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

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

ORIGINAL

CASE NO. 14601

APPLICATION OF AGAVE ENERGY COMPANY FOR AUTHORITY TO INJECT, EDDY COUNTY, NEW MEXICO

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: RICHARD EZEANYIM, Hearing Examiner
DAVID K. BROOKS, Legal Examiner

February 17, 2011

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, RICHARD EZEANYIM, Hearing Examiner, and DAVID K. BROOKS, Legal Examiner, on Thursday, February 17, 2011, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South Street Francis Drive, Room 102, Santa Fe, New Mexico.

REPORTED BY: Lisa Reinicke
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A P P E A R A N C E S

For the Applicant:

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I N D E X

EXAMINER EZEANYIM: Let us go back into the record and go back to the last case of today. And the case is case number 14601, application of Agave Energy Company for authority to inject, Eddy County, New Mexico.

Call for appearances.

MR. LARSON: Good morning, Mr. Examiner. Gary Larson of Hinkle, Hensley, Shanor & Martin in Santa Fe. I have three witnesses.

EXAMINER EZEANYIM: Any other appearances?

Okay. May the witnesses stand up to be sworn. State your name for us and then be sworn.

MR. GUTIERREZ: Alberto Gutierrez.

MS. KNOWLTON: Jennifer Knowlton.

MR. VILLA: Ivan Villa.

[Whereupon the witnesses were duly sworn.]

EXAMINER EZEANYIM: Okay. You may proceed.

JENNIFER KNOWLTON

after having been first duly sworn under oath,

was questioned and testified as follows:

DIRECT EXAMINATION

BY MR. LARSON:

Q. Ms. Knowlton, would you please state your full name for the record?

A. My name is Jennifer Knowlton.

Q. And where do you reside?

A. Artesia, New Mexico.

Q. And by whom are you employed and in what capacity?

A. I'm employed by Agave Energy Company, and I am the environmental engineer.

Q. Could you briefly summarize your educational and employment background?

A. I have a BS and MS in environmental engineering from New Mexico Tech. I have been employed full time by Agave for a little over eight years now.

Q. And were you personally involved in the preparation of Agave Energy's application that's the subject of this hearing?

A. Yes, I was.

Q. And were you responsible for preparing Agave Energy's H2S contingency plan?

A. Yes, I was.

Q. Have you ever testified in an administrative proceeding?

A. Yes, I have.

Q. And what proceeding was that?

A. I've testified several times in front of the Environmental Board.

Q. And during those hearings were you qualified as an expert in environmental engineering?

A. Yes, I was.

MR. LARSON: Mr. Examiner, based on Ms. Knowlton's education and professional experience, I move that she be qualified as an expert in environmental engineering.

EXAMINER EZEANYIM: Ms. Knowlton is so qualified.

MR. LARSON: Thank you.

Q. (By Mr. Larson) Mr. Knowlton, I ask you to identify what has been marked as Agave Energy Exhibit 1, which is a demonstrative exhibit.

A. This is a hard copy of the PowerPoint slides that we'll be presenting here today.

Q. Could you go ahead to the next slide. And who prepared the PowerPoint slides?

A. Mr. Gutierrez with Geolex.

Q. And he will be testifying today along with Mr. Villa?

A. Yes. They both will be testifying today.

Q. And was Agave Energy's application prepared in house?

A. No. It was prepared by Geolex.

Q. And why did you select Geolex to prepare the application?

A. Agave has no in-house expertise to do that work and Geolex does. And, in addition, Geolex has done several of these applications for other companies.

Q. For acid gas injection wells?

A. For acid gas injection wells, yes.

EXAMINER EZEANYIM: You are a professional engineer?

MS. KNOWLTON: I'm sorry?

EXAMINER EZEANYIM: You are a professional engineer?

MS. KNOWLTON: Yes, sir, I'm a professional engineer in New Mexico and Wyoming.

EXAMINER EZEANYIM: And that is environmental engineer?

MS. KNOWLTON: Yes, sir, environmental engineering.

EXAMINER EZEANYIM: That's interesting. That's good. Go ahead.

Q. (By Mr. Larson) And Geolex performed its work on the application at your direction?

A. At the direction of Agave, yes.

Q. And you personally?

A. Yes. I was one of several.

Q. And did you delegate to Geolex the responsibility for providing notice of the application in today's hearing?

A. Yes.

Q. And what approvals is Agave Energy requesting in its application?

A. We're requesting authority to inject acid gas at the rate of approximately 205 barrels per day with a maximum operating pressure of approximately 3,280 PSI.

Q. And what is the name of the well?

A. It's the Metropolis Number 1 Injection Well.

Q. If you could go to the next slide. And what is the composition of the acid gas that Agave Energy requests authorization to inject?

A. It is approximately 61 percent H_2S, 38 percent CO_2 and trace hydrocarbons.

Q. Would you say less than 1 percent?

A. Less than one 1 percent, yes, sir.

EXAMINER EZEANYIM: Go back to the name of the well. I assume you have approval in the 936, and it's called the Metropolis AZL6 Number 1. Now it's only Metropolis. Was the name changed?

MS. KNOWLTON: I don't believe the name was changed. We just internally call it the Disposal Well since that's its function. It's no longer a production well.

EXAMINER EZEANYIM: So it's not really --

there is no difference between the name we gave 936 and the name you are calling it today?

MS. KNOWLTON: I don't believe so, no.

Q. (By Mr. Larson) And where is the Metropolis well located?

A. It is located about 11 miles south of Artesia, half a mile south of the Dagger Draw Gas Processing Plant in Section 36, Township 18 south, Range 25 east in Eddy County, New Mexico.

Q. And the Dagger Draw Gas Plant is operated by Agave Energy Company?

A. It is owned and operated by Agave Energy Company.

Q. And when was the Metropolis well drilled?

A. The Metropolis well was drilled in 2001.

Q. And who drilled the well?

A. The well was originally drilled at the direction of Yates Petroleum Corporation.

Q. And what is Agave Energy's relationship to Yates Petroleum?

A. Agave Energy is a wholly-owned subsidiary of Yates Petroleum Corporation.

Q. And what was Yates' purpose in drilling the well initially?

A. They initially drilled the well to test the Chester intermediate summations for protection.

Q. And did Yates ever produce the well?
A. No.
Q. And did Yates subsequently recomplete the well as an injection well?
A. It was completed in January of '06 to a total depth of 10,500 feet.
Q. And is Agave Energy currently the operator of record for the well?
A. Yes. We did a change of operator from Yates to Agave in April of '06.
Q. And has Agave Energy previously applied to the division for authority to inject?
A. Yes, in 2004.
Q. And what was the purpose with regard to that application?
A. It was to inject acid gas and produce water into the Metropolis well.
Q. And was that application approved?
A. Yes, it was. Under the administrative order SWD 936.
Q. And after the authority to inject was granted, did Agave Energy construct pipeline from the gas plant to the well?
A. Yes.
Q. Is that the same pipeline that will be used for

injection purposes if the current application is granted?

A. Yes, it's the same pipeline.

Q. And is Agave Energy proposing any modifications to the pipeline?

A. No. There will be no modifications to the pipeline.

Q. And how about the well?

A. There are some minor changes to the well. And Mr. Gutierrez will address those in more detail.

Q. I think you mentioned that the administrative order authorized injection of acid gas and produced water?

A. Yes, sir.

Q. Did Agave ever inject produced water?

A. No, we never did.

Q. And why was that?

A. At the time we thought there was a need for disposal for produced water. But due to a lack of an active drilling program, the needs for that kind of disposal have changed.

