STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ORIGINAL

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

CASE NO. 14329

APPLICATION OF ANADARKO PETROLEUM CORPORATION FOR APPROVAL OF AN ACID GAS INJECTION WELL, SAN JUAN COUNTY, NEW MEXICO.

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

October 15, 2009
Santa Fe, New Mexico

BEFORE: RICHARD EZEANYIM: Hearing Examiner
DAVID BROOKS: Technical Advisor
TERRY WARNELL: Technical Advisor

This matter came for hearing before the New Mexico Oil Conservation Division, Terry Warnell Hearing Examiner, on October 15, 2009, 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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I N D E X

A P P E A R A N C E S

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HEARING EXAMINER: Good morning, everybody.

Thank you all for coming. We'll call Case No. 14329, and this the Application of Anadarko Petroleum Corporation for approval of an acid gas injection, San Juan County, New Mexico.

Call for appearances.

MS. MUNDS-DRY: Good morning, Mr. Examiners. Ocean Munds-Dry with the law firm of Holland & Hart, LLP this morning here representing Anadarko Petroleum Corporation.

Mr. Ezeanyim, before I identify my witnesses I just wanted to point out the Anadarko representatives that are here with us today so you can see their faces and get to know them.

Sitting with me at the table today is Ms. Kuhn, Senior Counsel for Anadarko. We also have Tony Marques, who is the engineering manager. And we also have Julie Petite, who is the Senior EHS Analyst for Anadarko. And we also have Ken McEvers, who is the Operations Superintendent for the San Juan River.

HEARING EXAMINER: Okay, good. They're not going to be witnesses?

MS. MUNDS-DRY: No, sir. I have two witnesses. I have Mr. Chuck Johnson, who will testify for us, and Mr. Alberto Gutierrez will also testify.

HEARING EXAMINER: Okay. Any other appearances?

MS. ALTOMARE: Mikal Altomare on behalf of the Oil Conservation Division. I have one witness, Brad Jones.

HEARING EXAMINER: Okay. Any other appearances?

MR. BRUCE: Mr. Examiner, Jim Bruce of Santa Fe. I am here in association with Charles Roybal, who is in-house counsel for BPH Billiton of San Juan Coal Company. And we do have one witness, Mr. Steve Bessinger, who is the engineering manager at the mine.

HEARING EXAMINER: Very good. Any other appearances here? At this point, may all the witnesses stand, state your name and be sworn in.

MR. GUTIERREZ: Alberto Gutierrez.

MR. JOHNSON: Chuck Johnson.

MR. BESSINGER: Steve Bessinger.

MR. JONES: Brad Jones.

(Note: The witnesses were sworn in by the court reporter.)

HEARING EXAMINER: Before we go on with this case, I have to bring to your notice that rather than have comments from the public from the Farmington and Kirtland area, for the record, I'm going to mention the names. It doesn't appear as if there are any appearances. I didn't see them here, so we need to read -- I mean, not read all their letters but at least mention that they commented on

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this acid gas injection.

No. 1 is Chris Dixon who is from Farmington. He raised comments and concerns about injecting acid gas into the formation. No. 2 is Roseanne Williams of Kirtland.

I'm not going to read the letters one by one because they're lengthy letters. They're all raising concerns about injecting acid gas into the formation.

Larry and Caroline Tinsel of Kirtland have the same concerns.

The Bureau of Land Management supports the application, however, they said that they need to know whether there is any hydrocarbon production in the Entrada. If there is none, then they support the application.

The first portion here is Janet Reese of Kirtland. She's expressing the same concern like the others are expressing.

Now, there's a Citizens Alliance. They are also expressing concerns about the acid gas. They say they don't understand it very well what is going on.

So for the record, we're going to have them into the record that they commented and we put them under administrative notice.

At this point, I'm going to call on counsel. Do you have any opening statements?

MS. MUNDS-DRY: I don't, Mr. Hearing Examiner, unless the other counsel do.

HEARING EXAMINER: Any opening statements?

MS. ALTOMARE: I don't think it's necessary at this time.

HEARING EXAMINER: Okay, you can go ahead and proceed.

MS. MUNDS-DRY: I'd like to call my first witness, Mr. Chuck Johnson.

CHUCK JOHNSON,

the witness herein, after first being duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. MUNDS-DRY:

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

A. Charles David Johnson. I go by Chuck Johnson.

Q. Mr. Johnson, where do you reside?

A. Woodlands, Texas.

Q. And by whom are you employed?

A. Anadarko Petroleum Corporation.

Q. And what is your position with Anadarko?

A. I'm the business development manager for Anadarko Petroleum in the Midstream Division for which the San Juan River Plant is an asset. Specifically, I am a

steward of the plant in maintaining its value and its long-term viability.

Q. Have you previously testified before the Division?

A. No, I have not.

Q. Are you familiar with the application that Anadarko has filed in this case?

A. Yes, I am.

Q. Are you familiar with the gas operations at the San Juan River Natural Gas Processing Plant?

A. Yes, I am.

Q. Would you please, Mr. Johnson, provide the Examiners today with an overview of Anadarko?

A. Anadarko Petroleum in the summer of 2006 acquired two assets through stock purchase. One was Western Gas Resources, and other was Kerr-McGee Corporation.

That made Anadarko one of the largest independent oil and gas exploration companies. As of the year end of 2008, Anadarko has 2.3 billion barrels equivalent of proven reserves --

HEARING EXAMINER: Excuse me. Before you continue, are you presenting him as a fact witness or as an expert witness?

MS. MUNDS-DRY: Just as a fact witness.

HEARING EXAMINER: A fact witness. I want the record to reflect that. If it's a fact witness, it's a fact witness; expert witness, is an expert witness.

MS. MUNDS-DRY: He does not plan to present any technical testimony today.

HEARING EXAMINER: Okay, he's going to give an overview?

MS. MUNDS-DRY: Just an overview of Anadarko, yes, sir.

HEARING EXAMINER: Okay.

Q. Please continue, Mr. Johnson.

A. Okay. So Anadarko, with these two acquisitions, we have 2.3 billion barrels equivalent of proven reserves, 4,100 employees, and our total asset is $48 billion at the end of year 2008.

Q. And could you go into a little bit more depth about your operations here in New Mexico, and in particular, at the gas processing plant?

A. The gas processing plant is -- central to our processing plant is the treatment of our gas, H2S and C02, predominently from Barker Dome and the Paradox formation. That we collect that and gather that and treat that for pipeline quality gas.

Q. And Mr. Johnson, would you please explain to the Examiners why Anadarko is proposing this project?

A. Central to the long-term viability in the San Juan plant is the sulphur recovery unit. It's antiquated, it's 30 years old, and it needs to be replaced.

Rather than replacing that unit with like-kind equipment, there's newer technology with an acid gas injection well that is more environmentally friendly and offers a better solution rather an emitting the CO2 into the atmosphere that we're doing today.

Q. And talk about how this will improve efficiencies at your plant.

A. Right now, our emissions are basically limited because of the age of the plant, and we're not able to accept any more H2S and CO2 composition gas.

Q. And what will the effect on production be in the San Juan Basin?

A. The acid gas injection well is actually an enabler. We have several producers that have shut-in production today and they have drilling plans that are on hold until our plant can take more of their production.

Q. And why, Mr. Johnson, would the granting of this application be good for Anadarko's operations?

A. Anadarko strives to be a good environmental steward at every opportunity. This acid gas injection well is that opportunity, and it would be so on a long-term and reliable basis.

Q. What about the effect on the jobs at the plant as well?

A. In addition, you know, specific to New Mexico, this acid gas injection well will restore the plant to 30 year viability, maintain the current jobs that we have at the plant, as well as in the near term in the coming months, create new jobs for the amount of drilling and equipment that we would have to install for this plant.

Q. Mr. Johnson, does Anadarko plan to continue to use the sulphur recovery unit if this application is granted and you're able to drill and inject with the acid gas injection well?

A. No, we do not.

Q. And likewise -- and I think there is some crossover here, but if you could explain to the Examiners why this application is also good for the state of New Mexico.

A. Well, for the same reasons, basically, as for our company. We want to be a good environmental steward. This is the first opportunity to really take out of service 30 year old technology. We want to sequester the C02 that we're venting today, and again, return and maintain that plant to viability.

Q. Who did Anadarko retain to prepare the C-108 application?

A. Geolex, Inc. of Albuquerque, New Mexico.

Q. And will Anadarko call a professional petroleum geologist and hydrogeologist to review this C-108 application?

A. Yes. Alberto Gutierrez is President of Geolex.

Q. And is there an engineer from Anadarko also present here today in case the Examiners have any questions within his expertise?

A. Yes. Tony Marques is a chemical engineer with Anadarko Petroleum.

MS. MUNDS-DRY: Mr. Examiners, that concludes my direct examination of Mr. Johnson.

HEARING EXAMINER: Thank you. David?

MR. BROOKS: No questions.

MR. WARNELL: Mr. Johnson, could you tell me a little bit about the sulphur recovery unit? You say it's old, how old is it?

THE WITNESS: It was built in 1979.

MR. WARNELL: And how does the sulphur recovery unit work?

THE WITNESS: You know, I'm going to -- I'd like to defer that to Ken McEvers, if that's okay?

MR. WARNELL: Very good. That's fair. No more questions.

HEARING EXAMINER: Do you know what the daily

capacity of the SRU is currently?

THE WITNESS: I know it by tons. It's 5 tons of emmissions. That is our restriction. It used to be a 60 ton unit and because of its age and efficiency, we cannot meet efficiency standards to keep it. We're only at -- has it hit 70 percent?

MR. McEVERS: 70 percent recovery is the NMED of New Mexico. We were classified as a new sulphur recovery unit last year. At 5 tons and above, we have to be at 90 percent recovery. At 5 tons, the air quality doesn't care about the recovery. So we keep it below the 5 tons until we get project approval.

HEARING EXAMINER: Okay. That's all I have for you right now.

MS. MUNDS-DRY: I have a few more questions but I didn't know if other counsel maybe has some questions.

HEARING EXAMINER: Any questions? Okay.

Q. (By Ms. Munds-Dry:) Mr. Johnson, you understand that BHP is present here today?

A. Yes.

Q. And have you had a chance to speak with the representatives from BPH about some of their concerns?

A. Yes.

Q. And what do you understand there may need to be, as you understand it?

A. They have internal risk assessment of our operations, whether it be with our current plant or with the acid gas injection well, and they have not had time to assess this application with the acid gas injection well with their internal risk assessment.

Q. And do you understand that they've asked you to be a part of that risk assessment process?

A. Yes.

Q. And what was your response?

A. Absolutely. From the time of this hearing to the time the well is actually turned into production 12 months from now -- or sooner, if possible, we have plenty -- ample time, we'll set meetings and go through a thorough investigation with them to satisfy their concerns.

Q. So Anadarko has committed to making its people and resources available to participate in that risk assessment process?

A. Yes.

Q. And do you believe that can happen separate and offline from this C-108 process?

A. Yes.

Q. Thank you.

MS. MUNDS-DRY: That's all I have, Mr. Examiner.

HEARING EXAMINER: Thank you. You may step

down.

MS. MUNDS-DRY: I'd like to call my next witness, Mr. Gutierrez.

ALBERTO GUTIERREZ,

the witness herein, after first being duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. MUNDS-DRY:

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

A. Alberto A. Gutierrez.

Q. And where do you reside, Mr. Gutierrez?

A. In Albuquerque.

Q. And by whom are you employed?

A. I'm employed by Geolex, Inc.

Q. And what is your position with Geolex?

A. I'm a hydrogeologist and I'm the president of the company.

Q. And what is your relationship to Anadarko?

A. I'm a consultant to Anadarko in this acid gas injection feasibility and permitting project.

Q. And what were you asked to do by Anadarko?

A. Basically, Anadarko asked us to review the feasibility and the potential targets for acid gas injection associated with the acid gas stream from their

San Juan River Plant.

