict whatsoever. Thank you for raising it, though.

COMMISSIONER DAWSON: Thank you.

CHAIRMAN BAILEY: We have minutes of previous hearings that we need to sign off on. We have minutes of the meeting that was held on September 13th, 2012, in which I did not participate.

Commissioners Balch and Dawson were the Commissioners for that hearing. And I ask if you have read the minutes as they were prepared by the Commission Clerk?

COMMISSIONER DAWSON: I have.

COMMISSIONER BALCH: And I have.

CHAIRMAN BAILEY: Do you have any comments, or do I hear a motion to sign this?

COMMISSIONER DAWSON: I will motion.

COMMISSIONER BALCH: I'll second.

CHAIRMAN BAILEY: All those in favor?

I do not vote because I was not a member.

Commissioner Balch, as Acting Chairman for that day, you have the responsibility to sign those minutes.

And we also have the minutes of the meeting of the Commission held on September 24th through the 27th, and October 1st, 4th and 5th. Those meetings dealt primarily with the Rule 17 deliberations that are ongoing.

Have the Commissioners had a chance to read the minutes as drafted by the Commission Clerk?

COMMISSIONER BALCH: I have.

COMMISSIONER DAWSON: And I did.

CHAIRMAN BAILEY: Do I hear a motion to adopt these minutes?

COMMISSIONER DAWSON: I will motion.

COMMISSIONER BALCH: I'll second.

CHAIRMAN BAILEY: All those in favor signify by saying aye.

And I will sign on behalf of the Commission.

Then we have an order in Case 14763, which was the application of Mack Energy Corporation for compulsory pooling.

Commissioners, have you had a chance to review the draft order as it was prepared?

COMMISSIONER DAWSON: I have.

COMMISSIONER BALCH: I have, also.

CHAIRMAN BAILEY: Do I hear a motion to accept and sign the order of the Commission in this case?

COMMISSIONER DAWSON: I will motion.

COMMISSIONER BALCH: I will second.

CHAIRMAN BAILEY: All those in favor

signify by saying aye.

Then you'll sign that order.

Commission Counsel, should I even sign that, since I was not a participant in that hearing?

MR. BRANCARD: Yeah. You can just indicate that you were not a participant on there.

CHAIRMAN BAILEY: Okay. All documents will be given to the Commission Clerk for distribution.

Before us today we have Case 14720, which is Agave Energy Company's amended second motion to amend Order Number R-13507. And I'll call for appearances.

MR. LARSON: Gary Larson, of Hinkle, Hensley, Shanor & Martin, on behalf of Agave Energy Company. I have two witnesses.

CHAIRMAN BAILEY: Thank you. Shall you call your first witness?

MR. LARSON: Actually, I have a brief opening statement.

CHAIRMAN BAILEY: All right.

MR. LARSON: May I proceed?

CHAIRMAN BAILEY: Yes. Please do.

MR. LARSON: Madam Chair, Commissioners, as you're aware, this is the second time Agave has requested a modification of the requirement in Order Number R-13507 that Agave re-enter and re-plug four plugged and abandoned wells in the vicinity of the Red Hills AGI Number 1 well.

The first time Agave requested relief from the requirement that it re-plug the Smith Federal Number 1 was based on the well's current plugging configuration and its distance from the AGI well.

Agave's present request for relief is different, in that it's based on actual wellbore conditions in the Government L Com Number 2 well that neither the Commission nor Agave could have anticipated, based on available plugging records.

Additionally, Agave's request is based on new data generated by Agave which is derived from inlet gas that it actually received at its Red Hills Gas Processing Plant, injection testing conducted during Agave's successful re-entry and re-plugging of the Sims Number 1 well, and new modeling demonstrating that the radius of the injection plume after 30 years will be 0.30 miles, rather than the 0.39 radius indicated in the Commission's initial order.

You're going to hear testimony this morning that Agave spent 22 days and $500,000 attempting to re-enter the Government L Com Number 2 well before reaching the conclusion that it was impossible to reach the depth necessary to place a balance plug across the injection zone. And that conclusion was shared by E.L. Gonzales, in the OCD's District 1 office, and by Will Jones, in the Santa Fe office, who are both experts in injection well matters.

And at the point Agave realized it was not feasible to reach the depth necessary to place the balance plug, it faced a dilemma. Its only option was to terminate the re-entry efforts, yet Agave was bound by the Commission's requirement to install the balance plug. And it was without a means to immediately obtain Commission approval of the termination of the re-entry.

And left with no other viable option, Agave terminated its re-entry efforts and then filed what was called its second motion to amend Order Number R-13507 requesting the Commission to relieve Agave of the balance plug requirement.

And soon after Agave filed that motion, the Division entered an appearance in the case and engaged in discussions with Alberto Gutierrez, of Geolex, and myself, regarding the proximity of the Government Number 2 well to the outer edge of the plume, which is indicated to be .39 miles in the initial order.

And several subsequent developments then changed the picture. First, Agave evaluated new inlet gas data and determined that the composition of the

Treated Acid Gas, which I'll refer to as TAG, would be 99.8 percent CO_2 and .2 percent H_2S, and that the average injection rate of TAG over the 30-year life span of its injection authority will be 14 percent less than Agave originally anticipated.

Secondly, Agave conducted injection testing during the re-entry of the Sims Number 1 well that demonstrated that its injectivity projections were overly conservative and that the reservoir has significantly more capacity than it originally anticipated.

And third, Agave performed new modeling based on this data which resulted in a 25 percent decrease in the radius of the injection plume after 30 years.

And Agave presented the OCD with the new inlet gas data, the injection test results and the new modeling. And the ensuing discussions between Agave and the OCD resulted in an agreement that there is no threat that TAG injected by Agave will migrate into the Government L Com Number 1 and Number 2 wellbores, and that the Commission should amend Order R-13507 by eliminating the requirements that Agave place a balance plug in the Number 2 well across the injection zone and re-enter and re-plug the Number 1 well.

And that agreement was eventually memorialized in a written stipulation which Gabrielle Gerholt has executed on behalf of the OCD and I have signed on behalf of Agave.

Finally, Agave will present substantial and unopposed evidence demonstrating that it should be relieved of the re-plugging requirements for the Government L Com Number 1 and Number 2 wells, and providing the Commission complete confidence in concluding that there's no threat whatsoever of injected TAG migrating into the welbores.

And before I call my first witness, I'd like to draw your attention to the document marked as Exhibit Number 1, which is the written stipulation between Agave and the OCD.

And Madam Chair, I have the original of the stipulation, if you'd like to place that in the record.

CHAIRMAN BAILEY: Yes.

MR. LARSON: And I would move the admission of Exhibit 1 into the record.

CHAIRMAN BAILEY: Any objections?

Then it is so admitted.

(Exhibit 1 was admitted.)

MR. LARSON: Thank you.

I would call Mr. Ivan Villa as my first witness.

THE WITNESS: Good morning.

CHAIRMAN BAILEY: Good morning.

CHAIRMAN BAILEY: Would you please stand to be sworn?

IVAN VILLA

Having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. LARSON:

Q. Please state your full name for the record.

A. Ivan Villa.

Q. By whom are you employed, and in what capacity?

A. I am the engineering manager for Agave Energy Company.

Q. Did you testify before the Commission during the previous two hearings in this case?

A. I did.

Q. Did the Commission qualify you as an expert in engineering during each of those hearings?

A. They did.

MR. LARSON: Madam Chair, I request that Mr. Villa be qualified as an expert engineer for the purposes of today's hearing.

CHAIRMAN BAILEY: Yes, he is.

MR. LARSON: Thank you.

Q. (By Mr. Larson) Do you recall testifying at

the June 28th hearing in this case that Agave would complete construction of its Red Hills gas plant on September 1st of this year and commission the plant on October 1st?
A. Yes.
Q. Did Agave meet those projected dates?
A. We did not meet those projected dates.
Q. What is the current goal for commissioning the plant?
A. The current goal for commissioning is by the end of December 2012.
Q. And has the continuing plant development changed Agave's timeline for drilling the Red Hills AGI Number 1 well?
A. It has not. We're still on schedule for drilling of the well in the third quarter of 2013.
Q. What relief is Agave requesting in its amended second motion to amend Order Number 13507?
A. To remove the requirement for setting the balance plug in the Government Number 2. And also, removing the Government Number 1 from the plugging list.
Q. And the motion that Agave filed with the Commission also requests that the Commission reduce either the lifespan of Agave's injection authority or the total volume of acid gas that Agave would inject over 30

years. Is Agave still requesting that relief?