Q. So Agave Energy, during that time period that the administrative order was in place, only injected acid gas?

A. We only injected acid gas.

Q. And when did Agave begin that injection?
A. In March of '06.
EXAMINER EZEANYIM: And what formation did you inject acid gas?
MS. KNOWLTON: I think that's probably a question for Mr. Gutierrez to answer. I'm not a geologist.
EXAMINER EZEANYIM: Okay. That's good. I think he can answer. Okay. Go ahead.
Q. (By Mr. Larson) And today you said that injection commenced is more than a year after the administrative order was issued. Did you get an extension of the one-year limit for injecting?
A. Yes, we did.
Q. And what was the reason for the delay from the time of issuance until the first injection?
A. We had delays -- at the same time that we were doing the acid gas project we were also refurbishing the Dagger Draw Gas Plant that we had purchased that year as well. And there were delays in the refurbishing of the gas plant, which delayed the start up of that gas plant which delayed the production of acid gas. So we had more time in there than we wanted to before we could start injecting.
Q. And when did the last injection under the

previous permit --

A. In July of 2007.

Q. And why did Agave cease injecting in July of 2007?

A. Due to changes in field conditions, Agave routed all sour gas from Dagger Draw to the Marizon Gas Plant. And we started taking just sweet gas at the gas plant for processing.

Q. And since July of 2007 Agave has only been accepting sweet gas at the Dagger Draw Plant?

A. Yes.

Q. But if the current application is granted you will go back to taking sour gas for processing?

A. Yes.

Q. And what will be the source of that sour gas?

A. The sour gas, when we start our reinjection after this application is potentially approved, will come from the Atoka field.

Q. And where is the sweet gas currently coming from?

A. It's also coming from the Atoka field.

Q. And during this period of July 2007 until the present, how has H2S been treated in the sweet gas that is sent to Dagger Draw?

A. The H2S is treated in the back field by the producers with the H2S chemical scavenger injection system.

Q. Which is the operator's responsibility and not Agave's?

A. It's the operator's responsibility. But in order to protect our plant from taking sour gas, we have a backup system of scavenger in place as well.

Q. And is the gas metered as it comes in so you know the H2S level of the gas?

A. It's both metered and it's tested as it comes in so we know that it's sweet gas at the plant.

Q. And what was the total volume of acid gas that Agave Energy injected during that 16-month period that the administrative order was in place?

A. Slightly less than 40 million standard cubic feet.

Q. And during that time period did Agave have an H2S contingency plan in place?

A. Yes, we did.

Q. And did you prepare that plan as well?

A. The initial plan was prepared by our former pipeline safety engineer, Art Newton, who is no longer with Agave Energy.

Q. But you were employed then?

A. Yes, I was employed with Agave at that time.

Q. And during that time period did Agave experience any releases from either the pipeline or the well?

A. No, sir, no releases.

Q. And after Agave Energy stopped injecting, did it subsequently receive notice from the division that its injection authority had lapsed?

A. Yes. We received a cease and desist notice on March 25th, 2010.

Q. And, hence, the purpose of the current application?

A. Yes, sir.

Q. Did Agave submit another application in 2010 that was withdrawn?

A. Yes.

Q. And why was that initial application withdrawn?

A. There was some question as to the integrity of the well, and we wanted to resolve that integrity question before we proceeded with our final application.

Q. And at the time the initial application was submitted, did you also submit an H2S contingency plan?

A. We did on April 5th, 2010.

Q. And then when the current application was filed in December of 2010, did you submit another H2S contingency plan?

A. We did with the C-108 application.

Q. And you also submitted hard copy and PDM to the

Environmental Bureau?

A. Yes, sir.

Q. And were there any substantive changes from the April 2010 version to the December 2010?

A. There was no substantive changes. It was comma fixes, period fixes, things like that.

Q. And I direct your attention to Exhibit Number 2. And could you identify that for the record?

A. This is the H2S contingency plan that Agave submitted both in April and in December of 2010 to the Environmental Bureau of the OCD.

Q. And then what has been marked as Exhibit 2 is a true and correct copy of the December 20, 2010 version?

A. Yes, sir.

Q. And since the H2S plan was submitted, have you had any communication with any representatives of the Division's Environmental Bureau at the plant?

A. Yes, sir. We he had a meeting yesterday. I believe the result of that was, again, no substantive changes, just some minor clarifications. We are going to have those clarifications in a revised plan to them next week for their review and hopefully quick approval.

Q. And who did you meet with yesterday?

A. We met with Mr. Glen Vangoten and with Carl Chavez.

EXAMINER EZEANYIM: Yesterday?

MS. KNOWLTON: Yes, sir, yesterday morning.

EXAMINER EZEANYIM: In the officers here?

MS. KNOWLTON: Yes, sir.

EXAMINER EZEANYIM: And have they approved it?

MS. KNOWLTON: No, sir. They asked us to make some clarifying changes and resubmit a second version to them.

EXAMINER EZEANYIM: Okay. Is it changes related to the API commended practice, RP55? What changes do they want?

MS. KNOWLTON: For instance, we made mention that in our radius of exposure -- or our area of exposure we have no neighbors, no businesses, et cetera. And they wanted us to make a more definitive statement in several places in the plan that there were no businesses or people within that area at this time.

There were also some suggestions that we clarify, for instance, we have four full-time employees at the plant during normal business hours. They wanted us to make clear that we have adequate self-breathing apparatuses, more than four, located throughout the plant. Those are the two suggestions that popped into my head immediately. Like I said, minor clarifying changes that they asked us to make.

EXAMINER EZEANYIM: Okay. Go ahead.

Q. (By Mr. Larson) Could you briefly summarize the safety measures that are identified in the H2S contingency plan?

A. I think Mr. Villa and Mr. Gutierrez will be talking about that in more detail for the pipeline and for the well itself. And those are also addressed in the H2S plan.

Q. And in your professional opinion, does the H2S contingency plan comply with all the requirements set out in part 11 of 1915 NMAC?

A. Yes, it does.

Q. And did you get any feedback during your meeting yesterday?

A. Yes, we did. One of the things we did to try to expedite the process was reference both the sections in Rule 11 and the RP55 in our plan so that they knew we had looked at it. And they commented that they thought that was a good way to lay out your plan because it made it very clear that we were trying to comply with both the RP55 and with Rule 11. Like I said, the changes they suggested were mostly clarifying changes.

Q. So you didn't receive any feedback that you were deficient in any way in terms of compliance with

Rule 11?

A. No. No. No. There was no remarks about deficiencies.

Q. And how is Agave currently disposing of CO2 at the plant?

A. The CO2 from the Amine unit still goes through the unlit flare header at the plant being released in the atmosphere.

Q. And are there any regulatory requirements relating to the venting of CO2?

A. There are federal permitting requirements. But those regulations don't apply to the plant at this time because we're bidding for threshold. And there are federal and state inventory requirements for CO2 venting that we comply with.

Q. And those are greenhouse gas types?

A. Those are greenhouse gas types of inventory requirements, yes.

Q. And could you give us an idea of the total annual volume of CO2 that's vented in the plant?

A. In the report I will submit to the Air Quality Bureau next month for calendar year 2010 we omitted slightly over 4,000 metric tons of CO2 into the atmosphere.

Q. And will Agave Energy be in a position to obtain emission credits if we ever move into a cap and trade world or some other kind of regulatory framework?

A. It's possible. At this time there are no formal written accepted protocols that the Air Quality Bureau would accept. And this is something we would have to work with them on in having them accept this as a CO_2 reduction project.

Q. And in your opinion, will there be environmental benefits of Agave Energy being authorized to inject acid gas and CO_2?

A. Yes. There's two significant benefits. One, we won't be emitting the CO_2 into the atmosphere anymore. That will be injected. And the second environmental benefit is we will be able to remove the chemical scavenger system that currently exists. We'll be able to centralize the H_2S removal.