Q. And have you previously testified before the Division?

A. Yes, I have.

Q. And were your credentials as a petroleum geologist and a hydrogeologist made a matter of record and accepted by the Division?

A. Yes, they have been.

Q. Are you familiar with the C-108 that was filed in this case?

A. Yes. I prepared that and -- our company prepared that C-108.

Q. And have you made a geologic and hydrologic study of the area?

A. We have.

MS. MUNDS-DRY: Mr. Ezeanyim, we would tender Mr. Gutierrez as an expert in petroleum geology and hydrogeology.

HEARING EXAMINER: He is so qualified.

Q. Mr. Gutierrez, I believe you prepared a Power Point presentation for us today?

A. I did.

Q. Would you please state what Anadarko seeks with this application, and then if I could ask you to review your Power Point.

A. Surely. As I mentioned, Anadarko retained us to evaluate the potential for acid gas injection at this facility.

As the Hearing Examiner is well aware, this acid gas technology is something that has been -- we're seeing more and more of in the state of New Mexico. We've now permitted five of these wells in the state and completed three of them.

So, it is a technology that as people are more and more concerned -- as Anadarko is -- about the effects of greenhouse gases on the environment, that it is an attractive technology because of the ability to sequester large amounts of CO2 that are currently being emitted into the atmosphere, as well as handling and improving overall emissions at gas plants by eliminating SRUs.

So, I have prepared a Power Point here that I would like to go through. It basically highlights information that is already included in the C-108 application, but it also addresses some of the issues which have arisen through the process. And I'd be happy to go through that.

Q. Thank you, Mr. Gutierrez, if you would please just take us through your presentation.

A. Okay. This coversheet, by the way, just to orient folks, the photograph on the right is a photograph

of the gas plant, kind of an overview looking towards the east. And the photograph on the left, the aerial photograph, is an aerial photograph of the general vicinity of the plant.

So, let's talk a little bit about what we're going to talk about today first of all. This AGI project, as I mentioned, has an environmental benefit, which is basically the sequestering of C02 which would otherwise -- and which is currently being released into the atmosphere as a result of the treatment of gas.

The subsurface feature, such as BHP's mine workings nearby, water wells and surface water, will be protected by the well design and the geologic factors. And we'll be going into that in quite a bit of detail in our discussion here.

The AGI project reduces waste and potential air emissions upsets by eliminating this SRU, as Mr. Johnson mentioned. The adequacy of the target reservoir, i.e., the Entrada formation, has been demonstrated by a successful injection at other wells outside the area of review, but still in the general vicinity approximately 4 to 5 miles away.

The final Rule 11 Plan for this proposed AGI project is something that we have worked very hard with and appreciate the hard work that Brad Jones of the

Environmental Division has done and how much effort we've put in and they've put in to getting a plan together and getting it approved. And that has been approved for this project.

The C-108 application that has been submitted details the full information that is needed, Mr. Hearing Officer, for you to be able to evaluate this project.

And the adjacent operators support the project, and all the surface owners have received proper notices as we will see in our exhibits that we intend to introduce.

This again is just a very general map. It shows -- This is located north of the town of Kirtland and lightly west. This is an approximate boundary of the property, the 320 or so approximately acres that encompass Anadarko's property at the San Juan River Plant.

Let's talk a little bit about the background here. As I mentioned, Anadarko retained us in February. We met with the Division shortly thereafter to introduce this project to the Division representatives so that they could understand kind of what we were trying to do.

What we were hired to do was evaluate whether there was a reservoir in this area that was capable of accepting between 1 1/2 and 5 million cubic feet a day of acid gas, C02 and H2S.

And the key factors that we were asked to look

at was, one, the reservoir has to be looked at -- It's basically the same stuff we look at in any acid gas project, which is can the reservoir accept acid gas safely without affecting either existing or potential oil and gas or other mineral production.

Can we construct a well that will prevent leakage into groundwater and will the reservoir have the adequate, appropriate geologic properties to assure its integrity over the long term as fluid is injected into the reservoir?

The well ideally would be located at the San Juan Basin Plant site if the geology was amenable, and indeed, our investigation shows that it is.

And the well design and reservoir should allow for the certification of the system as a C02 sequestration project for obtaining carbon credits.

As we all know, Congress is in the process of considering cap and trade legislation, and the Western Carbon Initiative all are looking at this issue. So, it's a very timely kind of issue.

So, in a general sense, what do we look for in a reservoir that we're going to use for sequestering C02 and acid gas? One, we want -- and most importantly, a geologic seal that permanently can contain that injected fluid and not allow it to come out of the injection zone

and affect other zones.

We want to have a zone that is clearly isolated and ideally below any fresh groundwater. We want to have no affect -- no deleterious affect on existing or potential production of oil and gas resources or other mineral resources in the area.

We want a reservoir that is laterally extensive, that's permeable and that's got good porosity so it can take the amount of gas that we intend to put in there. And it's got to have a compatible fluid chemistry so that we don't have problems once we begin the injection of the gas.

So, what we did initially in order to be able to carry out this effort is do a detailed geologic evaluation of the area. We began by identifying all the regional background geologic data that were available for the area. And this is covered in Section 4 of the C-108.

We also defined the characteristics of the ideal acid gas reservoir which is what I went over in the previous slide.

We identified, located, and evaluated all the wells in the local area. And this extended beyond the area of review, because, as I mentioned and as you will see in some of my later slides, it's a good thing, but within the area of review, we didn't have any wells at all

that penetrated the injection zone.

But the bad thing about that is, we needed data on the injection zone. So we had to look beyond the area of review. And so we evaluated the stratigraphy in the area to confirm the reservoir, that it would meet the basic geologic criteria that's presented in Sections 4 and Figures 5 through 13 of the C-108. We'll go through those in a little more detail here shortly.

We constructed cross-sections with the available logs from those wells in the area, both in the area of review and outside of the area of review.

We did a structural analysis as well, and we reviewed the saltwater disposal well test data from saltwater disposal wells within the area of review not in the injection zone that we're looking at, but in zones above it to look at fluid chemistry. And I'll talk a little bit later about why that was important.

We also looked at saltwater disposal wells in the Entrada formation outside of the injection zone to evaluate the ability of that formation to take acid gas.

We conducted a preliminary reservoir analysis of the Entrada formation, which I also will discuss. And since our evaluation confirmed feasibility, we then moved on to the next step of preparing a C-108 and submitting it to the Division for approval.

Okay, so let's kind of go step by step -- and I hope not to bore you, but I will walk you through and present to you, I think, the process by which we evaluated this site.

As I mentioned, we identified and characterized the wells in the area of review. There are very few shallow producing wells in the area. There was a total of something like eight producing wells in the area and three plugged wells, and those are detailed in the C-108.

They're Entrada wells that are used for saltwater disposal. They're well outside the area of review in a down-dip direction. And we'll look at some of those here shortly.

That's what gives us our information about the Entrada, in addition to the fact that we're fortunate in New Mexico that all around the rim of the Colorado plateau, the Entrada formation is actually exposed and has been fairly well characterized in terms of its characteristics.

Based on this stratigraphic analysis and the evaluation of the Entrada wells, we determined that the Entrada is an excellent acid gas reservoir with a 30 year plus -- actually, it is a significantly longer lifetime than that, but that was our criteria for this particular project. And we'll go through and look at some of that in

just a moment.

The analysis indicates that -- and frankly, the stratigraphic analysis shows that this is a good location in general, the area of the plant.

The specific location of the well is really designed to minimize any potential surface risks associated with H2S by minimizing the distance that we have to have a surface pipeline of H2S from the compression facility to the wellhead itself.

Data from the nearby Entrada wells demonstrate that it is capable of taking the injective fluid that we intend, well under the calculated maximum injection pressure that we calculated based on OCD guidelines. And that calculation is laid out in the C-108 and came out to be 1,985 PSI..

This map is a -- it's not the best map, however it is in the C-108 -- a visual representation of leases in the area. In large measure, the leases that we have in the area are all federal and state leases, they're all leased.

There is very little production in the area as we mentioned. I'll go over that in a little more detail. It's presented in the C-108. There are federal coal leases and state coal leases that are part of the San Juan Coal Company's operations and BHP's Operations. And we'll

talk a little bit about that as we get further in the application.

So, let's just take a look at the regional geology. Basically what we've got is a gently dipping set of stratigraphy to the northeast and to the east in the area. And this is a pretty good regional cross-section.

This incorporates quite a number of wells that are outside of the area of review, but what it does is give you a pretty good picture regionally of what we've got. We've got a pretty simple kind of layer cake geology.

Like I said, dipping to the northeast, we have a series -- we have a very thick section -- If we just start at kind of the Chinle formation, which is that first patched formation, this constitutes the top of the Triassic age rocks in the San Juan Basin.

Immediately overlying that formation is the Entrada, which is our target zone. You can see that there are three wells. These are all well outside the area of review but these -- I'm sorry, two wells -- that penetrate the -- This is our proposed well right here, the location of our proposed well.

These two wells to the northeast penetrate -- this was a basement test, an old well that has been plugged back to the Entrada. So this basal portion has

been plugged back.

They're injecting saltwater into the Entrada here, and there is an Entrada test that was unsuccessful, and that also is injecting saltwater into the Entrada. These are about 4 1/2 miles from the plant to the northeast.

HEARING EXAMINER: Those are those two wells, those in the 4 1/2 miles?

THE WITNESS: Yes.

HEARING EXAMINER: None of them is within the area of review?

THE WITNESS: No, they're well outside the area of review.

A. Like I said, this well -- as a matter of fact, I think is about 4 1/2 miles from the outside of the area of review, this is more like 5 1/2 half miles. You can see these wells -- this one and this well, is just outside the area of review.

We do have a couple of shallower wells that only go into kind of the Gallup formation, which is the only real productive formation in this area there, and -- But as you can see, there really are no significant structural features.

There's no offsets that we noticed in these wells. And one of the important things that I mentioned

earlier is -- which I think is another very good example, we did look at some formation fluids in both the Entrada formation and in some of the -- the Point Lookout and some of these other shallower formations that have been used for saltwater disposal in the area.

And there is a real significant difference in that formation water which indicates that we really don't have any kind of regional communication between those reservoirs.

There is also a very -- the Caprock, this very -- what appears to be this thin layer here, is actually about 150 foot thick Wanakah and Todilto formation which is a siltstone and recrystalized limestone which has very, very low porosity and very low permeability.

That is overlaying by the Morrison formation, which is a series of interbedded -- As you may well know, in the San Juan Basin, it's a very thick -- almost a thousand foot thick section of shale and interbedded sandstone.

And above that we have the Dakota formation, which is a sandstone that has been used for -- it has had some production in the area and is also used for saltwater disposal.

And then we get into the lower Manco Shale, the

Gallup formation, and the Upper Manco. So all of these are basically largely shale units with some interbedded sands, very low permeability.

Again, and we got about 2,500 feet of that Cretaceous Section, then we get to the Point Lookout, the Metafee, and then ultimately, to the Lewis Shale. And then this Picture Cliff formation. And then above it, the Fruitland, which is where the coal is located in this area.

But it's important to note that we've got -- in addition to a very good Caprock that you'll see in the logs, we've got about 5,000 feet of section between that and the coal workings and any surface water or groundwater in the area.

HEARING EXAMINER: Since you are there, what is the thickness of the Entrada in this area?

THE WITNESS: In the area here where we anticipate, it is approximately 170 feet think or so.