A. No, we're not.

Q. Is Agave now withdrawing that request?

A. We are.

Q. And will Mr. Gutierrez address that during his testimony?

A. He will.

Q. And do you also recall testifying at the June 28th hearing that Agave had begun the necessary steps to re-enter and re-plug the Government L Com Number 2 and Number 1 wells and the Sims Number 1 well, as required by Order Number R-13507?

A. Yes.

Q. What actions has Agave taken?

A. We had received approval for re-plugging of the wells. We also negotiated the surface use agreements for each well location and also have prepped the site for the upcoming work.

Q. And at the time of the hearing, had Agave rigged up on the Government Number 2 well site?

A. We had.

Q. And was Geolex overseeing the re-entry efforts?

A. Yes.

Q. Did Geolex perform that work under your direction?

A. They did.

Q. And I know Mr. Gutierrez is going to get into this in more detail, but could you tell the Commissioners how the re-entry efforts went?

A. We were unsuccessful on re-entering the Government Number 2 well.

Q. And how much has Agave spent to date on the re-entry of the Government L Com Number 2?

A. To date, we've spent about $500,000 on the Government Number 2.

Q. Did Agave move forward on the re-entry of the Sims Number 1 well?

A. We did.

Q. Has Agave completed the re-entry and re-plugging of that well?

A. We have.

Q. Was that performed in the manner specified by Order R-13507?

A. It was.

Q. Has the OCD District Office approved the subsequent C-103 describing the re-plugging?

A. Yes.

Q. What was the total cost of the re-entry and re-plugging of the Sims Number 1?

A. It was approximately $630,000.

Q. And while Geolex was performing the re-entry work on behalf of Agave, did you re-visit your original projections of the amount and composition of the inlet gas to be processed at the Red Hills Gas Processing Plant?

A. We did.

Q. And were those projections based on new data?

A. They were.

Q. And what was the data based on?

A. The data was based on information from our parent company on production curves for the producing zones around the Red Hills area, and also some new updated gas analyses for wells that we had tied into our system.

Q. This data became available when?

A. Approximately the June time frame.

Q. June of this year?

A. Yes. June 2012.

Q. Could you move forward to Slide Number 4, please?

A. (Witness complies.)

Q. And could you identify for the Commissioners the information in the table on Slide Number 4?

A. Yes. The table on Slide Number 4 is a Promax simulation of our updated calculation of the TAG composition. As you see, to the left, that is the -- each component breakdown. And across the top, you'll see, "TAG 1/13." That is our projected composition starting in January 2013. And then we move on to July 2013, and then finally, when we ramp up our production to 120 million cubic feet a day.

Q. And does the composition and the process streams differ from Agave's initial projections?

A. It does.

Q. What were your initial projections?

A. Initial projections were about 95 percent CO2 and 5 percent H2S.

Q. Could you move forward to Slide Number 5?

A. (Witness complies.)

Q. Again, would you identify for the Commissioners the data in this table?

A. The table in Slide Number 5 is a year-by-year forecast of our inlet volume coming into Red Hills, along with the corresponding TAG production. And that's based over a 30-year period. And that information is generated from our production curves from our parent company.

Q. What did you compute as the average injection rate over 30 years?

A. Average injection rate was approximately 6.7

million cubic feet a day.

Q. Does that also differ from your original --

A. Yes.

Q. What was the original projection?

A. A little over 8 million cubic feet a day.

Q. Did you provide this data to Geolex?

A. Yes.

Q. And did Geolex perform modeling based in part on this new data that you provided?

A. They did.

Q. And is the reduced radius of the injection plume the basis for Agave's withdrawal of its request and its amended motion that the Commission reduce either the lifespan of the injection authority or the total value of TAG to be injected?

A. Yes, it is.

MR. LARSON: Madam Chair, that's all I have on direct.

CHAIRMAN BAILEY: Do you have any questions of this witness?

COMMISSIONER DAWSON: I have one question.

EXAMINATION

BY COMMISSIONER DAWSON:

Q. When you did the -- going back to the previous slide on the calculation of the TAG composition, was that -- where did you test that gas stream? Was that on the line coming into the plant, or is that from the wellhead?

A. That's at each individual wellhead. And we just took a composition and threw that into the Promax model, and that's how we generated our TAG concentration.

COMMISSIONER DAWSON: That's the only question I had. Thank you.

CHAIRMAN BAILEY: Commissioner Balch?

COMMISSIONER BALCH: I have a few questions, Mr. Villa.

Good morning.

THE WITNESS: Good morning.

EXAMINATION

BY COMMISSIONER BALCH:

Q. L Com 2, you haven't been able to plug, $500,000. Sims 1, you did plug, about 630. And the other two are the Government L Com 1 and the Government L Com 2. Would you expect them to come in at the same price range, around a half million dollars?

A. I think -- yes, sir, I would. Actually, 500,000 is only the cost to date, since we basically halted work on the Government Number 2. I would suspect plugging of the other wells would probably come in at about the same amount as the Sims Number 1. And I'm sure

Alberto could probably elaborate on that during his testimony.

Q. I'm going to follow up on the question that Mr. Dawson had on the TAG.

Over 30 years of production, are you likely to see a variation in those CO_2 and H_2S ratios?

A. There could be a variation.

Q. What sort of range might you expect, from just knowledge of production?

A. Not much. You know, the initial H_2S -- the initial H_2S that we were seeing basically came from the outer fringes of the Avalon Shale play. Those were analyses that were pulled from wells for exploratory-type reasons.

So those concentrations could change, but I wouldn't think they would change by much.

Q. About what percentage of the total number of wells that are going to eventually come into the plant are in place and producing?

A. What percentage of the number of wells?

Q. If there's going to be a thousand to complete the play, how many do you have now? Just a percentage.

A. I'm guessing probably at 10 to 15 percent.

Q. So another 85 to 90 percent of the wells that you haven't tested yet?

A. Correct. But a lot of these analyses that we're seeing are spread out throughout the fields, and there's several producing zones that we have some pretty good information for. So we feel very confident with the gas compositions.

Q. If you had to put a variance on it, what would be your estimate of a variance?

A. For the composition?

Q. Plus or minus H2S.

A. I would probably guess we would probably be within plus or minus half a percent to a percent H2S.

Q. Could you refresh my memory on how deep the injection well is?

A. The injection well is roughly about 6,800 feet, the actual injection zone.

Q. I'm going to ask you just a general engineering question because I'm curious.

But if you were to drill a monitoring well only for the point of monitoring CO2 at that depth, how much would that cost, about?

A. That's probably a little bit outside of my realm. I'm hoping Alberto could probably answer that question better than I could.

COMMISSIONER BALCH: Thank you. That's all I have.

EXAMINATION

BY CHAIRMAN BAILEY:

Q. Since this case is predicated on a change of -- or a calculation of the composition at 99.8 percent CO_2 and 0.2 percent H_2S and an injection rate of 6.74 mcfd, would you object to having those limitations as part of the order, since that was the basis for your case before the Commission?

A. No. No, I don't think we'd object to that.

CHAIRMAN BAILEY: Okay. Any other questions?

COMMISSIONER DAWSON: No further questions.

MR. LARSON: I have a couple of follow-ups.

CHAIRMAN BAILEY: Yes.

REDIRECT EXAMINATION

BY MR. LARSON:

Q. Mr. Villa, has Agave submitted an alternative plugging plan for the Government L Com Number 2?

A. We have.

Q. But you haven't carried forward with that action yet?

A. Yes.

Q. That's pending the Commission's ruling on this motion?

A. Yes.

Q. Following up on Commissioner Balch's question, you have a small percentage of representative wells in that Avalon Shale play. Is it your belief that those wells are representative of wells that will come on line throughout that play?

A. Yes.

MR. LARSON: That's all I have.

CHAIRMAN BAILEY: Then your witness may be excused.

MR. LARSON: Thank you.

CHAIRMAN BAILEY: Shall we take a five-minute break?

MR. LARSON: Sure.

(A recess was taken.)

CHAIRMAN BAILEY: Shall we go back on the record?

MR. LARSON: Yes. With your indulgence, I'd like to recall Mr. Villa to answer a couple of questions.