Q. So you're not removing it. The operators will be.

A. The operators will be removing it, and we will tell them that they'll be able to remove it. So it will just be better not to have small quantities of chemical scavengers located throughout the back field.

Q. Sure. And does Agave Energy currently have any plans to expand the processing capacity of the Dagger Draw Plant?

A. At this time we have no plans. But in drilling programs, they're dynamic and there's always the possibility that we could need to expand the plant's capacity in the future.

Q. And do you envision that if there is an expansion it would impact your injection authority if it's granted?

A. It would probably inject the volume that we are currently seeking authorization for, yes, sir.

Q. And if you had to come back to the division for a modification of your injection authority, would you ask that such an application be approved administratively?

A. Yes.

MR. LARSON: That's all I have for Ms. Knowlton. I move the admission of demonstrative Exhibit 1 and Exhibit 2.

EXAMINER EZEANYIM: Exhibits Number 1 and Number 2, they are admitted.

[Exhibits 1 and 2 admitted.]

MR. BROOKS: No questions.

EXAMINER EZEANYIM: What is considered pollution? For purpose of greenhouse effects, the state regulates them. So do you meet that threshold for the state?

MS. KNOWLTON: The state has a threshold of

10,000 metro tons, and that includes not just the CO_2 that you vent but all your methane. And we have calendar year 2011 to determine our total impact from the plant in order to see if I'm at that 10,000 threshold. It wouldn't be a permit at that 10,000 threshold. It's part of the new reporting requirements that the EIB passed last year whether and how I report those greenhouse gas submissions. But not a permitting requirement.

EXAMINER EZEANYIM: Yeah, it's not related to this application. I just wanted know.

MS. KNOWLTON: Right.

EXAMINER EZEANYIM: But if we can take care of that CO_2, that's better.

MS. KNOWLTON: It is.

EXAMINER EZEANYIM: But you said you didn't emit the threshold of that requirement.

MS. KNOWLTON: The federal permitting level is 75,000 metric tons so we have quite a ways to go before I am impacted by any federal permitting rules.

EXAMINER EZEANYIM: So this is a good thing that we are doing here.

MS. KNOWLTON: Yes, I believe it is. It will keep us out of a lot of complicated rules that we don't --

EXAMINER EZEANYIM: That you won't have to worry about.

MS. KNOWLTON: Exactly. That we won't have to worry about.

EXAMINER EZEANYIM: I have a lot of questions that might be answered by your other witnesses.

MS. KNOWLTON: If I can't answer them, sir, I will defer to my --

EXAMINER EZEANYIM: Okay. Now, I was asking about, I think you say that you answered the question about the interval. Because I have here that this is in Rule 936, which would approve to inject from, I think it was 9900 -- let me see what it is. 9900 to 11,400. Was the well drilled down to 11,400?

MS. KNOWLTON: I think not. I think it was drilled to 10,500.

EXAMINER EZEANYIM: Yeah, right. I don't know why this one 11,400. So I don't know -- I mean, maybe because I didn't put in the gas. Because where the gas goes, he selects a very nice formation where you put it. So I don't know whether it's going from 900 or 11,400 or from 930 to 10,000 which is the application.

MS. KNOWLTON: I think Mr. Gutierrez will be able to answer that in a lot more detail when he does his presentation.

EXAMINER EZEANYIM: Okay. Excellent. I think most of the questions will be answered by him. But if I require you to --

MS. KNOWLTON: Yes, sir. I will be happy to come back to answer.

EXAMINER EZEANYIM: You may be excused.

MS. KNOWLTON: Thank you.

MR. LARSON: We next call Mr. Villa.

EXAMINER EZEANYIM: Mr. Villa, you have been sworn in and you are still under oath.

IVAN VILLA

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

DIRECT EXAMINATION

BY MR. LARSON:

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

A. Ivan Villa.

Q. And where do you reside?

A. Artesia, New Mexico.

Q. And are you also employed by Agave Energy?

A. I am. I'm engineering manager for Agave.

Q. And could you describe what your responsibilities are in the position of engineering manager?

A. I oversee, manage engineering and construction projects. I'm also involved in facility design. And I aid in the day-to-day operations of those facilities and the field assets.

Q. And that would include the Dagger Draw Gas Plant?

A. That's correct.

Q. Could you please briefly summarize your education and professional experience?

A. I attended Texas Tech University, received my Bachelor of Science in mechanical engineering in 2001. Upon graduation I was hired by Agave Energy as a staff engineer and have been with Agave Energy for 10 years.

Q. And this is the first time you've had the pleasure of testifying before the division?

A. Yes, that is correct.

Q. And do you have personal knowledge of the matters addressed in Agave's application?

A. I do.

Q. And do you also have personal knowledge of the matters addressed in the H2S contingency plan?

A. I do.

MR. LARSON: Mr. Examiner, I move that Mr. Villa be qualified as an expert engineer based on his education and professional experience.

EXAMINER EZEANYIM: He is so qualified.

Q. (By Mr. Larson) And could you describe for the Hearing Examiner the primary function of the Dagger Draw Gas Plant?

A. The primary function of the Dagger Draw Gas Plant is to treat and process the natural gas stream derived from the Atoka field in Eddy County.

Q. And at the current time the plant is only accepting sweet gas; is that correct?

A. That is correct.

Q. And what is the maximum design capacity of the plant?

A. 40 million cubic feet a day.

Q. And does it operate 24/7, 365?

A. It does.

Q. And I direct your attention to what has been marked as Agave Exhibit Number 3. And could you identify that document for the record?

A. I can. This is the process flow diagram for our current operating conditions at the Dagger Draw Processing Plant.

Q. And does it accurately depict the components of the Dagger Draw Gas Plant?

A. It does.

EXAMINER EZEANYIM: Which exhibit are you looking at now?

MR. LARSON: Exhibit 3. It's a single-page exhibit.

EXAMINER EZEANYIM: Okay. Go ahead.

Q. (By Mr. Larson) And referring to Exhibit Number 3, could you describe the process that we use to treat sour gas if the application is granted?

A. In reference to Exhibit Number 3 you'll find a process block labeled Amine Unit on the left side of the page. At that point we use Amine to remove H2S and CO2 from the inlet gas stream to the plant. That occurs in our Amine contacter.

The natural gas stream then exits out the contacter as a sweet gas. The loaded or the rich amine is then directed to the regeneration skid where we warm the amine at low pressure and strip the CO2 and H2S from the amine. CO2 and H2S is stripped from the amine and then directed at our acid gas compressor at low pressure. The acid gas pressure will then boost the gas system, the acid gas stream to injection pressure. We then transport the acid stream through our acid gas pipeline and ultimately inject into the Metropolis well.

Q. That's the same pipeline that Ms. Knowlton identified?

A. That's correct.

Q. Referring to slide number 8 that's up on the screen now, do you have the pointer there you could show how the acid gas and CO2 stream runs into the pipeline?

A. I can do that. Down here on the far left you'll see our amine unit. And that's where we generate our CO2 and H2S stream. That stream is then directed to our acid gas compressor at low pressure. That pressure operates about five PSI. Downstream of the compressor we've got a stainless steel two-inch line that takes the acid gas stream at high pressure and sends it to the wellhead.

You'll also see that the two-inch pipeline is depicted here on this figure. It's encased in six-inch SDR 11 polyethylene pipe and that serves as our leak detection system for the acid gas line.