HEARING EXAMINER: On the Entrada. Okay. Can you talk a little bit more about the overlying systems and underlying system between the --

THE WITNESS: I would like to, Mr. Hearing Examiner, if it's all right, I'll move on to some other -- I've got some detailed logs of those that would show --

HEARING EXAMINER: Because I am interested in

knowing the underlying and overlying in the Entrada.

THE WITNESS: Right.

A. And so just to go over it again in a regional sense, this is the Chinle formation. It's about 1,200 to 1,500 feet of mudstone with very thinly laminated limestones.

It's a pretty imprintable Triassic unit. As matter of fact, it's exposed very well in the -- when you ride from Bernalillo up through San Isidro, it's that very red formation that is a claystone at the base of White Mesa. You see about 300 or 400 feet of it exposed there. But again, it's a Triassic age, basically, mudstone.

HEARING EXAMINER: It just occurs to me now -- I don't know, I might say without asking my legal examiner, when I read some of these comments from the citizens, it occurred to me that if you want to do an acid gas now, because of the ignorance of the citizens out there, you may have to do this training in the area you want to do it so that we don't get all those -- maybe, I don't know, but from what I'm reading, it appears that most people don't understand what's going on, you know.

So if you go ahead -- like Citizens for Environmental Alliance and the San Juan Citizens Alliance and have a meeting and show them this, it might help, I don't know. It just occurred to me as you are talking.

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THE WITNESS: And that's a good point. And I will say that as you know, Mr. Hearing Examiner, originally this was set for hearing back in June. And at that time -- prior to that time, I had gotten a call from the San Juan Citizens Alliance and I did spend a couple hours on the phone with their director explaining this to them.

But I agree with you, it may be useful at some point to have -- He mentioned, well, he sure would like to have, you know, some of this kind of information, and I invited him and said, you know, "If you'd like further information, you could also come to the hearing and see it." But he said, "Well, then we have to travel to Santa Fe," et cetera. So your point is well taken.

HEARING EXAMINER: I think the burden is on the operator to educate the citizens on what you're trying to do.

THE WITNESS: Sure.

HEARING EXAMINER: Okay.

A. Then to answer your question, the zone immediately above the Entrada here is a the Wanaka formation. And this is -- it's difficult to draw it to scale at this kind of size here because just of the size of the lines, but it's approximately 150 feet thick. And that is essentially, as I mentioned, siltstone and

recrystalized limestone. And we'll see it in more detail in the logs.

And then overlying that again is another thousand plus foot thick package of mud stones that are represented by the Morrison formation.

Okay, so let's get to some of those detailed cross-sections. As I mentioned, up to the north and east of the -- Here is the plant. These Entrada wells that we have are basically -- one here, this test here, this one here, Sponge Bob -- I love that name -- that is plugged back, and then injecting into the Entrada, and then also, this Salty Dog well here.

So this log, we didn't have porosity logs for, but we have some old logs for this, and I'll have -- The first cross-section shows four of these wells. And then my detailed cross-section with the logs will show these other three wells.

So let's look at first this general cross-section. The Chinle formation, this is -- the Chinle mudstones and claystones which underlie the Entrada.

Here we see the Entrada formation, which is our target formation. You can see that we've got some pretty good porosity here in that formation, and we'll see how -- I'll give you another cross-section that has some more

detailed analyses of the porosity logs.

This, you can see that immediately above, this is the Todilto. We have a very rapid drop in the porosity. This is this siltstone and recrystalized limestone.

And then this Upper Wanaka is essentially a recrystalized, very low porosity limestone interbedded with siltstone.

HEARING EXAMINER: And this was outside the 1 mile area of review?

THE WITNESS: Well outside, yes.

A. Let me go back and show you -- Okay, if you look at -- Here is the section that includes the plant. So if we just look -- this is 5 1/2 miles out to this well, about 7 miles up to this well, and about 4 1/2 down to this well.

So as I mentioned, again, now we're going to look at a detailed porosity section where we had porosity logs for this Salty Dog, the Sponge Bob, and Big Field wells.

Here you can see we've got about 170 feet of Entrada formation with porosity ranging from about 18 to 21 percent; here about 18 percent. The Entrada thins a little bit to the southeast.

We are getting on a little bit of a high towards

the southeast part of the Basin in the Triassic section, so the Entrada thins a little in that direction.

We anticipate in our area -- although, like I said, we don't have any wells within the area of review that penetrate the Entrada, but we anticipate that the section will look more like what we see in here, this 18 to 21 percent porosity at probably about 170 feet.

We got the Todilto, which is a pretty thin formation which is part of this Upper Wanaka formation. You can see, it's got a very distinctive lower porosity kick immediately above the Entrada and it stays that way throughout the Wanaka.

And I didn't continue these logs, but they are certainly available. These logs on up, we're relying on this Wanaka formation as our Caprock, but as I mentioned earlier, we've got above that another thousand feet of Morrison formation, which is largely mudstones and siltstone before we get to the Dakota.

And then above that, we got the Manco and ultimately the Lewis Shale which provides about another 3,000 feet of low permeability log.

HEARING EXAMINER: On that Entrada, were you able to come into permeability of the Entrada?

THE WITNESS: The permeability, we don't really have a very good handle on because they haven't really

done permeability tests certainly within the area of review. But what I can say is that they're injecting very high volumes of saltwater into the Entrada and have been for over 15 years up in that Sponge Bob well at relatively low pressure. So it appears to have very good permeability.

HEARING EXAMINER: But there's no way to determine that?

THE WITNESS: Not at this point. When we drill the well, we intend to core. And I'll go through a little bit of what we intend do to when we drill the well. But we intend to core both the Caprock like we did on the Southern Union Jal 3 well, and to core the actual reservoir so that we can do detailed permeability testing on that.

HEARING EXAMINER: Okay.

A. One of the things that we want -- we're obviously very interested in looking at is the regional structure. And we've given you the structure here on two zones.

This is the top of the Entrada. Now, we've got limited data to do that with, because as I mentioned, we've got one well way out here to the southwest that penetrated the formation, and then we have those wells we were just looking at to the north and east.

But what we see is a pretty smoothly dipping formation to the north and east, and we see the same kind of -- We've got much better control with the Dakota because a lot of wells had reached the Dakota there and we see that we've got pretty similar kind of gentle northeast dipping beds there which indicate no significant discontinuities or fractures or faults in the area.

Okay, so let's talk now a little bit about the AGI itself. The application for the C-108 requests approval for a well that would have the potential to inject from 1.5 to 5 million cubic feet a day of acid gas.

Which would be interjected, Mr. Hearing Examiner, unlike the last one that we did for Southern Union, this well is going to be like the Linum well, a dry gas injection well.

So we're not injecting any waste water here, we'll be compressing and injecting supercritical dehydrated acid gas, which obviously is of benefit from lower corrosion to the system as a whole. This is our request in the C-108.

We have a current Rule 11 Plan which limits that injection to 3.8 million cubic feet a day of acid gas, and it is our intent to operate at no higher than this injection rate, although we are seeking approval for up to 5 million in the well.

We would not be able to go to that level until we filed a new Rule 11. If at some time in the future the plant would want to expand, we would have to file a new Rule 11 and get it approved before commencing with that higher injection. But we feel that the well itself is easily capable of taking up to 5 million cubic feet a day.

HEARING EXAMINER: But now you're limited by the plan to 3.8 million?

THE WITNESS: That is correct. And that's what we're requesting would be the initial injection rate.

HEARING EXAMINER: So if you need to go to 5 million, you have to come in for an amendment?

THE WITNESS: That is correct. We would have to come in for actually a new Rule 11 -- or an amended Rule 11 Plan. But our goal is to have the actual order for the injection allow us to inject up to 5 million even though we understand -- and you could put a condition in that we would need to have a new Rule 11 before going to a higher rate

HEARING EXAMINER: I understand.

A. The conceptual design is shown in Figure 2-4 of the C-108. And we'll go through that in detail. The layout of the plant includes H2S monitors which are shown on the Rule 11 Plan for this maximum 3.8 million cubic feet a day. And this was approved by OCD in October 2009.

It also has H2S monitors that are located offsite, and we'll look at those in a map here shortly. This is just a very -- this again is just -- I know it's hard to see it here, but it is in full scale in the Rule 11 Plan.

This is a diagram of the plant showing H2S monitors for the plant itself, and evacuation routes, et cetera. Again, there are more details in the Rule 11 Plan.

Let's take a look here. And we've been talking about the SRU. Here is the SRU currently. This is the SRU which will be shut down as part of this project when the AGI would go into service.

It is anticipated that the compression facilities will be built in this area right here where I've got a red dot. And the well itself is located approximately 200 to 400 feet -- we don't know exactly, and it will depend on the drilling constraints. And when we go to file the actual drilling permit, we would know that.

But what our goal is, is to minimize this length of high pressure acid gas line that has to go between the compression facility and the wellhead itself just for safety's sake.

But basically, what is currently going to the

SRU right now -- here is the stack for the SRU, this is where all the CO2 is now being vented into the atmosphere, and that feedline would now be going straight to this compression facility, and then this SRU would be mothballed or taken down.

There is currently -- One thing that I will mention is that there is a tail gas incinerator with the SRU. That tail gas incinerator would still be left in service in the event there was an upset and need to flare, but the rest of the SRU will be decommissioned.

Okay, this map -- again, this is out of the Rule 11 Plan. This shows the -- using the OCD's formula for calculating the radius of exposure associated with H2S release.

Now, it's very important to note that while these radii of exposure are calculated on the basis of OCD's formula and is a formula that essentially takes what is -- the whole 24 hour throughput of the plant and treats it as an instantaneous release of acid gas, which is a situation that can't really occur, but it is what is used for determining these radii of exposure.

Now, these red dots that you see are H2S monitors that would be placed outside of the dense grid of H2S monitors that exist within the plant itself.

This would be an initial assembly area in the

event of a potential minor release, and we have assembly areas going further outside of the ROEs and the evacuation routes and points. This is all detailed in the Rule 11 plan.

Also, these green dots would show in the case of a catastrophic release where there would be road blocks that would prevent any entry into the potentially effected area.

HEARING EXAMINER: Talking about these two radii of exposure, that first one and the second one, can you talk more about those?

THE WITNESS: Certainly.

A. The first radius of exposure right here is the 500 PPM radius of exposure, again, calculated with this 24 hour release of the entire acid gas stream going through the plant.

This is a radius of exposure of 1,634 feet away from the -- centered on the well itself. This radius of exposure is the 100 PPM radius of exposure, and it's a 3,576 foot radius of exposure.

It encompasses this golf course area and several other public areas within the -- some unmanned facilities like the San Juan turbine station here, this El Paso station here, this Mapko pump station, this XTA well, and this El Paso warehouse, those are unmanned facilities, but

they are encompassed within that radius of exposure.

There are some residences that are on the outside of this -- adjacent to the -- and just inside the 100 PPM radius of exposure on the east side of the plant. Again, these are things that we have dealt with in the Rule 11 Plan, and I think Mr. Jones will present some testimony.

But we have developed a training program, as you mentioned, and a way in which we will involve all of these entities in training and information associated with the potential risks with H2S in the area.

Okay, let's get back to the AGI facility itself. As I mentioned, this is just a general schematic. Again, I want to emphasis, Mr. Hearing Officer, this is a design -- this is not a new design, this is a design we have used and have permitted by the Division for five other wells here in New Mexico.

The compression facility here is where we would take the low pressure acid gas that comes out of the aiming unit, we would compress it here. On the outside of this compression unit is an automatic safety valve, and then this high pressure gas line down to the Christmas tree on the well, and then another automatic safety valve set at about 250 feet in the well.

So that really, if someone was -- for example, a

pickup truck was to back into the Christmas tree and knock this out, this valve would shut off any additional injection into the well. This valve would shut off any ability of material to come back up that is in this tubing in the well, and what would be released would be the H2S that is in this length of pipe right here.