CHAIRMAN BAILEY: All right.

You're still under oath, Mr. Villa.

THE WITNESS: Okay.

FURTHER REDIRECT EXAMINATION

BY MR. LARSON:

Q. Mr. Villa, Chairman Bailey asked you a question about putting a limitation on your average daily rate of TAG injection. And what is the maximum daily injection rate currently in place in the original order?

A. Thirteen million cubic feet a day.

Q. Would you like to maintain that 13 million per day maximum?

A. Yes.

Q. What is your reasoning behind keeping that?

A. One of the major reasons is during periods of plant upsets or field shut-ins, there could be times where we may need that extra capacity for TAG production. So mainly during periods of upsets, we would like that flexibility.

Q. And those periods of upset, would that change your calculation of the average injection rate over time?

A. Can you repeat that?

Q. If you had those upset days, would that have any impact on your calculation of the average injection rate?

A. No.

Q. But again, you would like to maintain that 13 million maximum daily injection rate?

A. That's correct.

MR. LARSON: That's all I have, Madam Chair.

CHAIRMAN BAILEY: Any questions?

COMMISSIONER DAWSON: No questions.

COMMISSIONER BALCH: No questions.

CHAIRMAN BAILEY: You may be excused.

Would you like to call your next witness?

MR. LARSON: I would. Alberto Gutierrez.

ALBERTO GUTIERREZ

Having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. LARSON:

Q. Please state your full name for the record.

A. My name is Alberto R. Gutierrez.

Q. What is the name of your company?

A. Geolex, Inc.

Q. What is your title with Geolex?

A. I'm the president of the company.

Q. Did you also testify before the Commission in the two previous hearings in this matter?

A. Yes, I did.

Q. Did the Commission qualify you as an expert in petroleum and geology and hydrogeology in each of those hearings?

A. Yes.

MR. LARSON: Madam Chair, I would request that Mr. Gutierrez again be qualified as an expert petroleum geologist and hydrogeologist for purposes of today's hearing.

CHAIRMAN BAILEY: Yes, he is.

MR. LARSON: Thank you.

Q. (By Mr. Larson) What are the key elements of Agave's request for relief, now that it has withdrawn its request for reduction in either the lifespan of its injection authority for the total volume of TAG to be injected over 30 years?

A. I wanted to go over a little bit of an outline of what we're going to go over, and then I'll go over those key factors.

Q. Sure.

A. Mr. Villa has already testified to the data that were provided to us on the change in the projected TAG composition and volume, and you've heard that already. I'll touch on that a little bit, but not very much.

Most of my presentation will relate to what did we find out about the reservoir when we were doing the plugging of the Sims Number 1, and how did that affect -- and what were the results of that analysis on the projected plume dimension over 30 years?

And then I will go into a fair amount of detail as to what we encountered when we attempted to plug the Government Number 2, and when we successfully plugged the Sims Number 1, and what we would expect in the context of the Government Number 1.

And then I will give you a revised estimate of the plume geometry and its maximum extent, based on the TAG volumes and the reservoir conditions and the additional new data that we have on the reservoir.

And I want to emphasize too that we coordinated this whole process. It was really an excellent example of working jointly with the agency. We coordinated with District 1 and with Santa Fe pretty much on a daily basis, and in some cases, more than once a day, while we were going through the whole plugging process, to keep the district and Will Jones, in Santa Fe, apprised of what we were encountering.

And it was a two-way street. I mean the district had their staff out there numerous times, and we would discuss and try to work out what was going to be the best way to accomplish the objectives that were set forth in the order.

And in fact, it was originally the district that said to us, when we were struggling with the

Government Number 2, "You may as well give it up. You're never going to get there." So I'll talk a little bit about that.

But I really am proud of the way we were able to work and have been able to continue to work with the district and with the staff in Santa Fe, which have been very helpful throughout the whole process. And then I'll just go through a summary of what our request is from the Commission today.

The key elements of our request are as follows: Basically we know, as Mr. Villa testified, that the projected concentrations of the TAG are resulting essentially about a 96 percent reduction in H2S concentration in the overall TAG stream. So we're basically injecting 99.8 percent CO2 and about .2 percent H2S. So there's a much lower percentage of H2S than what we originally anticipated.

Secondly, even if you take into account the uncertainties that go into the determination of that, as Mr. Villa testified, maybe you're talking a half to 1 percent difference in that H2S concentration, which would, at its worst, bring us up to about 1.2 percent H2S, which is still about 75 or 80 percent lower than what was originally projected.

Now, frankly, that change in composition doesn't have much of an effect on the overall size of the plume because the overall size of the plume is more affected by the overall volume of TAG and the reservoir conditions.

But when we went through the new modeling and projected rates, we found that instead of an average over 30 years of nearly 7.8 million cubic feet a day, our average turns out to be more like 6.75 or 6.74 million cubic feet a day. So that had a real effect on the overall size of the plume.

In addition, we went through extensive work to try to remediate and re-plug the Government Number 2. And I will go through those steps and explain to you why we feel that -- and so does the OCD -- feel that it is not possible to achieve that in the Government Number 2 or in the Government Number 1, and why we don't feel that those wells, as they currently exist, pose any kind of a threat of escape from the injection zone of acid gas.

Then very importantly, and something that we hadn't even thought of, frankly, when we originally re-entered the Sims well, but the Sims well is the closest well of all of the four that the Commission required us to re-plug. The Sims well is the closest to our proposed location for the AGI.

We were able to go and successfully plug that well. That configuration in that well was significantly different than what we encountered in the Government Number 2. Here's the point: We never thought of this in advance. I guess we probably should have.

But once we got down to the Cherry Canyon in the Sims Number 1 well, we thought, "Wait a second. We're in the injection zone that we plan to be in. Why don't we do some injection tests and get some more real data on the reservoir that we didn't have when we came to the Commission for the original application?"

So we did that. And that provided some additional very good data on the injectivity of the reservoir. And it provided data that frankly was pretty convincing to us and to the Division that the original projections for the size of the plume were way, way conservative, and that there is not much risk, if any, of that TAG coming out of that injection zone.

And if you'll note on the fourth or fifth bullet up there, the results of that injection test are summarized. The bottom line is we did not anticipate that the Cherry Canyon would be underpressured reservoir. We thought it would be normally pressured. But, in fact, it's underpressured.

The well went on vacuum at three barrels a minute and remained that way throughout our injection tests. And when we raised the rate to three-and-a-half barrels a minute, we were only able to generate about 400 psi of pressure.

Now, just to give you a comparison, the average rate of injection that Agave is anticipating, that's only the rate at which this well, the Sims well, took fluid on vacuum, is 148 percent of the rate at which Agave intends to inject.

So, in fact, we believe that our injection pressures are going to be very low, and, in fact, that the reservoir has much greater capacity and much greater porosity than what was originally anticipated.

In addition, we took a wider range of logs in the Cherry Canyon to re-look -- after we got these injection tests results, to look at the irreducible water saturation. And what it appears is that our original estimates were about .5 to .54 for irreducible water. And when we took a wider look at Cherry Canyon, what we found is that those numbers were much more around .43 to .45. And that has a real effect as well in the reservoir model and the prediction of the extent of the plume.

So basically the distance from the edge of the revised plume calculations indicate that both the Government Number 2 and the Government Number 1 are well protected from TAG in the reservoir. And so those are the key elements, and we're going to discuss those in detail as we go along.

Q. Just so the record is clear, Mr. Gutierrez, what are the parameters of the injection zone in the Cherry Canyon, the depths?

A. The injection zone in the Cherry Canyon is from approximately 6,200 to 6,500 or 6,600. We don't know exactly what would be the best zones when we encounter them. But that's what we anticipate.

Q. I direct your attention to the second bullet point from the bottom of the page there on Slide 6. That's a pretty strong statement, "The underpressured condition of the reservoir virtually guarantees that fluid will not leave the reservoir."

What's your basis for that statement?

A. It's very simple. We have a pressure gradient that tends to take fluid into that reservoir, rather than to allow fluid to escape from that reservoir.

So in fact, these injection tests were very key in both my reevaluation of that reservoir and in E.L.'s and Will's analyses of the reservoir. So we both feel very comfortable with that condition in the reservoir.