Q. And Mr. Gutierrez will testify in detail about the well itself?

A. That's correct.

Q. And who designed the pipeline?

A. The pipeline was designed in house by Agave Energy with guidance and consultation from third-party engineering firms.

Q. And who installed the pipeline?

A. The installation was performed by Flint Energy Services out of Hobbs, New Mexico. We used MBF Services as our third-party inspection service. And they worked under the guidance of Agave's construction supervisor and engineering departments.

Q. And to your knowledge, was the pipeline designed and constructed in accordance with the best available practices?

A. It was.

Q. Go to the next slide, please.

A. This slide, figure A, you'll see the take off point of our acid gas pipeline. This is located at the Dagger Draw facility. It's a little hard to see. And I'll go into a little bit more detail on the leak detection equipment a little bit further in the testimony.

But you've got the two-inch line here and it's encased in six-inch SDR 11. You've got a pressure transmitter here that's motoring the pressure in the six-inch SDR. And then off the page here to your left you'll find a Delmar H2S analyzer that we also monitor for H2S that may be from any leak that may occur in the pipeline.

Figure B is the pipeline right of way looking at it from the well to the plant.

Figure C is the pipeline coming out of the ground and into the wellhead. As you can see here, there's also another pipeline in the right of way that is our sweet fuel gas stream that we use for our leak detection system. You'll see the one-inch comes off the four-inch and it's introduced into the six-inch SDR 11 polyethylene pipe.

Q. And I don't know that I asked Ms. Knowlton. What is the distance from the gas plant to the wellhead?

A. It's approximately seven-tenths of a mile.

Q. And could you describe any additional safeguards installed on the pipeline that you haven't already addressed?

A. We have several safeguards that we have incorporated into the design. For over pressure protection on the pipeline, we've got high and low pressure set points on the acid gas compressor. If we fall outside a pre-determined pressure range, the acid gas compressor will automatically shut itself in and will direct acid gas to the flare.

As a second line of defense, we've got a pressure safety valve on the discharge side of the compressor. That basically, like I mentioned before, is our last line of defense and keeps us from reaching our maximum allowable working pressure on that pipeline. That valve will relieve high pressure sour gas to the flare in the event of an over pressure.

Q. And are each of these safeguards identified in the H2S plan?

A. They are.

Q. And does Agave Energy perform line surveys of the pipeline?

A. We do. We perform biweekly leak detection and line surveys on the acid gas pipeline.

Q. Is it bimonthly or biweekly?

A. Oh, I'm sorry. It's bimonthly. Yeah. Good catch.

Q. Twice a month?

A. Yeah.

Q. And that's done by somebody under your supervision?

A. That's actually performed by the operators at the Dagger Draw facility. And they work under the direction of our operations manager.

Q. And do they generate reports based on their line surveys?

A. They do.

Q. And Agave Energy keeps records of those surveys?

A. That is correct.

Q. And what is the total volume of acid gas and CO2 that Agave proposes to transport through the pipeline to the Metropolis well?

A. About half a million cubic feet a day.

Q. And what is the maximum design capacity of the well in terms of the volume it can handle?

A. We did incorporate extra capacity into the design of the pipeline. We could safely transport up to a million and a half through the pipeline.

Q. So if Agave were to expand its capacity in the plant, the pipeline, as currently designed, could handle a higher volume of acid gas and CO2?

A. That is correct.

Q. And you're aware that Agave Energy is proposing to inject in the well over a 30-year period?

A. That is correct.

Q. And is it your understanding that the total volume of acid gas and CO2 generated through the process of the plant will be injected during that 30-year period?

A. Yes.

EXAMINER EZEANYIM: After that year the world will not end.

MR. VILLA: I'm sorry?

EXAMINER EZEANYIM: The world is not going to end after 30 years. Why don't you want to inject after 30 years? Why do you choose 30 years? I mean, you might not be here, I don't know. I mean, in choosing to say, okay, 30 years. I mean, I don't care if you choose 300 years. Why do you guys choose 30 years?

MR. LARSON: I'll defer to the experts.

EXAMINER EZEANYIM: Because that's a well. We can continue to inject, if we determine that information is good for H2S and everything, I don't think it's good to say, well, I'm going to do it for 30 years. I know what you are trying to do. Before you know it 30 years is here. But what I'm trying to say is that after 30 years you can still continue to inject in there.

Are you planning on stopping after 30 years?

MR. VILLA: I would hope not. But I would probably direct that question to Alberto. I'm sure he has standards for that.

EXAMINER EZEANYIM: Okay. Good.

Q. (By Mr. Larson) And do you foresee a time that Agave Energy may expand the design capacity of the gas plant?

A. We are constantly vigilant of future drilling programs and other producing fields in the area. It's quite possible that that may warrant expansion of the Dagger Draw Gas Plant.

Q. And would that result in a corresponding increase in acid gas and CO2 from the processing of the sour gas?

A. It's very possible.

Q. And as the pipeline is designed it could potentially handle additional capacity?

A. It could.

Q. There may be some question with pressure?

A. Correct. There would be some other upgrades that we would look at elsewhere in the plant also.

Q. And in your opinion, will the proposed method of disposing of acid gas and CO2 be protective of public health and the environment?

A. It will.

MR. LARSON: That's all I have for Mr. Villa. I'll move the admission of Exhibit 3.

EXAMINER EZEANYIM: Exhibit 3 will be admitted.

Do you have any questions?

[Exhibit 3 admitted.]

MR. BROOKS: No questions.

EXAMINER EZEANYIM: I think I will defer all the questions for the next witness.

So, okay, you may be excused.

MR. VILLA: Thank you.

ALBERTO GUTIERREZ

after having been first duly sworn under oath,

was questioned and testified as follows:

DIRECT EXAMINATION

BY MR. LARSON:

Q. Please state your full name for the record.

A. Yes. My name is Alberto A. Gutierrez.

Q. And where do you reside?

A. I live in Albuquerque.

Q. And what is the name of your company?

A. Geolex Incorporated.

Q. And in what capacity do you serve?

A. I'm the president of the company. And I'm also a professional petroleum geologist and hydrogeologist.

Q. And are you a registered professional geologist?

A. I am indeed.

Q. And did you prepare Agave Energy's application?

A. I did.

Q. And have you prepared other applications for division approval of injection of acid gas?

A. Yes, I have.

Q. And did you testify on behalf of those applications?

A. I have, yes.

Q. And were you qualified as an expert in geology and hydrogeology during those hearings?

A. Yes, I was.

MR. LARSON: Mr. Examiner, I move that Mr. Gutierrez be qualified as an expert in petroleum geology and hydrogeology.

EXAMINER EZEANYIM: Mr. Gutierrez is very qualified.

MR. LARSON: I agree.

Q. (By Mr. Larson) Can you move to the next slide? Were you tasked by Agave Energy to provide notice to all individuals and entities who are entitled to receive personal notice of the application of today's hearing?

A. Yes, I was.

Q. And who identified the names and addresses of those individuals and entities?

A. We retained a land firm out of Roswell, MBF Services, who did the review at the courthouse to identify all of the operators and the surface owners within the area of review. And they provided that information to us. And we provided notice to all of the surface operators, all of the -- I mean all of the surface owners, all of the operators within the area of review.

And in addition to that, we provided notice to the state land office and to the BLM. Even though the state land office would have received notice anyway because they do have state lands that fall within the area of review. However, the BLM did not fall within the area of review. But just as a courtesy and because of the interest of the BLM in these kinds of projects in Southeast New Mexico and the division's previous instructions regarding notice, we provided notice to the BLM as well.

Q. And how did you define the radius of the area of review?

A. Well, in the evolving applications for acid gas injection, the division has determined that a one-mile area of review is an appropriate area of review for the permitting of acid gas injection wells. And so that is the area of review that we used.

We looked at further wells outside of the one mile to understand the geology. But in terms of the specific area of review, it's the one-mile area.