Which again, I want to mention, would be a significantly smaller radius of exposure than what was calculated for the Rule 11 plan.

This design for the well includes -- and we'll look at it in a little more detail, but basically includes setting surface casing to about 1,100 feet in the Lewis Shale, in the imprintable Lewis Shale cemented to the surface.

Inside that, we would set the production string which would have two joints which would straddle the basal portion of the Capstone. And then the top portion of the injection unit would be corrosion resistant alloy joints in which we would set the corrosion resistant packer.

We would then have the teflon lined tubing in the production string stabbed into that packer to inject into the zone below.

The annular space we're proposing would be filled with diesel and would be monitored for pressure like we have on the other previous designs to prevent --

or to detect any potential tubing leak of acid gas and to prevent corrosion of that production casing.

HEARING EXAMINER: Is it possible to divert that -- in case of emergency upset on those two safety valves, can you divert the gas -- in which you say is small -- to divert gas that's in the area of the former SRU?

THE WITNESS: Well --

HEARING EXAMINER: Is there a way to do that?

THE WITNESS: In short, the answer is no.

HEARING EXAMINER: You can't do that?

THE WITNESS: No. Because -- and my view is that if you had a catastrophic failure of the line here, you know, that gas would be released pretty much instantaneously. We could certainly divert -- once we shut this valve, we would divert the gas stream -- the ongoing gas stream to our tail gas unit. But what I was saying is, that if we had a failure in this zone, that gas would probably be released.

A. This gives you a little more detail of the well itself. Again, as I mentioned, this is a tried and true design that we have already operating on a variety of wells in southeast New Mexico.

In this case, we are setting surface casing deeper than we normally would set it in order to provide an added measure of security and safety to BHP's mine

workings and also to potential shallow groundwater. I'll talk about that in the area here.

But this surface casing would be set to a depth -- we have a little piece of conductor casing at the top just set at 50 feet or so, but then the surface casing would be set to about 1,100 feet.

And the reason I say about 1,100 feet is, we don't know exactly what the depth of the Lewis Shale is there, but we anticipate it would be about 1,100 feet. We would set the casing well under the Lewis Shale, we will cement that to the surface.

Of course, we'll run a cement bond log of that, and then we'll drill out of that surface casing and drill down to the injection zone.

Before we get to the injection zone, we intend to core approximately 40 to 60 feet of that injection zone with a traditional core.

And then we will also core in the injection zone itself with both maybe traditional core, maybe sidewall core, so we can do the permeability testing of both the Caprock and of the injection zone to assure us, one, of the quality of the reservoir, and two, of the quality of the Caprock.

As I mentioned, this production casing here at where we straddle the zone that goes to the Caprock and

into the injection zone, we would put in two joints of this corrosion resisting alloy production casing, and that's what will anchor the packer into -- which is anchored right here. And our tubing then stabs into that packer and the injection takes place below this zone.

HEARING EXAMINER: Are you going to run a logging sweep in the injection zone?

THE WITNESS: Absolutely. We're going to run actually a logging sweep through the whole Caprock -- well, through the whole section.

But we will run detailed formation microimaging logs through the Caprock and into the injection zone just like we did at Suggs down in Jal.

It was very useful to us because that formation microimaging log gives you a good idea of any fracturing or any -- It gives you a very detailed strike and dip information, and it's also very good -- we'll run a full sweep of normal porosity and gamma ray, neutron, and all of those kinds of -- basically, a triple platform kind of logging sweep.

HEARING EXAMINER: Yeah. And I think normally -- You're going to use some kind of cement that is not susceptible to corrosion there and you are going to cement all of your strings to this --

THE WITNESS: That is correct.

HEARING EXAMINER: It needs to be designed to withstand that corrosion --

THE WITNESS: Absolutely. It's actually less important in this installation than it was in the Subbs installation, because the Subbs installation, we were injecting a combination of gas and waste water.

But you're absolutely right, I mean, once the -- Actually, the beauty of the deal is that once this gas gets into the injection zone, the injection zone is a saline aquifer right now, so then that's where we create that corrosion. So that's especially important in cementing this production string, so we would be doing that there.

But, you know, the beauty of that is that once under the kind of pressure that -- that normal lithostatic pressure that the Entrada is under there, that gas goes into solution in that saline aquifer and it doesn't come out as a gas phase, it goes into solution and makes it less likely to go anywhere other than in the injection zone.

HEARING EXAMINER: Are you also going to use fiberglass tubing?

THE WITNESS: We would use probably a teflon liner.

HEARING EXAMINER: Or nickel?

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THE WITNESS: Yes.

Q. And Mr. Gutierrez, before you leave here, if you could talk about why the surface casing was set at the depth -- why you're proposing to set the surface casing at the depth you are.

A. Well, we've got a great formation in the Lewis Shale there that is, like I say, deeper than we normally would set the surface casing. But we feel very comfortable that if we set it in that Lewis Shale, that provides an added measure of protection to the mine workings of BHP, which my understanding is, don't extend beyond that approximately 500 or 550 feet of depth in the area.

And we've got -- we don't have very deep groundwater in the area. The deepest well water runs about 150, and that's well below that zone as well.

Okay, so let's take a look at the water wells in the area of review. There are a whole series of -- These little triangles you see up here, these are water wells that BHP has installed for mine dewatering. Those are not potable water wells, but they are water wells nonetheless.

Those are relatively shallow wells. And then we have -- But the only domestic wells we have are these six wells that are shown in this area down approximately three-quarters of a mile away from the facility. The

deepest of these wells is 150 feet. And as I mentioned, we are way below that.

We're injecting at depths of 6,700 feet, and we've got our surface casing set to 1,100 feet. So those wells will be well protected.

Okay, so let's summarize. What are the geologic factors that make us comfortable about the integrity and safety of this project? There's no significant structure offsets or discontinuities in the geologic section. We feel very comfortable on that based on what we have seen of the geologic data in the area and what we understand of the regional geology there.

The Caprock and the Wanaka are low porosity siltstone and recrystalized limestone which will provide a direct effective barrier above the injection zone. We also have an overlying Jurassic and Cretaceous section to the Lewis Shale that's over 5,000 feet of low permeability shale and mudstone with some interbedded sandstones which effectively add to the isolation of BHP's mine workings and surface water and groundwater resources in the area.

The Caprock integrity will be confirmed with detailed logging and coring as I explained earlier.

And by the way, one of the things that the BLM -- as you mentioned, Mr. Hearing Officer, the BLM wrote us a letter and they said they were supportive of

the project, they just wanted to confirm with this logging effort that there were no hydrocarbon resources in the Entrada.

This is a case where I want Anadarko not to make a discovery in the Entrada. The proposed injection pressure is well below the fracture pressure of the reservoir.

That calculation has been done using strictly OCD's formula for calculating that, and that's laid out in the C-108. And I think our actual calculation based on our presumed depth of injection was 1,984.6 PSI as grounded into 1,985.

Obviously, that would vary depending on exactly what depth we find our injection zone when we drill the well. The injection history of the saltwater wells in the Entrada formation outside of the area of review demonstrate that it is a closed system as well as the work that we've done with looking at the formation fluid in both that and upper formations.

HEARING EXAMINER: Before you go from that, you're asking for 1,985. I looked at your calculations and they say you're using 1.04. How do you come about with that?

THE WITNESS: That's the same value that we have used -- that we discussed with the Division when we did

the Linum well, which was also a dry gas injection, because since it's dehydrated gas, it's slightly lighter than water which is the --

HEARING EXAMINER: Yeah. If you use a different gradient than the 1.04, that makes a whole lot of difference in the calculations.

THE WITNESS: But most of the water that we have overlying it is basically saline water, so that's why we're using the 1.04 for.

HEARING EXAMINER: Okay, but you still use a gradient of 1.04 to --

THE WITNESS: Yes.

HEARING EXAMINER: Because that's why I was wondering. If you use 1.04 as your gradient, then it should be 1.0. But you're right, if your saline is --

THE WITNESS: Right.

HEARING EXAMINER: Okay.

A. There are no wellbores that penetrate the injection zone within the one mile area of review.

Then let's talk about the well design factors that assure the integrity and safety of the proposed project.

Number one, the well design, which we just discussed in detail, I'll just summarize here, we're going to set the surface casing in the Lewis Shale to about

1,100 feet. That's 500 to 600 feet below BHP's workings in the Fruitland, and about 800 feet below any domestic water wells in the area that we show those five wells.

Production casing will be set within the surface casing and cemented to the surface with CRA joints at this base. And as we talked about with that Halburton cement, which is actually quite a pain operationally to do, but it does provided some measure of added safety, and that is a good thing in these kinds of wells.

The cement bond logs, obviously, we will be submitting to the Division for their inspection and review to assure that the bond between the surface casing and the formation and the production casing and the formation is adequate.

The corrosion resistant teflon tubing will be used inside the production casing. It will be stabbed into the corrosion resistant packer and the annular space will be filled with diesel and will be monitored for pressure to ensure that if there is a tubing leak, we can know immediately and it won't affect the production casing.

This is a proven technology. Similar designs are already implemented without any leakage problems in similar and deeper zones in southeast New Mexico, Texas, and in Alberta for many years, including three similar

operations at depths of 5,000, 9,000, and 11,000 feet respectively that we've permitted and have been completed and are currently being operated in southeast New Mexico.

Okay, so finally, the C-108 requires notice of adjacent operators and surface owners. Mr. Hearing Officer, as you're well aware, while the Division's rules really call for only a half mile circle for AGI wells, we've always used 1 mile.

And so, it's the same practice we did here, we noticed all of the operators and surface owners within that 1 mile circle.

We put the C-108 application on a website, and in that notice to all of the owners, we provided a link to that website which also had the Rule 11 Plan, the original plan that we had submitted that the Division asked us to revise and to significantly change. And then when we did that, we posted that plan to the website as well so it would be available for review.

And we had a number of people that called and talked to us and asked questions, and we dealt with those primarily early in the summer.

The surface owners and operators confirmed receipt of notice, and the application link -- and this is included in an exhibit that we will present here shortly, and the notice was published in the Farmington Times as

required by the OCD, both in English and Spanish.

And the adjacent operators obviously support the project for many of the reasons that Mr. Johnson laid out in his testimony. They got shut-in production they'd like to get produced.

And so to go over in summary what we did, the project, I think, has some real benefits to the state of New Mexico and to the environment because of sequestration of CO2.

And frankly, I think this Division should be patting itself on the back, because through the permitting of these wells, New Mexico has really become a pioneer in this whole area of C02 sequestration associated with this acid gas injection, and it does provide significant amounts of greenhouse gases that are currently being released into the atmosphere from being released into the atmosphere.

Subsurface features, such as BHP's mine workings and the nearby water wells and surface water will be protected by the well design and geologic factors that we discussed earlier.

The AGI project reduces waste and potential air emissions by taking this ancient SRU out of service. The antiquity of the target reservoir has been well demonstrated by our geologic investigation and by the long

injection history in these wells that are outside the of area of review.

The final Rule 11 Plan for this proposed AGI at the 3.8 million cubic feet acid gas per day has been approved by the OCD and is fully protective of the exposed public areas at the surface.

And the C-108 application details all the information I think necessary for the Division to evaluate and approve the installation of the AGI well. And the adjacent operators support the project, and surface owners have all received proper notices.

So with that, that concludes my presentation.

Q. Thank you, Mr. Gutierrez. And as you heard, the Hearing Examiner has obviously reviewed the C-108, but if you would, for the record, identify what we've marked as Exhibit No. 1 and give us a brief overview of how you structured this document?

A. Sure. This is the C-108 application. As the Division is well aware, Mr. Hearing Examiner, the C-108 is actually just a two-page form, however, there is no way to include all of the relevant information that you need to make a decision in that form.