Q. And during Mr. Villa's testimony, I assume you heard a question about a potential monitor well?

A. I did.

Q. What would your opinion be about the validity of requiring a monitoring well?

A. Monitor wells in acid gas injection I think are not a good idea in the context of penetrating the reservoir. Because I think that it is far better to perhaps have a look at producing wells in the nearby area that penetrate that zone and look at what kinds of changes there might be in the chemistry as a way of maybe being an early sentinel of a problem.

But one of the things that you want to avoid is to avoid penetrations of that reservoir as much as possible, because you really want the stuff to stay in there. While this is an underpressured reservoir and that would not be as much of a concern, it's a very expensive proposition, and I don't think it will really help us assure safety.

Q. And could you ballpark the cost of a monitor well?

A. Yeah. I think if you were going to drill a monitor well that was going to be within the plume and you have to protect that well in the same way that you would protect an injection well out there at that location, I'd say you're looking at 2 to $3 million.

Q. And would it make sense to you to do a monitor well outside the projected radius of the plume?

A. I don't think so. I think it would be better just to look at other production in the area and monitor that.

Q. And could you move on to Slide Number 7?

A. (Witness complies.)

Q. What is the distance from the surface location of the Red Hills AGI to the Government L Com Number 2?

A. It's about .4 miles.

Q. And the same for the Government L Com Number 1?

A. It's about .72 or .73 miles.

Q. And what is the distance of the Smith Federal?

A. About .72, .73, something like that.

Q. So the distances of the Government L Com Number 1 and Smith Federal Number 1 are very similar?

A. They are.

Q. Can you move to the next slide?

A. I want to point out the Sims -- you didn't mention the Sims well.

If you look on the map -- this is just to refresh the Commission's memory about the location of these four wells -- you'll see the Government Number 2 and Government Number 1 there to the east of the proposed Agave well, the Smith Federal to the southeast. And the

Sims you can see is pretty much directly north and is approximately .25 miles away from the proposed Red Hills well.

Q. Anything else on this slide?

A. No. That's it.

Q. And what was Geolex's original plan for re-entering the Government L Com Number 2?

A. The Government L Com Number 2 is an abandoned dry hole of which the casing -- it was a deep test. It went way below the injection zone. But then it was plugged back and abandoned.

And the 10-and-three-quarter-inch intermediate casing was removed from a depth of about 800 feet to a depth of 2,700 feet, approximately. I'm sorry, to a depth of about 2,370 feet, approximately.

So the original concept and the approved re-plugging plan was that we would re-enter the well. We would drill out through the base of the surface casing at about 800 feet, and we would re-enter the open hole, which we did. Then the idea was we were going to get back into the 10-and-three-quarter-inch casing at about 2,370 feet and then go on down to the Cherry Canyon and set a balance plug because, again, we have some open hole down there that is filled with heavy mud. That was the original plan.

We attempted to do that. We had very, very difficult drilling in the upper well due to the fact there was a lot of metal debris and what I call junk that had been dropped in that well and that we had to drill through. So we spent basically almost 18 days just trying to get through from the surface to the top of that 10-and-three-quarter-inch cutoff casing.

In just drilling out the open hole, we had to mill a lot of steel that was in the well, a lot of just junk that had been dropped in that upper portion of the hole. And what would happen is there were a number of plugs that we drilled through as we were going down. But what would happen is you'd start milling on some junk, and then it would kind of push through portions of the open hole that had collapsed, and then you'd have to mill on it again. It was quite a tedious process. The bottom line is we had those difficulties to about 1,800 feet or so.

Then we had a little bit easier drilling until we got down to the top of the casing. And we went down -- we were drilling with a 12-and-a-quarter-inch bit, so that when we would encounter the top of the 10-and-three-quarter-inch casing, we would basically arrive at the top of that casing and then be able to pull out and come back in with like a nine-and-five-eighths-inch bit and then re-enter that casing.

After about three or four days of attempting to re-enter that casing, we thought we had re-entered it. And we kept on going down and kind of pushing and drilling down to a depth of approximately 2,560 feet.

So I thought, "Okay, now we're home free," even though we had expended a significant amount more of money than we anticipated to get there. But then we encountered some resistance at that 2,500-foot depth.

So I consulted with E.L. We talked about it. And I said to him, "You know what I'm going to do? I'm going to pull out because I think I'm not in the casing. I think I'm alongside of it." So I said, "I'm going to pull out and put a coring bit back on. I'm going to go back in, and I'm going to go to the depth where I'm hitting resistance and try and get a sample and see whether I'm in or out."

When we did that, we found indeed that we were outside the casing. We cored a piece of rock from where we had encountered the resistance, and the core that came out had the crescent shape of where the original hole was as half of the core. So we knew we were outside of this casing.

So we pulled back up and we attempted again to re-enter it, and we just couldn't do it. So we thought now we want to take a look at what the top of that casing looks like so we can maybe try and figure out how to get into it. So we put what's called an impression block, which is essentially a block of lead, this one being about the same diameter as our bit, 12-and-a-quarter-inch.

And we went down with that impression block. And you push a little bit on the top of the casing, so then you pull it up. And you basically have a negative image of what is looking up at you in the hole. When we did that, we got basically a completely inconclusive result. When we pulled it back out, what it looked like is that this casing is actually collapsed at the top.

So after we did that, E.L., when I called him and told him and sent him photographs of the impression block, he said, "Just give it up. You're never going to get there." And I agreed with him. I said, "I think we've got a real problem, and I don't think we're going to be able to re-enter it."

And we also noticed that -- because we obviously were down alongside the casing there at that 2,300-foot depth, that what had happened is at the top of that casing, where it had been cut off and pulled out, there was a big washout.

So really what happened is that that casing not only was partially collapsed, but it had almost 150 feet of essentially free pipe sitting in that hole at that depth. And we just could not get -- it's like threading a needle. We just could not thread the needle.

We then, in consultation with the district, we said, "Why don't we just squeeze and inject cement over that entire washout, fill it completely and bring the cement up to about 2,300 feet above there and then continue our plugging from above that zone?" Which was what we proposed to the Division. And it's a plan that we came up jointly with the Division of how to finish plugging that well without having the ability to go down there and set that balance plug.

That was submitted as a C-103 to the district. And they accepted it for the record, but they couldn't approve it because of the fact that the order trumped that and said that we have to place a balance plug. So that's why we're here today on that particular well.

That's, in short, the story of 25 days of my life that I don't want to repeat.

Q. During the process of your communication with the district office, were you also communicating with Will Jones?

A. Yes.

Q. Did he concur with E.L. Gonzales' conclusion?

A. Yes, he did.

Q. And when did you rig up on the Government L Com Number 2?

A. We were at this hearing I think on the 28th, if I recall correctly, of June. And we rigged up about a week before, about the 21st or 22nd.

So I -- actually, this was my slide that I -- I know this by heart, so I guess I went ahead of myself. So this is a slide that lays out what I just told you in a longer form. And so if you look at the -- these slides all describe that.

Now, this is a graphical picture of what we think that situation looks like now. You can see that thing that looks like a mushroom. That's the washout zone that is immediately above where that casing is cut off. That is now completely filled with cement. We put 310 sacks of cement in there and filled the open hole up to -- we completely covered the area alongside of that casing and then up into the open hole to the 2,310-foot mark.

And I know it looks kind of funny, but I tried to do it to scale. The washout is -- our estimated extent of that washout, based on our tools and then based on the cement volumes, was about 24 inches. So it was about twice the diameter of the open hole there. That's because they cut that casing off basically in the salt, and that tends to cause a bit of a washout. So that's what we encountered in that well.

Q. This alternative plugging plan that you submitted to the district and basically in abeyance, pending the Commission's ruling on this motion --

A. Yes.

Q. -- have you estimated the cost of completing that alternative plugging plan?

A. It will probably cost about another 160,000. And that would be to go back -- because actually, in consultation with the district, we decided -- and we did this in the Sims Number 1.

We originally had an approved plan that had us just resetting the plugs that were already existing in the well. But both the Division and we felt more comfortable, especially in the upper portions of these holes where the salt was, not just setting plugs inside the wellbore, but actually perforating it and squeezing on both sides and setting the plug inside and out.

So that makes it quite a bit more expensive because you have to perforate and squeeze, as opposed to just setting balanced plugs.

So we proposed that in all of the plugs and two additional ones than what were in the well before between that 2,300 foot and the surface be set as part of the revised plugging plan.