EXAMINER EZEANYIM: And the BLM, where does the BLM fall, within the one mile or within the two mile or outside the two mile?

MR. GUTIERREZ: Outside the two mile.

EXAMINER EZEANYIM: But you still decided to notify them?

MR. GUTIERREZ: We did, Mr. Examiner,

because the BLM actually has started a program in Southeast New Mexico. They have an individual David Harrell in the Carlsbad office that has been part of a BLM-wide task force for looking at CO2 sequestration projects. And so I've been working with him for over a year just sharing information about some of the projects that we've done. And in that context, we provided notice to them. And actually they are very supportive of the project.

EXAMINER EZEANYIM: That was one question I wanted to ask you, was what did they say.

MR. GUTIERREZ: Yeah.

EXAMINER EZEANYIM: Okay. Go ahead.

Q. (By Mr. Larson) And are lists of the names and addresses of the individuals and entities identified by MBF included in the application?

A. They are. They're included as Appendix D to the application. It identifies all of the lessees, the surface owners, and the interested parties and provides a copy of the notice letter that was sent to those parties.

Q. I direct your attention to what has been marked as Hearing Exhibit Number 4. And could you identify that for the record?

A. Yes. This hearing exhibit is -- the first page is just actually a notice letter that was provided to the land office. And this is exactly the same notice letter, obviously with different addressees, that was provided to all of the parties that were noticed.

Pages 3 through the end of this exhibit are copies of the return receipt cards from the individuals who were provided notice and from which we obtained return receipts.

Q. And was that same letter -- we have an exemplar there that went to the state land office. That same letter was sent by certified mail to each of the individuals and entities identified in attachment D?

A. Yes, sir, it was.

Q. And were any of those letters returned as undeliverable or sent to an incorrect address?

A. There were two letters -- and as a matter of fact, I want to emphasize that not only did we provide the letter that briefly described the application, but we sent a full copy of the application along with the letter to all of the parties that were noticed. We did receive two packages back that were undeliverable. As a result of that, one was in Glendale, California, and another was in Houston, Texas, I believe.

Q. And did you then contact MBF to follow up to see if they could obtain a good address for those two individuals?

A. Yes. MBF actually obtained a good address as far as all of the records indicated of those mineral owners and lessees. But apparently, I think, one of these was a very minor interest lessee who, to the best of our understanding, is deceased. And I don't know who is taking care of the estate. But we tasked them to again go back and try to get a better address or another address for those individuals and we were unable to find one.

Q. And do you believe that MBF made a good faith, diligent effort to find good addresses for those individuals?

A. Yes, I believe they did. And, in fact, we got return receipts from all except those two.

Q. And because of those two undeliverable letters, did you intend to publish a notice of the application in today's hearing?

A. We did. We had a notice published in the Carlsbad Current-Argus, which is the newspaper for the City of Carlsbad and Eddy County. And that copy of the affidavit of publication of that notice is Exhibit Number 5.

Q. And that is a true and correct copy of the affidavit of publication that has been marked as

Exhibit 5?

A. Yes, sir.

EXAMINER EZEANYIM: What is this MBF?

MR. GUTIERREZ: They're a land company in Roswell, MBF Services. They are just landmen, independent landmen.

EXAMINER EZEANYIM: So you consider them to give you all the information?

MR. GUTIERREZ: That is correct.

EXAMINER EZEANYIM: And then this good faith that you did, and got all this information, did you get any call on this issue? Did anybody contact you asking for more information or something?

MR. GUTIERREZ: I did not receive a call directly. But we did get a call from -- we didn't get a call. Will Jones received an e-mail from another individual at the BLM district office just wanting some clarification. And actually there was some e-mail traffic back and forth in the same day. And before I even saw the first e-mail, he had already had his question answered by David Harrell, the other person in his own office about the application.

But I went ahead anyway and contacted Mr. Wesley at the BLM district office to make sure that any questions that he had were answered. And his main question was about the potential extent of the plume over time.

EXAMINER EZEANYIM: Okay. I just wanted to know.

MR. GUTIERREZ: And that was the only call we received.

EXAMINER EZEANYIM: Okay, good.

Q. (By Mr. Larson) And then just so the record is clear, Agave Energy has not received any negative feedback in relation to the application?

A. No. Quite the contrary. Frankly, the operators are quite anxious for this project to go forward because it is expensive and not the best environmental practice to be having to treat this gas in the back field.

Q. Could you move on to the next slide, please? And what criteria did you use for evaluating the potential reservoir for sequestering the acid gas and CO_2?

A. Well, in this project, just like any other AGI project, there's several factors that we're looking for when we're looking for an adequate acid gas reservoir and CO_2 sequestration. In fact, I mean, there is really no difference between acid gas and CO_2. In effect, CO_2 is an acid gas. But we just label out the two things because there's so much interest these days in CO_2 sequestration that we just want to make sure that people understand that that is also being sequestered.

But the main factors are basically we need a geologic seal that will permanently contain that sequestered fluid. We need to make sure that it's isolated from any fresh ground water to prevent ground water contamination. We also need to make sure that it's isolated from existing or potential production. And we need to know that the reservoir has the right properties to be able to take that acid gas, which would mean its permeability, its porosity, and the fluid chemistry. The proposed well -- well, actually the existing well at this location meets all of those criteria.

Q. So you weren't starting here from a clean slate. You had data from the original application and the recompletion of the well for injection?

A. That is correct. I mean, unlike in many of these situations where we have taken the data from all around a proposed well location and we're going to put in a new well, in this case the well was already existing. And part of what Agave asked us to do, as Ms. Knowlton mentioned earlier, is to do a review of the integrity of the well and its adequacy for a long-term use as an AGI well. And we did do that and we found it to be an excellent candidate.

Q. Would you move to the next slide? And you also performed a stratographic analysis?

A. Sure. As I mentioned earlier, that's why we looked at not only the wells within the one-mile area of review, but we looked at wells within a much larger area. Because there really are relatively few wells within this area. And as a matter of fact, there are no wells, either plugged or abandoned or active, within the one-mile area of review that penetrate the injection zone or the cap rock from the injection zone. So it's merely this well that is in that zone in that one-mile area of review. But we did do a stratographic analysis to understand the overall geology of the area in the area of review.

Q. Go to the next slide, please. And in identifying and analyzing the off site wells, you use the same one-mile radius you used for notice?

A. That is correct, yes.

Q. You defined that as your area of review?

A. That is correct. And this is a map that shows the area of review, the one-mile circle around the Metropolis well location. And you can see that there are a number of wells. Actually the sum total of the wells, there are 24 wells, either active or plugged and abandoned, within the one-mile area of review.

The majority of those wells are completed in the Yeso, San Andres unit, which is much shallower. It's approximately 5 to 6,000 feet shallower than our proposed injection zone. And then there are some Strawn and Atoka wells that are also completed, nine of them in this one-mile area of review. And they're completed well above our injection zone as well.

Q. So none of the wells that you looked at penetrate the proposed injection zone?

A. None of the wells within the one-mile area of review penetrate either the proposed injection zone or the cap rock above it.

Q. Would you go on to the next slide, please.

A. This is a slide that shows a cross section from the wells that are in the immediate vicinity of the Metropolis well. You can see there's basically five wells on this cross section. The two wells to the west and the two wells to the east of the Metropolis well are the deepest wells that we could find in the area of review. Those are completed in the Morrow and the Atoka zones that are well above the Mississippian cap rock and the Woodford shale cap rock there, and also the injection zone, which is the Montoya Fusselman to answer Mr. Examiner's question from earlier.

EXAMINER EZEANYIM: And those four wells, two on the left and two on the right, they are producers right now. Are they producers?