But what we do have is, behind the cover page, we have the C-108 form, and then each of the questions on the form where the information that addresses that

question is laid out is indicated on the form and refers to the actual document, the C-108, which is divided into seven sections.

And as you can see on the table of contents there, the first is a summary, the second, just an introduction and organization of the application.

The third deals with the proposed construction and operation of the well. There is where you have the pressure calculations, et cetera.

The fourth is the detailed geologic assessment. The fifth, the analysis of the oil and gas wells and other plugged and water wells in the area of review.

The sixth is the notice requirements. The seventh is an affirmative statement that there is no hydraulic connection between the injection zone and overlying fresh water sources.

And that's basically the application.

Q. Mr. Gutierrez, if you would please turn to the figures section and turn to Figure 2 in the C-108, this is a slide you reviewed in your presentation. I'd just like you to highlight a few things. Have you found that document?

A. Yes.

Q. Okay. You outlined for the Examiners the location of the proposed well and compressor facility in

relation to the existing SRU. Could you explain for the Examiners why that location of the well -- if you could expand on why that location was picked for the well.

A. Yes. If you look at Figure 2, you can see that right now there is a low pressure acid gas line that goes from approximately where the aiming unit is, which is near where the proposed compressor facility is, up to the existing sulphur recovery unit.

And that line would now be modified so that -- and this is only intended to be a schematic. I mean, the actual connections will be developed when the surface facilities are designed.

But essentially, the concept is that we would -- what we're trying to do basically by the location of the well is have it far enough away from the tail gas incinerator and from the rest of the plant that we can safely drill the well and conduct any operations at the wellhead that need to be done periodically during completion of the well and also future servicing of the well.

But at the same time, we want to minimize the distance of the high pressure acid gas line that goes from the facility to the well itself. And so, it's a balancing of those factors.

Q. Thank you. And also in your presentation, you

mentioned that one of your criteria for the well and for the proposed injection zone, you're looking at an approximate life span of 30 years. Is that what you expect the life span of this project to be?

A. That's kind of the planning horizon. There's nothing in the design of the well or the system that makes me think that it couldn't last significantly longer than that, but that's kind of the design life we worked with.

HEARING EXAMINER: Thank you for asking the question. Why did you pick 30 years?

THE WITNESS: You know, I don't think I have a good answer for that, Mr. Hearing Examiner. I think we have typically -- That ends up being the horizon, the planning horizon for most of these kinds of projects.

I mean, certainly it is an expression of how long we feel the viability of the plant is certainly assured for that time period.

So we want a minimum of that kind of life span available for injection of the well, and we wouldn't want a reservoir that we would have a problem that would pressure up within a few years and have a significant investment that we wouldn't be able to continue injecting over a longer period of time.

I'm just saying, you know, whether it was 30 years or 35 years, I mean, that's just typically the life

span that we look at.

Q. But is the intent of this project -- and I think you discussed this in your presentation -- for permit sequestration of the acid gas?

A. Oh, yes, absolutely. We anticipate that the -- we feel very comfortable based on the geology that -- and in fact, in order to get the carbon credits certified, you ultimately have to convince an independent verifier of those carbon credits that you can essentially, permanently sequester that C02 in that geologic zone.

So we feel comfortable that we can do that within a geologic time frame.

Q. Thank you. I'd like to just highlight a few things from your presentation and follow up on a few things in the C-108 application that I don't believe were covered.

If you could remind us, what is the average in maximum injection pressures that have been proposed in the application? And perhaps you could indicate for the Examiners where that's located in the C-108, if you would, please.

A. Yes. As the Hearing Examiner noted earlier, he's obviously looked at that calculation in here, but that calculation is shown on Page 4. We anticipate that a maximum injection pressure would be about 1,985 PSI, but

based on what we've seen and the performance of existing injection wells in the Entrada outside of this area, we would anticipate 1,900 pounds would be an average kind of injection pressure.

Q. And if higher pressure is needed, will Anadarko justify that higher pressure with a Division witness step-rate test?

A. Absolutely.

Q. And do you plan to inject under pressure or by gravity?

A. It will be under pressure. We need to first make sure that the acid gas stays in a supercritical phase, and that has to be done under pleasure.

HEARING EXAMINER: Are you asking for 1,900 or 1,985?

THE WITNESS: 1,985 is the maximum that we're asking for.

HEARING EXAMINER: So you're asking for 1,985?

THE WITNESS: That is correct.

Q. Mr. Gutierrez, have you provided an expected fluid composition of the fluid to be injected?

A. Yes, we have. That fluid composition is essentially 90 percent C02, 10 percent H2S, and some trace C1 through C7 hydrocarbons.

Q. And if you would please refer to the C-108 --

and I know you touched on this in your presentation, but because of the importance of it, I'd just like you to review for the Examiners the groundwater hydrology in the area.

A. Sure. That is discussed in Section 4.5 of the application along with a list of the wells that is included in Appendix A2.

We identified seven domestic wells that are all completed within shallow sands of the Kirtland and Fruitland formations. The deepest of those extends to only 150 feet in the area.

There is also, in the southern portion of the area of review, there is this Farmer's Mutual Ditch, it's an irrigation canal, and that's only a depth of 8 to 10 feet surface water.

Q. And based on your review, what conclusions can you reach about the hydrology of this area?

A. Well, there are, you know, limited water resources in these shallow zones, they can produce some pretty good water, but the well design in the injection zone -- and in particular, the well design and the surface casting we feel will more than adequately isolate these zones.

As a matter of fact, if you look at surface casing for most of the oil and gas wells that are

completed in this area, it's significantly less surface casing than we're proposing here.

Q. And in your opinion, will the injection of acid gas pose a threat to any fresh water resources in the area?

A. No. I'm convinced that it will not.

Q. And based on the result of your examination of available geologic and engineering data on this reservoir, have you found any evidence of open faults or other hydrologic connections between the injection interval and any underground source of drinking water?

A. Absolutely not. As a matter of fact, I haven't found any evidence of that kind of structural discontinuity even well below the zones where drinking water or domestic water exists.

Q. And did you make that affirmation in Section 7 of the C-108?

A. Yes. It's on Page 14, Section 7.

Q. And you also discussed this in your presentation but I'd just like to highlight this for the Examiners, what is Section 5 in the application?

A. Section 5, gives the details of active oil and gas wells and plugged wells in the area. There's very few, as I mentioned, and there are three plugged wells in the area, and the full plugging information of those is

included in Appendix B.

Q. And after you reviewed that data, are you now satisfied that there is no remedial work that is required on any of these wells to enable Anadarko to safely operate this project?

A. Yes. And primarily, that's because all those wells are thousands of feet above completed -- above the injection zone, none of them penetrate or even get close to the injection zone.

Q. And is this the expansion of an existing project?

A. No, it's not, it's a new project.

Q. What is the status of the land on which the well will be drilled?

A. Anadarko owns that land.

Q. And what is Appendix E to the application?

A. Appendix E to the application was the original hydrogen sulfite contingency plan that we submitted along with the application which has been superceded by the work done in conjunction with Mr. Jones of the Environmental Division of the OCD with the other Rule 11 Plans.

Q. And as far as you know, has the OCD indicated its approval of that Rule 11 Plan?

A. That is my understanding.

Q. Does Anadarko have an approved bond for the

well?

A. No, we do not. We will obviously get a bond prior to obtaining a drilling permit for the well. But, you know, since we don't have an order yet or even applied for a drilling permit, we don't have a bond yet.

Q. If you could please turn to what's been marked as Anadarko Exhibit No. 2 and identify and review this packet for the Examiners.

Mr. Gutierrez, I believe you already indicated in the C-108 that the list of affected parties as defined by Division rules is included in the appendix to the C-108, so what is the packet that I've given you?

A. It includes that same list, which is Table B-1. It has all of the surface owners. It is a five page list of all of the surface owners, their names, addresses, et cetera, within the area of review.

And that is followed by a copy of essentially the letter that was sent to each and every one of those surface owners, followed by a copy of the affidavit of publication of the notice in the Farmington Daily Times, and then followed by all of the return receipts and copies of the signed green cards that we got back from all of the noticed parties.

Q. And just because I like to point these things out for Mr. Brooks, is Appendix C the list also of the

operators and leases in the area of review?

A. Yes.

Q. As well as the list of operators, the names and addresses that's in the C-108?

A. Yes, that is correct.

Q. And Mr. Gutierrez, what is Exhibit No. 3?

A. Exhibit No. 3 is just a copy of the two slides which we showed. I wanted to highlight these because they were not included in the C-108, but it was just a summary of all the factors that -- the geologic factors and the actual well design factors that assure us of the integrity and safety of this project.

Q. Thank you. Finally Mr. Gutierrez, in your opinion, will the granting of this application be in the best interests of conservation, the prevention of waste, and the protection of correlative rights?

A. Yes. And in addition, I think it will be a very good thing for the environment because we'll have that much less CO2 put in the atmosphere.

Q. And will it also protect human health?

A. Absolutely.

Q. And were Exhibits 1 through 3 either prepared by you or compiled under your direct supervision?

A. They were.

MS. MUNDS-DRY: Mr. Ezeanyim, I'd move for the

admission of Exhibit 1 through 3 into evidence.

HEARING EXAMINER: Any objections?

MS. ALTOMARE: My only objection would be that I would ask that Anadarko supplement Exhibit 1 by submitting the updated version of the contingency plan in the proposed amendment to the contingency plan so that Appendix E is complete in its entirety so that the superceded version of the Rule 11 Contingency Plan is complete and updated.

MS. MUNDS-DRY: We can certainly do that, and that's why we wanted to mention that the Appendix E was an outdated version as it was submitted to the Division. So we would certainly do that.

HEARING EXAMINER: Any objection?

MR. BROOKS: No objection.

HEARING EXAMINER: Okay. So without further objection, Exhibits 1 through 3 will be admitted into evidence. Now, cross-examination?

MS. MUNDS-DRY: Yes, that concludes my examination of Mr. Gutierrez.

HEARING EXAMINER: Mr. Bruce?

MR. BRUCE: Mr. Roybal has a few questions for the witness.

HEARING EXAMINER: Excuse me, before you do that --

MR. BROOKS: Is Mr. Roybal in-house counsel as a --

MR. BRUCE: He is in-house attorney for BHP Billiton.

MR. BROOKS: Okay, that will be acceptable. Go ahead.

HEARING EXAMINER: I'm sorry. I'm not an attorney so I needed to clarify that. Go ahead.

MR. ROYBAL: Mr. Hearing Examiner, I'm Charles Roybal. I'm in-house counsel for BHP Billiton and San Juan Coal Company. My office is in Farmington, New Mexico.

HEARING EXAMINER: Thank you. Go ahead.

CROSS-EXAMINATION

BY MR. ROYBAL:

Q. Looking at the Entrada disposal, I just have a couple of details to enquire about. How long have the wells been injecting?

A. I don't know the exact number of years, I think probably in the order of about 10 to 12 years.

Q. And what are the injection volumes?

A. Let me look. I don't know if we have that in the C-108, but as I recall, they are on the order of a couple thousand barrels a day.

Q. And do you have any idea of a total volume to

date for those wells?

A. I don't. Although, I believe that they have injected well in excess of a couple million barrels each, but I don't have the exact numbers off the top of my head.

Q. And how about the maximum pressures in the wells?

A. Well, those wells have been -- You know, they're deeper, but the maximum pressures have been running in the -- about 2000 PSI, I think. And actually, I think, some of them are less than that. But those wells are deeper in the section so the pressure is a little bit higher.

Q. Shifting over to your Rule 11 Plan, I was a little confused about whether we were talking about a 3.8 million input or -- at one point we were discussing 5, I think?