Q. With regard to the Sims Number 1, you had better luck re-entering that well, didn't you?

A. Well, we had better luck in that we were able to accomplish our objective and, frankly, that we were able to gather additional reservoir data. But it was significantly more expensive than we anticipated for similar reasons.

In that well, we really didn't have this cutoff casing issue. We had a little bit of cutoff casing, but it was very near the surface and it was easy to deal with. But what we did have is the same encountering of a lot of junk that had been put into the top of that hole, along with the mud in between the plugs. So we had to spend a fair amount of time drilling through that.

Q. Do you recall what Agave's initial estimate of the re-entry and the re-plugging was for the Sims Number 1?

A. Unfortunately, I do. It was approximately 250-, $260,000.

So we were talking about the Sims Number 1. I thought I'd give you a quick rundown of what we encountered when we did that.

After we pulled off the Government Number 2, we then moved to the Sims Number 1 and started plugging it. We worked on that job about six or seven days a week until we completed it on August 14th, 2012.

We had a fair amount of difficulty, like I described, because we had to drill through a lot of trash in the upper portion of the well. And we had a couple of trapped gas pockets in the upper part of the well, and we don't really know how those got there. I think it was just during the original plugging. But it was not coming from the depth, from depth, or from -- we stopped encountering those before we even got to the Cherry Canyon, so they were trapped up higher.

After nearly three weeks, we reached our target depth and we circulated everything out of the hole. And then we decided that we would do this injection testing. As I mentioned, the injection tests yielded a three-barrel-per-minute rate on vacuum and then a three-and-a-half-barrel-a-minute rate at only 400 psi at the surface. So we felt very good about that.

We also, you know, have had an experience with another AGI well close to Hobbs, and this was a well that we worked on very closely with E.L., as well, where after we had injected for two and a half years into a similar reservoir that had similar characteristics to what we had tested in the Sims, we had the well go on vacuum after two and a half years of injection at pretty significant about a four-and-a-half million-a-day rate. So we feel very comfortable about the Cherry Canyon, much more comfortable even than we did when we felt it was a good reservoir to begin with.

So we then -- this next slide shows you the final approved C-103 for the remediation of the Sims. And we did go -- we did set a plug across the entire injection zone, as well as inside-and-out plugs all the way back up that well after we tested the Cherry Canyon.

Q. And that C-103 has been approved by the District?

A. Yes, it has. That's a copy of it there.

Q. You mentioned a change from your original assessment of the reservoir capacity based on the injection testing. What did you base your original assessment on?

A. We based it on all of the logs that we had for the wells in the immediate vicinity. And there were really no drill stem tests in the Cherry Canyon, so we had based it basically on just the log data from the logs of wells that were available. And some of the wells were newer, some were older. We had pretty good log data, but we really didn't have good data on the pressure conditions in the reservoir.

Q. Is that your normal procedure when you are tasked to evaluate a potential reservoir?

A. Right. We try to get all of the data we can. In some cases -- the reason why there's not much data on that reservoir there is because it's been -- early on they tested it a few times, and it came back straight wet. So there hasn't been -- people don't pay much attention to it when they look in that area because it's just nonproductive.

Q. After Geolex terminated the re-entry work on the Government L Com Number 2, did you have further discussions with the OCD regarding the course of action Geolex should take going forward?

A. We did. After the Sims Number 1, we went back to the -- first of all, we -- clearly the Division was very well aware of what happened, because they were there when we were doing the injection testing, and they were in and out of the site the whole time we were doing the re-plugging. Like I said, I was communicating on a daily basis with E.L. and with Mark down in District 1.

So when we encountered those results, I said, "I think we're going to go back and re-look at this reservoir with this new data." And the Division encouraged us to do that.

Because when we first encountered the inability to plug the Government Number 2 and we discussed it with the Division, there was still some concern on the Division's part that, you know, the Government Number 2 was pretty close to the edge of the 30-year plume. And consequently, while they agreed that it was not possible to re-enter and re-plug that well, there was still some lingering concern about that. So that's what generated our original motion to consider a reduction of the injection rate.

Q. Excuse me. At that time, everybody was still operating under the assumption that the radius after 30 years is .39?

A. Yes, sir. And that the well was out at a distance of about .4, so it was right at the edge of the 30-year plume. Even though I will emphasize that as we discussed in the original hearing, we felt pretty comfortable and still feel very comfortable, and more so now because of the conditions of the reservoir.

But we felt very comfortable that the plugging conditions of the well, as they existed and where the casing is and the heavy mud plug across there, that we don't have a potential problem in the well anyway.

But there was still some concern that it was close to the edge of the plume. So that's why we said, "What if we consider either reducing the lifetime of the injection or reducing the rate?"

And that was before -- I mean we were still just in the process of plugging the Sims Number 1, and that was before we got to the Cherry Canyon in the Sims Number 1.

Then when we got these injection test results, that kind of changed the whole picture, because we had new data that was reliable, that was right in the area testing the reservoir. When I showed that data to E.L. and Will, they said, "You ought to re-look at what the extent of the plume is with this new data, and there may not be a need to do anything other than to not be required to plug those wells."

Q. And then at that point, you did your new modeling?

A. Yes, sir. At that point, we did.

Q. Did the subject of a monitor well ever come up in your discussions with Mr. Gonzales or Mr. Jones?

A. No. We did discuss the potential merit of putting some kind of port, if you will, in the Government Number 2 that would -- and this was before, actually, we had the data from the Sims. But we discussed the concept of possibly putting a port that would extend to that depth of about 2,300 feet and to periodically monitor that.

But after looking at that well in detail, and after the Division looked at it, we both agreed that it probably was a useless effort because we don't believe there's any chance that that could get up that high, that the gas would ever leave the injection zone at all, much less get that high.

So we probably thought it was better to do a good plugging job on that, rather than to try and do that. So we didn't discuss a monitor well, but we did discuss that.

Q. But that went by the wayside after the modeling was done; is that correct?

A. It actually went by the wayside before that. But yes, definitely after the new modeling was done.

Q. It went by the wayside when the Division representative saw the injection test data? Would that be more accurate?

A. I'd say it went by the wayside even before that, because we looked at the likelihood of success. It was just kind of a thought that we had, and we bounced it around for a while. But it was all happening about the same time, so I don't really recall exactly. But yeah, it was all about the same time.

Q. And once the Division representatives were satisfied with regard to the Government Number 2, what did they suggest to us regarding the Government Number 1?

A. The Government Number 1, as you know, is again another three-tenths of a mile further, almost twice the distance from the proposed well as the Government Number 2.

And we had -- as Mr. Villa mentioned, we had, in good faith, obtained permission to plug all four of these wells, pursuant to the order. We had filed the APD with the BLM and had gotten that approved for doing the work. We had actually signed agreements with all of the landowners, and we had gone in and prepared the site for all of the wells. That's how far we got on the Government Number 1. We were going to move to the Government 1 after we completed the Sims.

But the Division said, "We're not even concerned about the Government Number 2 anymore. Why would you bother going back into the Government Number 1, because it's farther away? And secondly, you're not going to have any better success in the Government Number 1, because" -- as opposed to the Government Number 2, which had the 10-and-three-quarter-inch casing removed from 2,300 feet to the surface, this well had the 10-and-three-quarter-inch -- same kind of condition, but it's removed from 5,500 feet to the surface. So it would have been even more difficult to re-enter this one.

Q. I next direct your attention to Exhibit Number 1, which is the stipulation.

A. Yes.

Q. Does the stipulation accurately reflect the OCD's position that the Government L Com Number 1 and Number 2 wellbores do not present a threat of being conduits for injected TAG?

A. Yes, it does. And it furthermore states that the Division believes it's not necessary to reduce either the lifespan or the rate of TAG injection.

Q. And this document was the culmination of discussions with the Division over the course of several months?

A. I would say over the course of about two months, yes, sir.

Q. And moving to Slide Number 14, is there anything more you want to tell the Commission about the status of the Government Number 1?

A. No. The Government Number 1 is sitting there with the surface prepared, and we're hoping we do not have to re-enter it or attempt to re-enter it.

Q. And next I'd like you to address the impact of your injection testing during the re-entry of the Sims

Number 1. Could you explain to the Commissioners the data that appears on Slide Number 15?

A. Sure. Slide Number 15 is a summary of the injection conditions in the well, using the new data that we obtained from the reservoir testing and the additional log analysis.