MR. GUTIERREZ: Yes, sir, they are.

Q. (By Mr. Larson) And then maybe just to clarify that question, do you know the total depth of the well in its current configuration?

A. Yes. It's 10,500 feet.

EXAMINER EZEANYIM: It never went to 11,400 feet?

MR. GUTIERREZ: That is correct.

Q. (By Mr. Larson) And in conducting your stratographic analysis, did you also look at any water wells within that one-mile area of review?

A. We did. We looked at all of the water wells that exist in that one-mile area of review to determine what was the depth to water. And in this area we also looked at the -- there's some pretty good published information about the extent of some deeper fresh water aquifers in this area.

Q. Could you go to the next slide? I think that gives a --

A. Right. This is a table, which is Table Number 3 included in the C-108 application that gives the five water wells that are located within the one-mile area of review. You can see most of the wells are located about three quarters of a mile away. There is a well located about a quarter of a mile away. The deepest of those wells is 455 feet and it produces water from a depth of about 200 to 250 feet.

Q. And I think you had another slide?

A. Yes. This next slide actually provides you with some of the published information that we used in addition to the well information. The map on the left, it's a very busy map and it's a large area. But it's basically a map of all of the water wells in the Roswell Basin or a large number of water wells. I wouldn't say all of the water wells, but a large number of the water wells in the Roswell Basin. And a contour of the depth to ground water, fresh water, the maximum depth of fresh water in the area. And you can see that in the vicinity of the Metropolis well, the maximum depth is a little under 400 feet, approximately 400 feet.

The map on the right actually shows a shaded area to the northwest, which includes what is locally called the carbonate aquifer or the limestone aquifer. And it's a deeper semi-confined fresh water zone and it shows the thickness of that aquifer in the area. But as you will see, that aquifer pinches out about six miles, five and a half to six miles to the northwest of our proposed location. You can't really see it on the slide as well as you can. But this is where the Metropolis well is located and here is the edge of that carbonate aquifer, each one of these squares being one-mile.

Q. And would you briefly describe the steps you took in your geologic evaluation of the injection reservoir?

A. Sure. As I mentioned earlier, we have the great benefit in this location of not only having the well already in place and have good logs for the well, but on top of that we actually have, albeit short, about a year and a half of injection history, of actual injection history in the wells. So we evaluated both of those.

This slide shows the portion of the section that includes the cap rock, which is essentially this Mississippian limestone and the Woodford shale formation. You can see it. They've got very low porosity, low permeability units that overlie the injection zone. The injection zone is essentially the entire Fusselman and a portion of the Montoya and just a piece of what the Devonian is up here, from 9900 -- roughly 9930 feet to 10,500 feet.

And in that interval we found an average porosity of about 4.2 percent. And that gives us a total net porosity of about 25 -- a little under 25 feet for that injection zone.

Q. And do those numbers indicate to you that this is a good candidate, this reservoir is a good candidate for injection?

A. Yes. Not just those -- well, let's see. I was hoping to get to another slide, but we'll get to it in just a minute here. It's not just those numbers. The porosity is not, you know, the best porosity in the world. It's 4.2 percent. But when you take it in the context of the thickness of the injection zone it provides some pretty good net porosity in that area. And when you look at the volume of gas that is going to be injected, even at two or three times the volume that Agave is proposing to inject, this zone is more than capable of taking that.

EXAMINER EZEANYIM: The permeability of the zone. The permeability of the zone, do you know --

MR. GUTIERREZ: The permeability?

EXAMINER EZEANYIM: Yes.

MR. GUTIERREZ: We don't have a direct measure of the permeability. We hope to do some injection tests prior to turning the well back on, and maybe a fallback test to take a look at that. But, you know, our estimate is somewhere in the 2 to 300 millidarcy range.

Q. (By Mr. Larson) If you could go on to the next slide. We've heard testimony from Ms. Knowlton and

Mr. Villa about the pipeline in the well. Could you give a sense of what Agave Energy proposes to do in terms of recompleting the well?

A. Yes. We'll see -- and in the application in the C-108 there are some drawings, and I'll refer to them in just a moment. But I want to summarize what we're intending to do with the well. The well, the way it's completed right now, has essentially a packer set at approximately 9900 and I think 9875. I have to go back to a future one to show. But it's just above the top of the injection zone. And then there is tubing. Currently the tubing that is in is J55 plastic line tubing but with eight round thread to the surface. And it does have a subsurface valve at about 280 feet that is a subsurface safety valve which is currently locked out.

We are looking at whether we will actually modify that. If that valve can be modified to be an automated fully functional subsurface safety valve that can be tested, we will modify that one. If not, we will replace it with a brand new automated subsurface safety valve.

We also intend to replace the entire string of tubing. Originally the tubing that was -- that is in the well now was put in when there was a concept that we might inject a combined stream of waste water and acid gas. And, frankly, in our opinion, the eight round thread is not as good as the flush joint FX special thread and the L80 casing tubing that we're proposing to use, which is more the standard at this time rather than when the well was previously completed. So we proposed to Agave, and they have agreed to change out that tubing and the subsurface safety valve if necessary.

We will also add some additional regulating pressure valves or modify the existing ones and rework them. We will also take the tree completely off the well and refurbish the entire tree to make sure that all of the seals are still in good shape because the well has not received any injection for a couple of years now. And we obviously have an existing acid gas injection compatible packer in the well that will remain.

Obviously there will be meters. There are meters already. And those meters will be verified that they're working to record both the volume and the pressure under which the gas is injected. And Mr. Villa described the pipeline extensively. And also the layout of the plant and the H2S monitors are shown in the H2S contingency plan which we reviewed with the agency yesterday.

Q. And if you go to the next slide, could you describe in more detail the configuration of the recompleted well?

A. Yes. And I would also -- I mean, just because the lighting on this slide is so hard to read unfortunately, I would refer you to figures 5 and 6 in the C-108 application that I think -- do we have that as an exhibit? I don't know if we have it.

Mr. Examiner, do you have a copy of the application?

EXAMINER EZEANYIM: Yes, I do.

A. Well, I can show it up here, but you may want to refer to it a little bit more.

But basically we have three strings of casing. We have a surface or a conductive casing down to 400 feet. We have surface intermediate string down to 1200 feet, both of those with some uncirculated to the surface. It is this surface string that is down to 1200 feet that will protect the fresh water, both that and the conductor casing. But that protects all the fresh water. As a matter of fact, it extends to over 700 feet below the deepest fresh water in the area.

Then we have the production casing that extends down to a depth of about 9853 feet, and that's where the packer is set currently. And then the well is completed in the open hole from there to its TD of 10,500 feet.

So this is a configuration and a spec sheet for the well as it exists today.

This is the recompleted well. You can see the basic well will remain the same except for the modifications that I discussed for the subsurface safety valve at about 250 feet in the new string of tubing. And then also we will fill the annulus of that well with diesel. And that annulus will be monitored for pressure to assure that there are no tubing or casing leaks.

Q. (By Mr. Larson) And what is the benefit of using diesel in the annulus?

A. Well, when you put diesel in the annulus what it allows is if there is, in the anticipated and highly unlikely event that you would have a tubing leak, that would release some acid gas. You have two functions that the diesel performs. One, it's an incompressible fluid so therefore since it's a sealed system, you would recognize the change in pressure due to an escape of gas from the tubing into the annular space. And that pressure is monitored 24/7 so that we could immediately take action if there is an indication that there is a tubing leak.

And then in addition to that, if such a leak should occur, what it does is allows the acid gas to basically settle to the bottom because it is more dense than the diesel. And it is a hydrophobic liquid so that the acid gas does not come in contact with water and cause potential corrosion of the casing before we can rehabilitate the well if there was a problem.