A. Right. As I mentioned, what we are requesting is that the well itself be approved to take up to 5 million cubic feet a day of acid gas, but in order to get beyond 3.8 million, 3.8 million is what our Rule 11 Plan covers currently.

So if we were able to inject additional amounts, we would have to go back to the Division first and get a new Rule 11 Plan approved for that higher level. But what I was looking at was the subsurface capability of the well

would be within the 1.5 to 5 million range.

MR. ROYBAL: Those are all my questions, Mr. Hearing Examiner.

HEARING EXAMINER: Thank you. Ms. Altomare?

CROSS-EXAMINATION

BY MS. ALTOMARE:

Q. I just want to clarify one thing for the record. It's not a huge thing, but I know everybody gets the Environment Department and our Environmental Bureau a little confused.

And just to be clear on the record, the individuals with whom Anadarko worked with to be sure that the revised version of the Rule 11 Plan met all regulatory requirements was the Environmental Bureau with the Oil Conservation Division; is that right?

A. Yes. That's Mr. Jones and Mr. Von Gotten.

Q. Correct. I just wanted to make sure because there's a lot of confusion between -- because there's a lot of throwing around of the word "environmental" and it gets confusing.

HEARING EXAMINER: That's a good point.

Q. Just for the record, I wanted to be sure we were all on the same page with whom you were working to make sure that all came to fruition. So I think that that's all I have. So thank you.

HEARING EXAMINER: Any redirect?

MS. MUNDS-DRY: Nothing further.

MR. BROOKS: Mr. Gutierrez, as I understand, Exhibit 2 concerns only the surface owners that were notified, correct?

MS. MUNDS-DRY: Mr. Brooks, it's a little confusing, but it contains both the green cards for the operators and surface owners.

MR. BROOKS: Okay, so it contains a list only of the surface owners?

THE WITNESS: That is correct.

MR. BROOKS: But it contains the certified mail receipts for both the surface owners and the mineral owners who were notified?

THE WITNESS: The operators and leasees.

MR. BROOKS: Right. I was using mineral owner in the term instead of just an owner in the interest of the minerals and not in terms of mineral fee owners.

THE WITNESS: Yes.

MR. BROOKS: Okay. Now, with a list this long, it would surprise me if you got signed receipts for delivery from every person on the list; would that be accurate that there are not --

THE WITNESS: That is correct. We got about 90 percent of them back. We also have in this Exhibit B,

there are a number of notices -- The last 11 or 12 pages that have two or three entries each that show where the -- for some reason, it was either unclaimed or returned and it's a copy of what we got back from the post office.

MR. BROOKS: Yeah, that would be a copy of the outside of the envelope. I see there are a number of those here.

THE WITNESS: That is correct.

MR. BROOKS: And you would be relying then upon the published notice, the affidavit of published notice for service of notice upon those persons who you did not get return receipts from?

THE WITNESS: That's correct. I mean, unfortunately what happens too many times with these things, Mr. Brooks, is that, you know, people get a certified letter, and for whatever reason they don't know it's coming and they don't want to even open it. So they end up refusing delivery of it or whatever and -- but we do the best we can.

MR. BROOKS: Or the notice is sent to them and it's delivered to them when they're not present and they simply never come to the post office to claim it?

THE WITNESS: That's correct.

MR. BROOKS: I'm familiar with that issue. Okay, I think that clarifies the record. Thank you.

MR. WARNELL: Mr. Gutierrez, if you could go to Exhibit 4 of the well sketch of the AGI, you talked about cutting the core?

THE WITNESS: Let me get to that figure. Okay.

MR. WARNELL: You talk about cutting cores, either conventional core or wire line core. Could you tell me a little bit more about the coring that you anticipate in that area and the depths?

THE WITNESS: Yes, sir. We anticipate that we will reach the top of the Entrada at approximately 6,515 to -- basically, about -- let's just say about 6,500 feet. It's our intent to begin -- we would probably begin coring -- our goal would be to try to begin coring approximately 60 feet -- conventional core about 60 feet above that contact.

So, we would like to get at least 30 or 40 feet of really good conventional core out of that Caprock. And then we probably would core into the injection zone for some distance. And then we typically will drill on through the injection zone and run our open-hole logs and our formation microimaging log.

And then based on that, we would then run wire line for sidewall coring in the zones that look particularly interesting in that injection zone.

MR. WARNELL: Okay. What's your experience with

full core versus the sidewall cores?

THE WITNESS: Well, you know, it really depends on the zone that you're coring in. Obviously, a full core is a lot nicer because it allows you to do a better kind of permeability testing especially if we -- one of our primary motivators is probably overkill for strict evaluation of the Caprock for normal injection purposes.

But for the requirements that are coming down the pipe with respect to certifying the carbon credits for a permanent sequestration of CO2, we feel it's important to have a better core.

And we can run like actual acid gas permeability tests in that core, and for that purpose, the conventional core is a little better.

Sidewall core -- you know, interestingly enough, the last time we did this, it was in a zone that was basically a dolomitic limestone and we got pretty good recovery on those sidewall cores.

But sometimes in a zone like the Entrada, we may not do that well because it's a sandstone and it can be pretty friable. So typically what we will do is core some way into that and try and get some conventional core.

But then the advantage of -- you know, it's kind of like you pays your nickel, you takes your chances. You really want to put down the log to be able to identify

what are the areas you're most interested in coring.

But then obviously, by the time you've done that, you can't take a conventional core anymore and all you can do is a sidewall.

But typically, you know -- obviously, our recovery is a lot better with a conventional core. But we've gotten some pretty good sidewall cores. And we typically will run maybe 30 of them on a wire line and you get maybe 20 decent ones back.

MR. WARNELL: And you'll send that off to a lab to be evaluated and --

THE WITNESS: Yeah. We'll do thin sections, we'll do, you know, standard core permeability analysis. And typically, as the Division knows and as Mr. Ezeanyim knows, when we complete one of these wells, we put a pretty comprehensive -- Like for the Southern Union well, it ended up being about this big well completion document that transmits to the Division all of the logs, all of the core data, the photographs of the core, the thin sections, all of the permeability testing and everything else associated with that.

MR. WARNELL: One of the things in that report would be not only the permeability but an RW?

THE WITNESS: That's correct.

MR. WARNELL: I'll be anxious to see that.

Thank you. I also was just wondering here about the contingency plan. The letters that Richard referred to that we got from the concerned citizens around Kirtland, they all seemed to have a common thread through them. They're concerned about no contingency plan or a lack of a contingency plan. So I got the feeling looking through those letters that they're under the belief that there is no contingency plan.

THE WITNESS: Well, when we started out in this process and we submitted the draft, what we called the Rule 118 Plan, which was the formal rule for a contingency plan, we became aware through that process from the Division that they did not have on file an approved contingency plan for the facility.

And that matter was what we rectified in our original -- we identified that in the original meeting they had prior to when the hearing was scheduled, and that's what we worked with with the Environmental Bureau of the OCD to rectify.

So there is currently an approved Rule 11 Contingency Plan for the facility as it is operating today in place, and that has been approved. It was approved in September.

And there is a plan that has been submitted that would be for the proposed acid gas injection operation at

the 3.8 million level that the Division has reviewed and approved in October.

HEARING EXAMINER: I think what Terry is asking is what I mentioned before. I know you have the correct contingency plan Rule 11, but the citizens out there don't. And that's what they're looking to -- They're asking what are the contingency plans in case you have upsets or an emergency.

So you may have stated them to the Environment Bureau of the OCD, but the citizens out there don't know that. So that's what I think he's asking because of what we're seeing in the letters we've received that say that you are the OCD, what are you going to do.

For example, what if there is an upset on Christmas day or something like that, who is going to take care of that? That means they don't have the training or they lack the knowledge or are ignorant of what's going on.

That goes to what I said before that the operator needs to do some training when they do this so that people understand.

THE WITNESS: And that's a point well taken, Mr. Hearing Examiner, and part of the Rule 11 Plan includes training requirements.

And I don't know if that's something that

Mr. Jones is going to talk about, but part of that is included and we anticipate doing that type of training for all of the people that are affected in that plan.

MR. WARNELL: I have no more questions.

HEARING EXAMINER: Okay, I think I got a letter that I need to address here because I think -- Okay. All right, let's go back to the area of review. The area of review was -- you have nine of them, and none of them penetrate the injection zone; is that right?

THE WITNESS: That is correct.

HEARING EXAMINER: But you still gave us information on them so that we can evaluate them?

THE WITNESS: Absolutely. It is included in the C-108 in Section 5.

HEARING EXAMINER: Okay.

A. Just to clarify, there are six wells that are operating currently and three that are plugged.

HEARING EXAMINER: And those plugged wells, you gave us the schematics?

THE WITNESS: That's correct.

HEARING EXAMINER: Okay.

THE WITNESS: And just as a further point, Mr. Hearing Examiner, I'd like to refer you to Page 11 in the C-108, because I think it's important to note that of the wells that are in the area of review, the majority of

the wells extend only into the Fruitland formation with one exception, which is this saltwater disposal well in the Menafee formation.

So you can see that most of those wells really don't even get to the depth of what would be our surface casing. There is only this saltwater injection well that injects into the Menafee which is completed at a depth of 3,420 which is located right adjacent to the plant. And that is the deepest currently operating well in the area.

There is a plugged well in the Gallup formation about a little over six-tenths of a mile away, and then two plugged wells in the Fruitland formation.

HEARING EXAMINER: Okay. So you're going to do a conventional core and a full-size core because we need to know what would happen and where the Entrada is?

THE WITNESS: Yes, sir.

HEARING EXAMINER: And you said there is no hydrocarbon production as far as you know today that would compromise that injection zone?

THE WITNESS: That is correct. Of course, we will be confirming that during drilling.

HEARING EXAMINER: On the outside -- I'm talking about the construction of the injection well. Now, on the back side, you're going to have diesel, right?

THE WITNESS: That's correct.

HEARING EXAMINER: And that will have to be monitored continuously?

THE WITNESS: Absolutely. That diesel will be -- that outside annular space is completely sealed, and then we have a pressure monitor in there. So it should essentially be at zero pressure all the time.

HEARING EXAMINER: And you understand that an MIT should be conducted -- apart from initial MIT, an MIT should be conducted every two years?

THE WITNESS: That's the normal condition that we see on those orders, yes, sir.

HEARING EXAMINER: And your one safety valve will be at 250 feet?

THE WITNESS: Yes, sir.

HEARING EXAMINER: Now, talking about preserving the environment, your tubing, you say, is not fiberglass. What is it made out of?

THE WITNESS: It will be a teflon lined steel tubing.

HEARING EXAMINER: Okay. And your packer will be of the same material?

THE WITNESS: No, the packer will probably be ink alloy corrosion resistant packer.

HEARING EXAMINER: Okay. And the gas is .8, is that correct, the gas range, the specific gravity of the

gas?

THE WITNESS: Point 8, yes.

HEARING EXAMINER: And what did you say the depth of the nearest fresh water is in the area?

THE WITNESS: Well, there's probably some fresh water also in the Fruitland formation, but in terms of the domestic wells in the area, the only free water that's being used is at a maximum depth of 150 feet.

And that's seven wells that are located to the southeast of the facility, and they are shown on Appendix A2. A1 has the water quality data.

And A2 is a map in there. And it shows basically -- Figure A1 shows those wells, and that's the figure I showed in my presentation.

HEARING EXAMINER: Okay. Which water did you analyze?

THE WITNESS: The water analyses, we did not take samples of the water, what we did was -- we did not see any analyses in the state engineer's records, so what we did was, there were some water analyses that were taken during the preparation of the discharge plan removal for this facility in 2006.