Basically, it comes out with essentially the same kind of calculation. There's slight difference in the maximum allowable operating pressure because of the change in composition of the TAG. That does affect the maximum allowable operating pressure, but not by very much. It's a few psi, basically.

And that's because the density of the TAG is a little bit different when you have more CO_2 and less H_2S, and so that pressure changed a little. But we're not requesting any modification because we feel this pressure, the maximum allowable operating pressure, we're not going to get anywhere close to it because of the conditions in the reservoir.

What this does is then on this table, in the second red square there, you have outlined the calculation that results in the new radius predicted for the 30-year plume. And that's done exactly the same way we did it before. It just inputs the new data that we obtained.

Q. Did you use this injectivity data in performing the new modeling of the reservoir plume that you discussed?
A. Yes, we did.
Q. I'd ask you to move on to Number 16.
A. This slide now shows what we believe to be, again, a still conservative prediction of the plume after 30 years from the Agave Red Hills well.

Again, I will mention that we have not, in either the original modeling or in this modeling, attempted to take into account the 10 to 20 percent amount of mineralization that has been shown in the literature to take place that binds up the acid gas.

Because geochemically, it's very difficult to really calculate exactly what that factor is, we just don't do it. Because, in fact, what it would do is reduce the plume size a little bit more. But since we don't feel like we can do it reliably, we just prefer to be a little more conservative.
Q. Would it be fair to say you're comfortable that the formation of hydrides in the geochemical complex of CO2 occurs? It's just difficult to quantify the impact on the TAG?
A. Yes. The literature demonstrates that it does occur, and it has been noted. But it requires some very

extensive modeling and with data that we don't even have for this kind of situation.

Q. And how did the new modeling factor into your conclusion and the OCD's conclusion that the Government L Com Number 1 and Number 2 wells are a safe distance from the Red Hills AGI well?

A. I think the reservoir conditions, combined with the -- from our perspective, as I testified in the original hearing and as I testified again in the hearing relative to the Smith Federal, we never felt those wells presented a problem in the first place. We thought they were far enough away, and that the conditions of how they were plugged were sufficient to prevent an effect on those overlying or underlying zones.

But now we have an even greater level of confidence. We even have -- the Sims Number 1 well, which we did successfully plug and which is the closest well -- I must have misspoken when I said earlier it was about a quarter of a mile away, because this radius is .3 miles. So it's just outside .3. It's maybe like .31 or .32, something like that. Even that well, in its original condition, we didn't have a concern about.

But I think after getting this new reservoir data, the Division -- as well as our analysis, the Division's independent analysis of that data came up with the same conclusion.

Q. Directing your attention to the final three slides, I'll leave it to you to emphasize any points you feel you haven't sufficiently covered in your testimony.

A. It really comes down to these seven points on Slide 17. The injection test results make us feel very comfortable about a better understanding of the reservoir and our revised modeling of the plume.

The revised TAG volume and composition shows that we've got much less H2S. So while that doesn't affect the composition strictly, it doesn't really affect the extent of the plume, the revised volumes of the TAG do. And those are based on the best available data that we have at the present time.

Q. You heard Mr. Villa's testimony that there will be some variations in the composition, particularly the amount of H2S. Is it your view that that really isn't the driving factor? It's the volume in the TAG, rather than the composition?

A. That's correct. But we do have a reduction in volume, too, of about 14 percent. So that affected it, as well.

Given the reservoir characteristics and the current plugging configuration of all of the wells, we feel very comfortable that that protects clearly any production zones and will prevent escape from the intended reservoir.

And then of course the distance of the wells, we discussed that in detail, relative to the projected plume extent.

Then comes the unfortunate reality that it's really impossible to go back in and do those wells anyway. Even if we wanted to, at this point, we have made a very good-faith effort. Our client has spent well over a million dollars in just attempting to plug the Number 2 and plugging the Sims Number 1. And we feel very strongly that we could spend that much more again on the Government Number 1 and never be able to plug it, either.

And then last, but not least, the Division has been a partner all along in the development and analysis of this data, and they concur with our analysis and support our request to the Commission.

Q. Anything you'd like to emphasize on the last two slides?

A. Nope. I think they just summarize the same things we've already discussed.

Q. In your opinion, does the Government L Com Number 1, as currently plugged, present a threat of becoming a conduit for injected TAG?

A. Absolutely not.

Q. Similarly, in your opinion, will the Government L Com 2, as re-plugged pursuant to Agave's alternative plan, present a threat of being a conduit for TAG?

A. I don't believe so.

Q. And in your opinion, would a requirement by the Commission that Agave drill a monitor well either be necessary or appropriate under the circumstances presented?

A. I don't think it would be prudent.

Q. In your opinion, will the relief requested by Agave present any threat whatsoever of potential harm to correlative rights, fresh water, human health or the environment?

A. No, absolutely not.

The last bullet on my slide there which says, "Geolex and Agave," I actually should add OCD. Because Geolex, Agave and OCD are confident that the proposed modified program fully protects correlative rights, fresh water, human health and the environment.

MR. LARSON: Madam Chair, that's all I have on direct for Mr. Gutierrez.

And I would move the admission of Exhibit 2, which is the PowerPoint slides.

CHAIRMAN BAILEY: So admitted.
(Exhibit 2 was admitted.)
MR. LARSON: Thank you.
CHAIRMAN BAILEY: Commissioner Dawson, do you have any questions?
COMMISSIONER DAWSON: I have a few questions.

EXAMINATION

BY COMMISSIONER DAWSON:

Q. Can you go back to Slide 11, please?
A. Yes, sir.
Q. On the washout, when you cemented the plug or cemented into the washout -- and I believe you said it was 320 sacks is what that took?
A. I believe it was like 310 or 3 -- I think it was 310. Yes, sir.
Q. Was OCD on site when you performed that cementing operation?
A. I don't know if they were on site for the entire time, but they were on site for part of the time, yes.
Q. So after you performed your cementing operation on that washout, I was wondering if they were there when you tagged that plug to measure the top of the plug.

A. I don't think they were there when we tagged the plug. But that was a requirement that the District was specifically very adamant about, that we go back in and tag the plug. You know, we calculated the cement volume based on what we thought we understood about the washout, based on all of the drilling that we did, and we calculated sufficient cement. Our intent was to get to 2,300 feet, and we got to 2,310. So we felt pretty good about it, that we filled it up.

And we did provide all of that data to the Division in a subsequent C-103, in which we requested approval for this revised plugging program. And that was accepted by the District, for the record. But again, they couldn't approve it because of the fact that there was this requirement in the order.

Q. Did they -- after you tagged the top of that cement, did the OCD personnel feel that was sufficient, that that didn't need to be cemented to the surface? Did they feel that that tag at 2,310 was sufficient to protect any migration upwards?

A. No. We have additional work to do on that well, which is to plug from 2,310 to the surface, a number of different plugs, like I described. So that's where the additional 160,000 comes in, is that we're going to have to go in and squeeze and plug at the top of the salt and then at the base of the surface casing and then from there to the surface.

Q. Roughly three to four plugs within that wellbore --

A. Yes, sir.

Q. -- from 2,310 to the surface?

A. Yes, sir. Inside and out plugs.

Q. You'll squeeze those plugs? Do you plan on squeezing the top one, maybe, but --

A. The top two, we will squeeze. The other one is in the open hole, so it will be a balance plug.

Q. Did you consider -- whenever you did your new log on the Sims 1 during your plugging operations on the Sims 1, did you ever consider maybe doing a sidewall core in that zone or taking a core of that zone?

A. We did not, because it was cased. So we couldn't take any.

Q. So the logs pretty much -- the log data is what you relied on?

A. We relied on the injection tests, primarily. We didn't have new logs. We looked at additional logs in the area to look again at the irreducible water saturation. But we didn't have any new logs, per se, on the Sims Number 1. We had a direct injection test.

COMMISSIONER DAWSON: No further

questions. Thank you.

CHAIRMAN BAILEY: Commissioner Balch?

COMMISSIONER BALCH: As you can imagine, I probably have a lot of questions on modeling. I've actually done my homework, so I'm going to give you a little warning.

I did have a student complete his master's thesis on CO2 injection in the brine aquifers in May. And after the January hearing, I had him do some additional work because I was curious. So I may know more than I did before.