Q. You may have discussed all the factors you've identified. If there are any more, could you summarize the design factors, which in your opinion, will assure the integrity and the safety of the well in its recompleted state?

A. Yes. I mean, for the most part, those factors are already discussed. But in terms of the design, we've got this corrosion resistant tubing that we're going to put in, the L-80 flush joint FX threaded tubing, this automated subsurface safety valve, the choke and regulating valves for making sure that the maximum allowable operating pressure is not exceeded. And then the annulus and the casing, as I mentioned, will be monitored. And then we also have the corrosion resistant packer.

Q. Could you move forward a couple of slides?

A. Sure. The surface casing is, as I mentioned earlier, set well below the deepest fresh water, and it is cemented to the surface. It is over 700 feet below the deepest fresh water there. The new tubing and the subsurface safety valve will assure the integrity of the well as I described earlier.

And then furthermore, we have implemented similar designs at seven wells now that we have designed and installed in New Mexico and Texas. And then there are many others of similar design that have been used in Alberta as well.

Q. And these wells you've identified in New Mexico, has the division granted authority to inject in those wells?

A. Yes.

Q. By the commission?

A. Yes. Either the division or the commission.

Q. And beyond these well design factors, what geologic factors will assure the integrity and safety of the well?

A. Well, this was the reason why we have to do this geologic analysis, is not only to assure that the material will be sequestered over the life of the well.

And this is a good time to address another issue that the Hearing Examiner Mr. Ezeanyim raised earlier. There is no specific reason why we would stop injecting after 30 years. But we use 30 years to calculate the approximate extent of the injected plume simply because it's a typical number that is used in the industry for the life of some of the surface equipment and that type of thing. There is no reason why the well itself would not be able to be used because there are periodic mechanical integrity testing that is done of the well. And it could be used longer than 30 years. It's just that's typically what we use for modeling the extent.

As I mentioned, the cap rock is a very low porosity shale and recrystallized limestone overlying the Montoya Fusselman. It's not penetrated by any wells within the one-mile radius. There are no faults or any pathways or structures that we have identified that would compromise the section and allow this material to leak out of the injection zone.

The injection zone is welled deeper than all of the production zones in the area. The fresh water, as I mentioned already earlier, is isolated. The proposed injection pressure, maximum allowable injection pressure that we're requesting, is significantly below the fracture pressure and it's calculated using the method prescribed by the division. We have a good injection history of the well already. And I'll go into that in a few minutes. And that just demonstrates that we're dealing with a closed system. And we don't have, as I mentioned, any bore holes penetrating that zone.

Q. And in your professional opinion, will the reconfigured well adequately protect all oil and gas producing wells and all water wells within the area of review?

A. Yes. It will definitely protect all of the existing water wells in the area from potential contamination for the reasons I described. And because of the fact that it is -- the injection zone is well below existing production and isolated by a cap rock, it will protect correlative rights and future potential production as well as existing production.

Q. Now we've got a slide with this 30-year period, which I believe you testified is more driven by mechanical issues than geologic issues?

A. Right. And it's just driven by a kind of industry standard number of years to calculate out the operation of these things. It's not, per se, that it can't operate -- especially in this case. And I'll show you the reason why.

We did a simple -- we usually do a simple screening model, a plug model, to look at the approximate area that will be affected by injection -- or at the requested rate over 30 years. And we did this for this site. And you can see that the rate is pretty small, 205 barrels a day. That's the half million cubic feet a day of acid gas that Mr. Villa described earlier that will need to be injected.

When we look at that over 30 years, we have actually an area affected that will be less than 500 feet. As a matter of fact, it's about 412 feet if I remember correctly, from the well in terms of a radius of injection and cover an area of less than 15 acres.

Now, we have looked -- this map shows that small area around the well. And that area would be -- even if we were to double or triple this injection rate in the event of a future expansion, that area would not actually increase by two or three times. Because as you're adding injection, you're adding a larger volume and the radius doesn't increase at the same rate. So in other words, even if we doubled or tripled this injection rate, we're probably looking at somewhere in the neighborhood of less than 40 acres, for example, to be affected even if we were to triple the injection rate. But at the currently proposed injection rate, and we modeled it taking into account the fluid that has already been injected, we estimate that no more than 15 acres will be involved.

And it's a good thing to look at this graph here on the right. There are two lines. One is to show the injection rate. This is using the actual history of the well that was injected between 2006 and 2007. We had a rate of approximately 110 to 115 barrels a day injected into the formation over that time period, about half the rate that we're looking at now. And the pressure that was injected ranged from about 1100 to 1200 PSI.

So the maximum allowable injection pressure using the OCD calculation we got was about 3280 PSI for this acid gas stream. But it's not requiring anywhere near that amount of pressure to inject it. That's part of why we know we've got a very good injection zone.

Q. I think your next slide summarizes the steps in your geologic evaluation. Is there anything on this slide that you haven't already discussed in your testimony?

A. No. We've covered it all. All this slide does is gives, for the convenience of the Hearing Examiner, we've got all of the key aspects of the geologic evaluation and where they're discussed in the application. It's just kind of a guide, a little shorthand guide of where these things are located.

Q. And your next two slides, these are what you've identified as the key elements of the pending application?

A. Yes. And I'd be happy to review those. We've discussed all of them, but I'll just quickly go back through them. The first one is obviously, there's a substantial environmental benefit by eliminating the

CO2, the 4,000, roughly, metric tons a year that would be released into the atmosphere and sequestering those. We also will eliminate the need to treat this sour gas at the wellheads, which is another activity which will be eliminated.

The current well is going to be recompleted and upgraded for this AGI use. And a new MIT will be performed prior to putting the well into service, of course, after the tubing is replaced and the subsurface safety valve. All of the nearby wells are going to be protected. Obviously this is a very important thing, that we have no wells at all within the one-mile area that penetrate either the cap rock or the injection zone, other than the Metropolis well itself.

The adequacy of the reservoir has already been demonstrated by the successful previous injection. I showed you that on the graph just a moment ago. We've given the division everything they need in the C-108 to be able to evaluate and approve hopefully the installation and the recompletion of this well.

And the H2S contingency plan, as Ms. Knowlton described, we're very close to obtaining approval hopefully within the next two weeks after we submit those minor revisions to the Environmental Bureau.

And last but not least, obviously all the operators and surface owners have received notice. There are no objections. And, in fact, the adjacent operators and the BLM support the project.

Q. And you mentioned a moment ago about calculating the maximum surface pressure that has been requested.

A. Yes.

Q. And how did you come up with that?

A. We calculated it using the formula that is prescribed by the division. That takes into consideration the pressure gradient from the surface to the injection zone and the specific gravity of the tag or the treated acid gas. This is presented on pages 4 and 5 of the C-108, the detailed calculations are shown there.

And what we came up with was actually 3288 PSI, and we're requesting 3280. And, frankly, Mr. Hearing Examiner, as you well know, from the injection history we're not going to need anywhere near that kind of pressure. But we still would like to request that pressure because in the event that there is a future need to inject greater amounts, we may need to raise the pressure, which, you know, might, as Mr. Villa mentioned, require some additional modifications of the plant and the compression system. But we would like to have that opportunity and have this pressure approved.

Q. And what's your sense of the average pressure?

A. At the rate that we're looking at here, the average pressure in my opinion is going to be less than about 1300 pounds at the surface. But we really don't know. As we crank up the rate, that's just based on the previous -- we'll know better when we do the injection testing. But I think it will be well below the maximum allowable operating pressure.