And those are shown from the daily well which is the only water well in the area that wasn't located downgradiant from the facility. And the average TDS for

those was about 2,700 to 4,500 milligrams per liter. So it's pretty salty fresh water.

HEARING EXAMINER: Okay. What kind of logs are you going to run there, injection testing, neutron, is that what you're going to --

THE WITNESS: No, it's the whole platform.

HEARING EXAMINER: CDL too?

THE WITNESS: Yes.

HEARING EXAMINER: And your cores, conventional?

THE WITNESS: Yes, sir. And the formation microimaging log.

HEARING EXAMINER: Okay. Did you try to calculate some -- you were talking about 30 years?

THE WITNESS: Yes, sir. That's shown in the C-108 application on Figure 13. We calculated it both at the basically low ended, the 1.5 million cubic feet a day, and the 5 million, with some safety factors.

HEARING EXAMINER: What do you use as a safety factor?

THE WITNESS: It's about a 50 percent safety factor; 46 percent or so. And what we've got here, if you look at Figure 13, we anticipate a radius -- at the actual planned injection rates, we anticipate a radius -- my guess would be somewhere on the order of a thousand feet or so and would encompass approximately 80 or 90 acres.

HEARING EXAMINER: Let's talk about this Rule 11 Plan that authorizes 3.8 million a day, but you're asking for 5 million a day. Can you tell me again what you need -- what you are requesting and based on what information?

THE WITNESS: Yes, sir. Our original application was -- and what Anadarko is looking for is the flexibility to -- You know, at the current operation, if they were to put in the well today, they would be basically injecting about a million and a half cubic feet a day. So that was the low end of what we were asking for.

Then the high end is 5 million cubic feet a day, and that's what we anticipate would be the maximum capacity of the plant.

But in order to reach that capacity, there would probably be some significant plant changes that would have to be made beyond just associated with the injection well, just for the aiming unit and some other things like that.

So the maximum capacity that the plant that we think that it could do the way the bulk of the plant is structured now is the 3.8 number. So that's what we foresee as the most likely injection rate for the near term.

But at some point in the future, Anadarko may

wish to expand that depending on, you know, a lot of things, like gas prices and how much drilling and how much gas is available, and we would like the flexibility to use this injection well to dispose of up to 5 million.

But of course, that presumes we would go back to the Environmental Bureau of the Division and get a Rule 11 Plan that would be appropriate for that level of injection.

HEARING EXAMINER: You're trying to see how we could do that. If this application is approved -- I don't know, you want to get approved for 5 million now, so that whenever all those changes you make in the plan occur, you can go back to the Environmental Bureau and get permission to go up to 5 million without coming back to amend this permit in case it's approved; is that right?

A. That's correct. And my suggestion -- I guess this is probably more for the lawyers, but my suggestion would be, just like there are many conditions that are put in the order, like limiting the maximum pressure and everything else, that there could be a condition in the order that would say that for an injection rate above 3.8, that we would have to come back to the Division before injecting and get an approved Rule 11 Plan for that injection rate.

HEARING EXAMINER: Okay. When you say go back

to the Division, how do you intend to do that, just go back to the Environment Bureau without conducting a hearing?

THE WITNESS: Well, Rule 11 Plans don't require any public notice or hearings, so we would just go back to the Bureau.

HEARING EXAMINER: I just wanted to make it clear.

THE WITNESS: Yes.

HEARING EXAMINER: Okay. Could you talk to me about the compression facilities that you use to complete this gas before it goes ahead, the compression facility -- I know you showed it there, but I need you to talk more about completion.

THE WITNESS: Right. Probably I'm not the best person to talk about that. My responsibility ends at about the surface of the earth and mine goes below that.

The compression facility, to my understanding, has not been designed yet, but I think there may be some Anadarko personnel in here that could speak to that more accurately than I can.

MS. MUNDS-DRY: And Mr. Ezeanyim, as I mentioned, we do have an engineer manager here. If you'd like to talk about that in more detail, we could call him and you can ask him questions.

HEARING EXAMINER: Okay. Let me finish. I just want to see what's happening with the compression facility. But let me finish with what we have here. I'm done with you then. Any other questions for him?

MS. MUNDS-DRY: I did have one quick question related to your questions on Rule 11.

REDIRECT EXAMINATION

BY MS. MUNDS-DRY:

Q. Mr. Gutierrez, when we receive the approved plans from the Environmental Bureau, did we post those anywhere for the public to view?

A. We did, we posted them on the same website where we posted this. We replaced that. In effect, when it was requested that Appendix E be replaced, we already did that on the website back on September 17th.

Q. An amended plan, when was that posted for the well site?

A. I think October 6th or 7th.

MS. MUNDS-DRY: I have nothing further for Mr. Gutierrez. Would you like us to call Mr. Marques to discuss --

HEARING EXAMINER: Yes, briefly.

TONY MARQUES,

the witness herein, after first being duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. MUNDS-DRY:

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

A. Anthony David Marques.

Q. And Mr. Marques, where do you reside?

A. Woodlands, Texas.

Q. And by whom are you employed?

A. Anadarko Petroleum.

Q. And what is your position with Anadarko?

A. I'm manage Southern Region Midstream Engineering.

Q. And are you familiar with the C-108 application that's been filed by Anadarko?

A. Yes.

Q. And are you familiar with the gas operations at the San Juan River Natural Gas Plant?

A. Yes.

Q. And have you testified before the Division previously?

A. No, I have not.

Q. Could you please briefly review your education and your work background for the Examiners?

A. I'm a 1978 graduate of the Colorado School of Mines with a Bachelor's of Science in Chemical and Petroleum Refining Engineering. I have an MBA from the University of Phoenix.

My first job out of college was with Union Carbide Corporation for approximately two years in a petrochemical plant. Since then, I have been employed by Western Gas Resources for Anadarko Petroleum Corporation doing engineering, engineering management work, and natural gas gathering, treating, processing, basically, the full gamut of natural gas facilities-type work from the wellhead through product delivery.

Q. How long have you worked for Anadarko?

A. Since August 2006, I believe.

Q. And what are your duties for Anadarko?

A. I manage the Southern Region Midstream Engineering group.

MS. MUNDS-DRY: We would tender Mr. Marques as an expert in petroleum and chemical engineering.

HEARING EXAMINER: He's so qualified. Thank you for doing that. All of that just to bring you up to ask you a few questions about some of the ins and outs of the construction of the injection well. I want you to tell me about your completion facility, the way you bring the gas and all those things that go into that.

THE WITNESS: Okay. We've completed our preliminary design to the point where we're ready to start writing our AFEs. Basically, we will being taking the acid gas -- roughly 90 per CO2, 10 percent oxygen, hydrocarbons off of the aiming regeneration system at approximately 5 PSIG.

We'll take that, compress it to -- we look at cases that range anywhere from 1,500 up to 1,985 PSIG for the injection pressures.

In that process, we will remove the water -- Well, to clarify, the acid gas, when it comes to compression, is water saturated. As we go through the compression, we are going to be cooling it on the inner stage of each of the five stages of compression. That will remove the water.

The water will be treated and recycled back to the aiming unit to produce our water makeup requirements. We will cool it. I believe it's in between the fourth and fifth stages of compression to get the water content out such that there won't be free water left in the system when we actually go to injection.

There will still be some water in the solution, but because of the properties of the fluid, it won't come out as a free water. That minimizes the chances of corrosion.

HEARING EXAMINER: Okay. And then what is the composition now, H2S, CO2 and other --

THE WITNESS: We've used as a basis 90 percent CO2, 10 percent H2S with some trace hydrocarbons. We've looked at a range of compositions in facility design anywhere from 3 percent H2S up to 10 percent H2S.

HEARING EXAMINER: Okay. So you have from within --

THE WITNESS: Up to the hexanes, heptanes.

HEARING EXAMINER: Okay. Do you do any form of treatment on this gas before injecting it into the formation?

THE WITNESS: The only treating or treatment we do is the innerstage cooling to remove the water instead of a separate dehydration. We've evaluated that and we think that gives us the best operation by cooling the gas to the point where we condense out water instead of having to run it through a separate dehydration unit.

HEARING EXAMINER: Okay. Does anybody have any questions for this witness? Okay, you may be excused. Thanks. Who wants to go next?

MS. MUNDS-DRY: That concludes our presentation.

(Note: A break was taken.)

HEARING EXAMINER: Let's go back on the record and continue Case No. 14329. Ms. Altomare, you may call

your witness.

MS. ALTOMARE: I'm calling Brad Jones.

BRAD JONES,

the witness herein, after first being duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. ALTOMARE:

Q. Can you state your name for the record, please?

A. Brad Jones.

Q. And Mr. Jones, what is your title or position?

A. I'm an environmental engineer for the Environmental Bureau of the Oil Conservation Division.

Q. And how long have you held that position?

A. A little over three years.

Q. And as part of your position with the Oil Conservation Division's Environmental Bureau, did you have an opportunity to review what's been referred to as the Rule 11 H2S Contingency Plan for the Anadarko application in this matter?

A. Yes.

MS. ALTOMARE: And just for clarification for the Examiners, unless it becomes necessary later, I'm presenting Mr. Jones only as a fact witness in the context of what he did in this particular matter, although he does have expertise in the area.

HEARING EXAMINER: Okay. Very good.

Q. Mr. Jones, have you heard the testimony presented so far in the Anadarko matter?

A. Yes.

Q. How did you first become aware that Anadarko was making this application for this acid gas injection well?

A. The Environmental Bureau was approached and inquiry was made to have us look at the plan before the APD was submitted. We were requested to look at the plan to see if it satisfied the requirements of Rule 11.

Q. Okay. And just for clarification on the record, when you say APD, you mean Application for Permit to Drill?

A. Yes.

Q. Okay. And the portion of that APD that you were asked to review was actually what has been referenced as Appendix E to that APD, which is the Rule 11 Contingency Plan; is that right?

A. Yes.

Q. Were you at any point asked to actually review the C-108 application itself?

A. No.

Q. Was the Application for Permit to Drill any part of your consideration within the scope of your job duties?

A. No. The Environmental Bureau doesn't review

those applications.

Q. Okay. What were your initial conclusions upon reviewing the original submission of Appendix E, the H2S Contingency Plan for Anadarko's application in this case?

A. The initial plan had a limited view. It didn't address all the requirements under Rule 11 as in the proper assessment, the radius of exposure, and some of the other general provisions that needed more details. So we asked for additional information to address those concerns.

Q. And was Anadarko amenable to working with the Oil Conservation Division's Environmental Bureau to correct those deficiencies in the originally submitted plan?

A. Yes, they were.

Q. And was a meeting held with Anadarko representatives, Oil Conservation Division representatives, and Anadarko and Oil Conservation Division counsel on June 10, 2009 to begin that process?

A. Yeah. There was an initial meeting based on the initial submittals that we reviewed. And in that meeting, we discovered that Anadarko has a general health and safety plan that includes a lot of H2S provisions and addresses issues beyond health and safety and beyond the H2S part, but include provisions within it. So that

discovery allowed for the generation of the amended version, it's my understanding.

Q. So at that meeting, it was discovered that there was an internal document or plan that was more comprehensive but nothing that had been submitted and approved to the Division, specifically what is now known as a Rule 11 H2S Contingency Plan?

A. Yes.

Q. Okay. After that meeting, did you work with Anadarko representatives to assist in the revisions or as they revised the plan to ensure that they were making revisions that were consistent with regulatory requirements?

A. Yes. Our first concern was to establish a plan for the facility itself, a gas plan which is required. So we used that as a foundation for the amendment for the additional installation of the acid gas injection valve.