EXAMINATION

BY COMMISSIONER BALCH:

Q. So how deep is the Sims? Did it penetrate through the Cherry Canyon?

A. Yes, sir. It goes actually way down below the Wolfcamp.

Q. Where is the next plug down there?

A. I'm going to have to look at my --

MR. LARSON: Slide 13.

Q. It looks like there's some cement somewhere in the Cherry Canyon.

A. Yeah. I think that's the cement that we put in.

Q. So the next plug would be down there at --

A. It's just above the Wolfcamp there.

Q. But you have a good 1,200 feet or so? There's no perfs anywhere in that interval? You didn't perf your injectivity tests?

A. That's correct. There's no perfs in there.

Q. You were going through whatever current casing there was, not dropping it down?

A. No, no. We perfed in the Cherry Canyon zone to do our tests. But there were no perfs there before.

Q. Did you pull a water sample while you were down there?

A. We did not.

Q. Water chemistry has a large impact on solubility and residual CO_2 saturation, as well as mineralization?

A. It does.

Q. That's why I was curious.

I think, from looking at the table on 15, that your CO_2 is still going to be supercritical --

A. Yes.

Q. -- at that bottomhole.

A. Absolutely.

Q. That was my calculation. I've got about 4,000 tons a day. I'm used to thinking in tons because that's the way the models that were built for me were done.

The models that the student worked on were for Gordon Creek in Utah. And that's currently a saltwater injection well that sucks 5,000 barrels a day of water.

You do see pressure increase when you add CO2 into that kind of an aquifer, not necessarily in your wellbore, but you see it away from the wellbore.

A. Due to the displacement?

Q. Well, you're basically putting something in that comes gums up the works. The CO2 doesn't move as quickly. So as you go away from the wellbore, you get like a doughnut of pressure that goes out. And you can actually measure that with microseismic monitoring and put a passive seismic array down the borehole. We measured this for a CO2 flood, and that pressure flood moves well ahead of any actual CO2 that you might see.

Your model is purely volumetric, if I remember right?

A. That's correct.

Q. So there's no residual saturation? There's no --

A. No. We take into account the residual water saturation. We reduce the porosity by that residual water saturation.

Q. What about solubility?

A. We don't really attempt to take solubility into account. We just displace the entire amount.

Q. And then the third thing is mineralization. And that's really something that happens over -- I mean you get a little bit right away, but it's really hundreds to thousands of years --

A. Yes, sir.

Q. That's kind of the ultimate fate of the CO_2, not anything to do with the early part. Most of the early is going to be residual or soluble, and that's going to reduce your effective volume of free CO_2. I think I brought this up in the January hearing.

A. Yes.

Q. And inherently making your model even more conservative?

A. That's correct.

Q. The model that my student ran actually was about three times the CO_2 rate. compared to what you are proposing for this well. In every case, within a couple of years, even doing just CO_2, you would see a pretty good pressure spike. You didn't get quite up to the level of the parting pressure of the rocks, but you did see that spike somewhere in the vicinity of the wellbore. Not at the wellbore, but where that pressure front is moving through the rocks.

So that's why I brought up the idea of

monitoring or the question of monitoring. And I was thinking more of passive seismic, to see if you're breaking rock. And that would be a control on whether or not you're exceeding pressure in the reservoir.

A. Could I ask a question about what you --

Q. Sure.

A. I'm curious. When his model showed the movement of that pressure front during the injection, what about when he would stop the injection? What would happen then?

Q. When you stop the injection, what happens is, even though you have a reservoir that's overpressured and is regionally extensive, in the area that we modeled, which was several square miles around the injection reservoir, the net effect after, say, 1,000 years was about an 80 psi increase in pressure, so a much larger rate. And then also injecting 10,000 barrels a day of water.

A. Oh, on top of that?

Q. On top of that. But even with the CO2, you saw the same thing. It was just a little bit smaller. So you do see an increase in the local pressure.

Now, if you draw that out to the illogical extreme, like 10 million years or something, then it's going to equalize much more.

And then also, the CO_2, because it's underpressured, you'll see the CO_2 diffusing away from the wellbore.

A. I was just curious. Because as an example, in this other well that we worked on, the Lineham well, that had a tubing leak. And we had to work over that well when we killed that well. And then it sat there for some period of time after we did the workover. And then we went back into it and were reevacuating the well to set it back up. Even after I guess it was about eight or nine days, the well was still on vacuum, even in the immediate vicinity of the well.

Q. What was your total volume of injectate to that point?

A. It was roughly about three and a half to four and a half million a day for about three years.

Q. mcf?

A. Yes. That's a fairly low rate, compared to what we're talking about.

Q. To what you were doing there?

A. Yes. And I think also even to what you're talking about doing at Red Hills.

A. Right. It's about 50 percent greater at Red Hills, yeah.

Q. And also, our model is probably going to have the same porosity permeability that you have there. I just wanted you to be aware of that pressure and the potential for your bottomhole to look okay, and you still have a chance to break rocks away.

A. That's a good point. Maybe afterwards I could get his thesis so I could take a look at it.

Q. I could give you the name, and you can go to New Mexico Tech and get it. His study was actually involved with the transport of CO2 through outlets, out through wells, out through potential fault. And the bulk of his modeling was done with an assortment of very transmissive faults going up several thousand feet from the injection horizon. And in part, because of the underpressured reservoir, he had a difficult time getting CO2 to go up in significant quantities.

A. Even in open faults?

Q. Yes, even in open faults, 100 percent open faults. Basically, you're just filling up the volume, because you're dealing with a largely underpressured situation.

A. Right.

COMMISSIONER BALCH: And I think in the original hearing I mentioned that I wasn't terribly concerned about CO2 moving up through wells in the first place, and that modeling makes me feel a little better about that now. You're in the modeling business, so you know how good a model is.

That's why we talk about monitoring, because you want to get some well data in your process that will tell you that your model is correct. Or if you want to adjust your model, whether it's from microseismic or sampling the water in some distant well or something, I think it's probably a good idea, over a 30-year project, to understand if your model is working the way you think it is. Sorry about that, just a philosophical discussion.

I think that's all I have for questions.

MR. BRANCARD: Madam Chair, may I ask a few questions?

CHAIRMAN BAILEY: I'm not through.

MR. BRANCARD: Oh. Well, you go last, unless you'd like me to go last. I don't care.

CHAIRMAN BAILEY: Sure. Go ahead.

EXAMINATION

BY MR. BRANCARD:

Q. Just so we're not off track with what the Commission decided at the last hearing before us, at the previous hearing you testified and the Commission relied on what you called a safety factor, in which you took your zone that you were projecting and then gave it a three times safety factor and said that the well -- that you didn't want us -- what you wanted us to drop out was beyond that three times safety factor?

A. That's correct.

Q. You've not talked about safety factor in this hearing.

A. For the Government 1, which is about the same distance as the Smith Federal, which was the subject of the last hearing, the safety factor would be even greater now because the original size of the plume has shrunk. If you applied the same safety factor to this, it would encounter the Government Number 2.

Q. And I just did some -- just for the record, I did some quick pencil and paper calculations. If you had a .30 radius, three times it, I calculate it as .52.

Did you come up with a similar --

A. Well, I haven't done the calculation. But it's not really a straight radial calculation. Because every time that you -- as the radius expands, it takes more and more volume to make it expand the same distance. I don't know. I just would have to do the calculation.

Q. I did it based on square roots. That's how I got to the .52.

A. Right. But you can't really just do it that way. Because the fact is that you have to take into account the added -- when you're talking about a safety factor in this kind of application, what you're talking about is boosting the amount of gas going into the reservoir, and then you have to take into account how much additional porosity is taking place going out. So I don't know what the result would be.

Q. Okay. At the last hearing, you also, to bolster your argument, mentioned that it may not be moving in a perfect concentric circle, due to the angles or the slope of the formation?

A. That's correct.

Q. Did your results from the Sims well give you any indication about the formation and depths and how it might differ in where the movement is and in which direction?

A. Nothing, other than what we had before. Because we already knew what the top was, and we knew what the dip of the formation was. Although, again, I believe that the impact of the dip -- the dip is shallow enough there that it's going to have a very minor impact.

Q. On page 19, you indicate that the Cherry Canyon zone at the top is 6,150?

A. That's correct.

Q. In your document for the Sims well, you put the top of the cement at 6,197, so that's a considerable difference there.