Q. And both of those pressure levels are below the cracking pressure?

A. Well below. This 3200 is still well below the cracking pressure of the formation or the cap rock.

Q. And I asked Ms. Knowlton and Mr. Villa about potential increases in the production capacity of the gas plant which would involve an increase in the volume of acid gas and CO_2 sent to the well. Do you think the reservoir is capable of accepting safely that increased volume of acid gas and CO_2?

A. Yes. I have no reservations at all at probably anything up to 1,000 barrels a day of acid gas, which would be four or five times the amount that has been requested.

Q. And in your opinion will the injection of acid gas and CO_2 as proposed by Agave Energy be protective of human health and the environment?

A. Yes.

MR. LARSON: That's all I have for Mr. Gutierrez. I move the admission of Exhibit Numbers 4 and 5.

EXAMINER EZEANYIM: Exhibits 4 and 5 will be admitted.

Do you have any questions?

[Exhibits 4 and 5 admitted into evidence.]

MR. BROOKS: No questions.

EXAMINER EZEANYIM: Okay. Your last slide, what is the specific gravity of the tag?

MR. GUTIERREZ: The specific gravity of the tag is .78. Let me just make sure that I'm remembering it correctly. It's included in table 1 of the C-108 application. For this concentration the specific gravity of the tag is .74.

EXAMINER EZEANYIM: So .74, okay. And you are using -- what are you using for the water?

MR. GUTIERREZ: We're using the pressure gradient to be .2 plus .433 times 1.04 for the water minus specific gravity of the tag.

EXAMINER EZEANYIM: Yeah. And the water is 1.04, right?

MR. GUTIERREZ: Yes.

EXAMINER EZEANYIM: So that would give you most likely 300 PSI. Okay. Let's go back, and there are some other things that we need to visit here.

The injection would be the Devonian, the Fusselman and the Montoya, right, based on interval?

MR. GUTIERREZ: That is correct.

EXAMINER EZEANYIM: 9930 -- what do you want, 9930?

MR. GUTIERREZ: 9930 to 10,500.

EXAMINER EZEANYIM: And that well that was shown that maintained integrity in 2009, it was tested for the MIT testing, right?

MR. GUTIERREZ: Yes. It was tested with the existing tubing string, et cetera, that is in the well. But obviously we'll do a new MIT.

EXAMINER EZEANYIM: After you remove it.

MR. GUTIERREZ: Right.

EXAMINER EZEANYIM: The four wells within the one-mile area review, nine of them are producers and then the other 15 are plugged and abandoned?

MR. GUTIERREZ: Yes, sir.

EXAMINER EZEANYIM: And I think they should be in the application.

MR. GUTIERREZ: It is in there, yes, sir. And the plugging diagrams are included in Appendix B for all of the -- I'm sorry, in Appendix C for all of the wells that are plugged and abandoned in that area as well as the full well records for those wells.

EXAMINER EZEANYIM: And this is producing shallow in the danger zone?

MR. GUTIERREZ: Yes, sir, significantly shallower, 4 or 5,000 feet shallower.

EXAMINER EZEANYIM: When the well was drilled, did you guys gather any more logs or conventional coring --

MR. GUTIERREZ: There was no coring done of the well. But there are good logs, porosity logs and gamma ray logs, a full platform express, and those were filed with the division at the time.

Calculate Perm from This!

EXAMINER EZEANYIM: No mud logs?

MR. GUTIERREZ: I don't recall any mud log for the reentering of the well. I think there was an original mud log for the exploration well.

EXAMINER EZEANYIM: Yeah. You have to explore the whole area and then you have the --

MR. GUTIERREZ: Well, based on the -- based on the logs, we evaluated that and there was no hydrocarbons at all in the Chester, which was the original formation that was being tested, or in the deepened Fusselman and Montoya formations.

EXAMINER EZEANYIM: Okay. Then the

injection into this well stopped on July 5, 2007. Is it because you lost authority or why did Agave stop injecting into that well?

MR. GUTIERREZ: Agave stopped injecting into the well because, as Ms. Knowlton mentioned earlier, at that time there were changes in the gathering system and the field system such that the plant was no longer receiving sour gas. So they were only using sweet gas so there was no need for it anymore.

EXAMINER EZEANYIM: Okay. It makes sense. And then the well was shut in?

MR. GUTIERREZ: That is correct.

EXAMINER EZEANYIM: And then in preparation of this, it was MIT tested in, I think it was, September 2009 and it passed.

MR. GUTIERREZ: That is correct. But the problem was that Agave did not recognize or realize that they needed to put the well under a kind of temporary abandonment and seek a specific change in the status of the well to be able to later reactivate it without going to a new application. So that's why we're here today.

EXAMINER EZEANYIM: Yeah, okay. So the only difference between the designs of the well is that you are going to remove the tubing and install new tubing?

MR. GUTIERREZ: And make modifications or replace the subsurface safety valve and rework the tree.

EXAMINER EZEANYIM: Okay. Yeah, to accommodate the surface pressures. Okay. Excellent. Most of the equipment will be corrosion resistant, right?

MR. GUTIERREZ: It will all be corrosion resistant equipment, yes.

EXAMINER EZEANYIM: Can you explain again what the time means? What is the ratio and what is time?

MR. GUTIERREZ: Yes. Treated acid gas, it's the stream that comes out of the amine unit. And that tag is in -- based on the inlet stream that the plant is receiving now and the processing of that gas, that treated acid gas stream should consist of approximately 61 percent H_2S, 38 percent CO_2, and probably less than 1 percent C1 through C8 --

EXAMINER EZEANYIM: Hydrocarbons.

MR. GUTIERREZ: Yeah.

EXAMINER EZEANYIM: And that will be in a liquid phase.

MR. GUTIERREZ: It will be in a liquid phase.

EXAMINER EZEANYIM: When you inject it?

MR. GUTIERREZ: Yes, sir.

EXAMINER EZEANYIM: So that creates some environment for corrosion?

MR. GUTIERREZ: It does, but it is dehydrated. The gas is dry. And, you know, there's five stages of compression on the compressor, and the water is knocked out at each one of the stages. So we basically have a dry gas that is going into the pipeline.

EXAMINER EZEANYIM: So you really have to install some compressors on the floor lines to bring it up to the measures that is required to be injected.

MR. GUTIERREZ: The compressor, as it stands right now, will produce the pressure that we need to inject.

EXAMINER EZEANYIM: The requirements, if you inject it, right? And if you treat it, acid gas, there are other requirements?

MR. GUTIERREZ: You're exactly right, Mr. Hearing Officer. If you were to use the well to inject a combination of gas and waste water then you are in a much more corrosive environment than what we are proposing here, yes.

EXAMINER EZEANYIM: Okay. Because this one is just the effluent from only your tag.

MR. GUTIERREZ: Only, that is correct.

EXAMINER EZEANYIM: Okay. It's important for me to know that. Okay. Nothing further.

Do you have any more questions?

MR. LARSON: Nothing further, Mr. Examiner.

EXAMINER EZEANYIM: Okay. That's good. At this point case number 14601 will be taken under advisement. Good job.

MR. LARSON: Thank you.

EXAMINER EZEANYIM: I think concludes the hearing today.

[The hearing was concluded at 12:12 PM.]

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 14601 heard by me on 6/17/11
, Examiner
Oil Conservation Division

REPORTER'S CERTIFICATE

I, Lisa Reinicke, New Mexico Provisional Reporter, License #P-405, working under the direction and direct supervision of Paul Baca, New Mexico CCR License #112, Official Court Reporter for the US District Court, District of New Mexico, 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 and was reduced to printed form under my direct supervision.

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 whatsoever in the final disposition of this case in any court.

Lisa R. Reinicke

Lisa R. Reinicke,
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