A. Right. But you're about .3 miles away, pretty much, in the direct updip direction.

Q. So which -- if there's going to be a bulge in the .3, in which direction are you going to see that bulge, updip, downdip? Which direction is that?

A. The dip direction is towards the -- basically, southeast. So whatever -- all things being equal, you would see a kind of oblonging of that plume to the northwest.

Q. That's the opposite direction of the wells that you were working on?

A. Yes, sir.

Q. I'm glad you corrected your original statement about the distance of the Smith well. Because the Smith well is actually outside this .3 projected zone; correct?

A. Oh, yes. It was outside the .39 projected zone.

Q. The data you're using now for the reservoir is coming from someplace that is outside of where you're projecting the gas to go to in 30 years?

A. That's correct.

Q. Would you be -- are you planning to do a similar test on the zone when you drill the Red Hills well?

A. No. We're planning to do significantly more testing. In that well, we plan to core it and do direct permeability and porosity measurements both of the Caprock and the injection zone itself. And we will do a long-term injection test of that zone with bottomhole gauges, and we will take formation -- or attempt to take formation fluid samples, as well.

So we're going to do significantly more testing and logging of that well and have a lot more information when we drill that well.

Q. Are you obligated at this point to recalculate your estimates at that point and report it to the OCD?

A. That is not a current requirement, but it is not a requirement that I would have any problem with at all. I mean we would probably do it anyway.

Because it's our practice, even though we're not required to do this, that on every one of these wells that we complete, we submit to the OCD what we call a final end-of-well report. And that report has all of the core data, all of the logs, all of the modeling, all of the additional work that we do. And we provide that voluntarily to the Division on every well that we do, and this would be no different

MR. BRANCARD: Thank you, Madam Chair.

EXAMINATION

BY CHAIRMAN BAILEY:

Q. Let's go to Slide 6. Several times you've commented that the Government 1 will have or does have similar conditions to the Government Number 2. But there hasn't been any re-entry attempt, has there?

A. No.

Q. So this is based solely on forms that would have been filed with the OCD to indicate where the casing has been cut off?

A. Yes. We found, from the Government Number 2, for example, that that was very accurate. I mean the casing was supposed to be cut off at 2,370, and we encountered the top of the cutoff casing at about 2,373 or so.

Q. Are the operators the same for the Government Number 1 and Number 2?

A. I don't know the answer to that.

Q. So we don't know if the similar practices of throwing junk down the hole could go for Government 1 as you found in Government 2?

A. That's correct, we don't know. No, we don't.

Q. So the assumption was made that Government 1 is similar to Government 2. But we really don't know, because nobody has made a re-entry?

A. I think we know, based on the plugging records, that Government Number 1 will be more difficult to re-enter even than Government Number 2, even if you don't have all that junk in the hole, because the cutoff casing is approximately almost 3,000 feet lower than the cutoff casing was in the Government Number 2. So you've got that much more open hole that you have to thread the needle through to get back into that casing.

So that's the main factor that we believe makes the Government Number 1 more difficult than the Government Number 2.

Q. On Slide Number 6, you mentioned newer logs for indications of the water saturation.

Were those newer logs in the Sims, or are they from nearby wells?

A. We basically cast a wider net in the Cherry Canyon so that we included additional logs that had not been included in the original analysis.

Q. So these newer logs you referenced may not be within the two-mile --

A. Oh, no. They're within two miles, yes. They're not necessarily within the half mile.

Q. The next slide, is that a surface top hole, or is that the top of the Cherry Canyon?

A. That's a surface top hole.

Q. So we can't make any inferences from the Cherry Canyon from those --

A. No, not at all.

Q. My question of the day is: What is a night cap as referenced in Slide 8?

A. A night cap is basically a welded piece of steel on the top of the casing so that you can't -- so that no one can fall in the hole or drop stuff in there. But it's not a BOP, for example.

CHAIRMAN BAILEY: Those were all my questions.

Do you have any follow up?

MR. LARSON: I do not have any, Madam Chairman.

If I might ask your indulgence for a five- or 10-minute break so I can confer with my clients?

CHAIRMAN BAILEY: Sure. Take 10 and be back at five after 11:00.

(A recess was taken.)

CHAIRMAN BAILEY: Back on the record.

Did you have any closing?

MR. LARSON: A brief closing.

Madam Chair, Commissioners, this has been a prolonged process on Agave's application to inject in the Red Hills AGI well.

As you recall, Kaiser-Francis appeared at the original hearing opposing the application. We have subsequently given Kaiser-Francis notice of our second motion, which was withdrawing this amended motion, the first motion involving the Smith Federal, and Kaiser has chosen not to appear and oppose our presentation.

As you're aware, the OCD completely concurs with the relief we're requesting today. And with that said, I would ask that our motion be granted and that the Commission relieve the requirement of putting a balance plug across the Government Number 2 and requiring Agave to re-enter and re-plug the Government L Com Number 1.

CHAIRMAN BAILEY: All right. Thank you.

We will go into executive session, in accordance with the statutes and the Open Meetings Act, to deliberate this case, and then we will announce the decision of the Commission coming back out of executive session. So at this point, we need to clear the room.

Do I hear a motion?

COMMISSIONER BALCH: I'll make a motion that we go into closed session.

COMMISSIONER DAWSON: I will second.

CHAIRMAN BAILEY: All those in favor?

(Whereupon the Commission went into executive session.)

CHAIRMAN BAILEY: Back on the record.

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In conformance with state statute and the Open Meetings Act, do I hear a motion for us to go back into session?

COMMISSIONER BALCH: I'll make the motion.

COMMISSIONER DAWSON: And I'll second.

CHAIRMAN BAILEY: The only topics that were discussed had to do with this case. And we have reached a decision for this case, and our Commission counsel has all of the information.

Mr. Larson, we will ask you to create a draft order based on the decisions that our Commission counsel will read to you.

MR. BRANCARD: Okay. First of all, the Commission agrees with the motion to eliminate the requirement that Agave place a balance plug in the Government L Com Number 2 well across the injection zone and directs Agave to move ahead with the cementing and plugging plan that it has proposed to finish up that well.

For the Government L Com Number 1 well, the requirement that Agave re-enter and re-plug this well is delayed for a period of five years from the commencement of injection of acid gas on this project.

Six months prior to that five-year anniversary, Agave is directed to submit data and results from the injection that has occurred during the first four years of injection, and with that, any recalculation of the models that have been developed based on the current estimates of pressure or porosity, et cetera.

At that time, Agave may then reapply to eliminate the requirement on the Government L Com Number 1 if it is supported by the data at that time. And in that, if there is any new drilling in the area of review that has occurred during that period, Agave should also report that to the Division.

There's been a lot of discussion about the percentage of H2S. There is actually no limitation currently in the order with this well. The Commission would like Agave to have the responsibility that if it determines that the sources that are coming into the well exceed the 5 percent limitation that was earlier discussed, that Agave report that to the Division and Commission.

Did I cover everything?

CHAIRMAN BAILEY: I believe so.

MR. BRANCARD: Okay.

CHAIRMAN BAILEY: And we retain jurisdiction.

MR. BRANCARD: And we retain jurisdiction to re-visit this.

CHAIRMAN BAILEY: So you will be in communication with our counsel and present that draft order so that we can sign it in December at our --

COMMISSIONER BALCH: 7th or --

CHAIRMAN BAILEY: -- Commission hearing that's scheduled in December?

MR. LARSON: I will, Madam Chair. And I'll try to have it to him sufficiently in advance of the hearing date.

COMMISSIONER BALCH: That hearing is on the 6th of December.

CHAIRMAN BAILEY: Is there any other business before the Commission today? Then we can call it a day.

MR. BRANCARD: Stand adjourned

CHAIRMAN BAILEY: Stand adjourned.

(The hearing was adjourned at 12:00 p.m.)

REPORTER'S CERTIFICATE

I, JACQUELINE R. LUJAN, New Mexico CCR #91, DO HEREBY CERTIFY that on October 25, 2012, proceedings in the above captioned case were taken before me and 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.

I FURTHER CERTIFY that I am neither employed by nor related to nor contracted with 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.

WITNESS MY HAND this 5th day of November, 2012.

Jacqueline R. Lujan

Jacqueline R. Lujan, CCR #91
Expires: 12/31/2012

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