Q. So the first step was to establish a contingency plan for the facility as it was operating already?

A. Yes.

Q. And was that accomplished to the satisfaction of the Oil Conservation Division's Environmental Bureau?

A. Yes. I believe we approved the -- the date of the plan was September 17th, I believe, but we didn't get a chance to look at it until the 21st, and we responded to

let them know that we approved that plan.

Q. So as of September 21, 2009, the Anadarko gas facility currently in operation had an approved contingency plan in place?

A. Yes.

Q. And at that time, did you further advise Anadarko that we were still awaiting the proposed amendments relating to their application for the injection well that we are now discussing today?

A. Yes.

Q. At some point, did Anadarko submit an amendment relating to that injection well?

A. Yes.

Q. Did you have an opportunity to review that?

A. Yes. We made a couple of changes in it. I think it was finally finalized -- I'm not sure of the date. I know that version was October 7th, and we may have approved it that same day.

Q. Okay. And when you say that it was approved, do you mean that it met -- according to your review, it met regulatory requirements?

A. It was approved on contingent approval of the permit to drill the well. There are some limitations within it. Since they don't know exactly where the well location is, some of the facility maps will have to be

updated after things are constructed.

But the general approach is to address the actions that you would take based upon certain levels of releases and response-type actions, or things that are addressed inside here that wouldn't be subject to those -- to the installation of the well as it stands now. So you wouldn't have to wait for it. So those things are currently addressed, yes.

Q. Okay. And that amendment addresses updating the plan if the well is approved and drilled and installed as proposed by Anadarko?

A. Yeah. And they're mainly facility maps, equipment maps, safety equipment-type maps.

Q. So in summary, at this point in time, are you confident that both documents, the Rule 11 H2S Contingency Plan that was submitted and reviewed by you on or about September 17, 2009, and the amendment addressing the proposed injection well submitted approximately October 7, 2009, meet regulatory requirements according to your review and your understanding of those requirements?

A. Yes, they satisfy the requirements.

Q. You heard the testimony earlier regarding Anadarko's intentions to later file for a amended Rule 11 Plan if and when it decides to seek permission to go beyond 3.8 million?

A. Yes.

Q. At that point in time, they would require approval of a modified plan; is that right?

A. Yes.

Q. And what would be required of them at that point in time?

A. Multiple things. They would have to reestablish the rates of exposure. With that, there might be steps for their assembly points. Where they're going to assemble during evacuation might be reestablished. Road block areas, notification, identification of parties that would need to be notified if there was a release if they were within that range of exposure, all of those things will have to be reestablished.

The thing I would like to clarify and I think might resolve some issues, is that if this injection well is approved as it is today, the gas plant itself is currently permitted under the Water Quality Control Commission requirements of 20.6.2, that they have a discharge permit.

The inclusion of that gas injection well would need a modification to that permit. They can't do that until they have approval of that well, so they can't pursue that modification.

That rule requires that they provide public

notice for modifications to that existing facility. We consider this well a function of the gas plant, so there will be public notice on this again.

He will look at the gas plant per Rule 11, which is 19.15.11 for hydrogen sulfide gas which includes the smell of the gas plant, addresses the contingency plan, addresses the gas plants themselves.

So part of that submittal would be updating a discharge plan permitted for the gas plant to include this amended H2S plan.

So with that, if they were to increase capacity -- they had already mentioned they're going to have to install additional equipment for that purpose, so at that time, they would have to once again amend the discharge permit which would require notification again, public notice, and at that time would signal us that we would need to request an amendment to the H2S plan as well.

Q. To be clear, at this point in time, if the application for the acid gas injection well is approved and this project moves forward, Anadarko will need to seek an amendment to their discharge permit presently?

A. Yes.

Q. And then in the future, if they do seek an amendment to their H2S contingency plan to go beyond the

3.8 million which would require the installation of additional equipment, at that point in time, they would again need to seek an amendment to their discharge permit at that point as well?

A. Yes. And these permits are issued by the Environmental Bureau. So we would be reviewing those modifications and approving those.

Q. And do you recall what the notice requirements are in those circumstances for modifications of discharge permits?

A. The provision is 20.6.3.108 under the Water Quality Control Commission regulations. I believe that the public notice does require by certified mail one-third a mile from the property boundary in which -- where they determine discharge occurred.

So that would include the facility. So it wouldn't be from the facility boundary, it would be from the boundary of the property in which Anadarko owns. So the third of a mile would start from there.

Q. Okay. Mr. Jones, have I missed anything critical with regard to your interaction with Anadarko over the past several months that you would like to provide testimony regarding?

A. No. I think that covers it.

MS. ALTOMARE: I'll go ahead and pass the

witness.

CROSS-EXAMINATION

BY MS. MUNDS-DRY:

Q. I have one question just to clarify, Mr. Jones. When you said you were approached to review the H2S plan in conjunction with the application for permit to drill, did you mean the C-108 or a C-101, which is a separate form -- an APD, what we call? I just want to make sure.

A. Well, I'll simplify it. The only thing I received for review was Appendix E.

Q. Okay. That helps.

HEARING EXAMINER: Mr. Bruce?

MR. BRUCE: We don't have any questions.

HEARING EXAMINER: Okay. Do you have any?

MR. WARNELL: No questions.

HEARING EXAMINER: Mr. Roybal, your witness?

MR. ROYBAL: We call Steve Bessinger.

STEPHEN L. BESSINGER,

the witness herein, after first being duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. ROYBAL:

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

A. Stephen L. Bessinger.

Q. And your place of residence?

A. Farmington, New Mexico.

Q. Could you state your position, please?

A. I'm the Mining Engineering Manager for San Juan Coal Company. I'm a registered engineer and have a Bachelor's and Master's in Mining from the Colorado School of Mines, and a Doctorate in Mining Engineering from West Virginia University.

I've worked for a number of different enterprises in the coal mining industry. I worked for Consolidation Coal Company in both production and engineering capacities, supervisor in engineering capacities. I've been the engineering manager for the past several years at San Juan Coal.

MR. ROYBAL: We would offer him as an expert witness.

HEARING EXAMINER: He's so qualified.

Q. Dr. Bessinger, could you state your current responsibilities for San Juan Coal Company?

A. Yes. I'm responsible for the entirety of San Juan Coal company's activities, and in regard to today's discussion, the San Juan underground mine as depicted here in the figure is an ongoing activity that's near proximity to the site of concern.

We're responsible particularly for the design of

the mine with regards to geotechnical and ventilation aspects in this case, and the health and safety attributes insofar as what we call hierarchy of control in limiting risks that might jeopardize the safety of the work force over the sustainability of the asset, threats to the environment, and so forth.

HEARING EXAMINER: Where is the well located in relation to your mine?

THE WITNESS: Well, because the well isn't precisely located, we'll say that it is approximately as depicted here with the red dots. What you see here are mine workings, both past, present, and future.

The ones that are cross-hatched as you see here, are the ones that are already extracted, and those dates and times reflect the time line in which the extraction occurred. These areas over here are areas where the mining is yet to be conducted.

And these areas that are depicted as looking very much like roads on a city map, these are underground entries that we maintain open for the purpose of ventilating the mine. And there's a ventilation shaft located down here that will continue to be in service until the whole southern side of the mine is complete.

So people will work and travel in this area continuously up until the last panel of extraction in the

southern group of long well panels.

HEARING EXAMINER: On Section 6, do you have the lease to mine those areas?

THE WITNESS: Yes. We do need and intend to mine those areas. We have a mandate from the BLM to mine those areas consistent with the leases we have through BLM for the safety --

HEARING EXAMINER: Do you have all the leases in Section 36 that you show over there in Section 36?

THE WITNESS: Well, this area up here is currently lined up to this location. And then we're going to move back down here by January of this year, mine again this way, come to this location, be -- approximately January 11, go this way, January 12, this way, and so on until we've completed approximately five panels in the southern area of the mines.

HEARING EXAMINER: Excuse me, counsel, I need to understand that map.

MR. ROYBAL: I was going to ask some questions. Hopefully we'll do that.

HEARING EXAMINER: Okay. Go ahead.

Q. Could you very briefly explain the mining process in terms of long wall and development and what's involved in that?

A. Well, with the long wall mining process, just to

kind of give an overview beyond what's on the map, the primary access to the mine is a series of east/west entries up here north of the area of the map.

From there, we drive what are call gate roads, which you can see one such gate road right here, through a series of three entries connected by what are called cross-cuts. These cross connecting entries.

This gate road is developed out at the easternmost point of our penetration into the mining area, and when finally mines from north to south down to here, and connections across here, this is defined as a long wall panel.

Sometime thereafter, we installed the entire long wall equipment from here to here, which is approximately 1,003 feet.

HEARING EXAMINER: From where to where?

THE WITNESS: Across the bottom of each of those long wall panels as they developed. The southernmost entries are what we call setup runs. They're essentially the launching point for the long wall equipment.

Upon having started, it commences in a continuous and successive fashion to mine out northward with the strata that overlies the coal collapsing to fill a void that's created when the coal is removed.

At the same time that that process is occurring,

another set of gate roads is being developed south which ultimately will be connected across. And the long wall would move in the completion of the prior panel, the successive new panel, and that larger process repeats endlessly until the resource is completely extracted.

Q. The gate road stays in place after the long wall process is completed?

A. The gate road stays principally in place. There are three entries which constitute a gate road set. In the course of mining the long wall, the two innermost entries collapse into the so-called dog, the area of the uncontrolled rock material, and then with the next mine, those two entries collapse again leaving only one entry standing and two sets of pillars in a row that we call chain pillars.

These areas are actually sealed off without atmospheric seals that we use in the mining process, but the ventilation for each successive long wall panel comes down through here and out to this ventilation shaft.

And in order to maintain that shaft and let it service all its functions, which include egress from the mines to an emergency facility, we have this -- people work and travel in this area and it periodically would include, as would be required, to keep it accessible and suitable for a critical ventilation path.

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HEARING EXAMINER: From that red dot, what is the distance between that and your mine workings?

THE WITNESS: Well, the scale here is about a thousand feet. So we're looking at something less than a thousand feet.

HEARING EXAMINER: So approximately a thousand feet?

THE WITNESS: Well, if you went straight by where the dot is located out from where it's pointed, it might be 300 to 500 feet.

HEARING EXAMINER: So let's say it's 500 to a thousand feet. But you don't have any need inside that section that you've already located?

THE WITNESS: We don't intend to have any extraction beyond the perimeter of what's been marked here.

HEARING EXAMINER: Okay.

Q. What depth are we looking at, depth of coal in that area?

A. In this area, you're probably talking about the 400 to 600 foot depth range.

Q. In terms of surface operations in that area, would you describe what San Juan Coal's operations are?

A. Well, actually, there are a number of impacts. The shaft we talked about shortly ago. We also have the

power line and related road system that connects that, as well as periodically what we call good vent bore holes that were used to assist in mining ventilation process.

But some of those are left behind when we actually complete mining in the event that it's necessary for us to conduct some procedure that connects the surface to the coal seam.

One example might be in the event we detect a spontaneous combustion situation within a sealed gob, then we might want to inject nitrogen.

We also have activities out in here where we travel. And we have generalized security patrols and various smaller environmental remediations down in this area.

In addition to that beyond our activities are several small sand and gravel operators that are operating in an area that overlies our leases. But since it's a different mineral, they're actually working through the BLM to exploit that resource.

Q. Can you generally describe how long BHP and San Juan Coal Company are going to be in this area?

A. Well, the intention here would be that there would possibly be a group of five or possibly six panels to be mined out here. So perhaps until 2014 or so, we're likely to be still heavily involved in this area. Going

on from there, we expect to generally be involved in the near vicinity until at least 2017 under current contract.

Q. Is there a ventilation shaft that's in the vicinity?

A. There is, the ventilation shaft as I've indicated here.

Q. And what distance is that from the wellbore?

A. I don't know the exact length, but estimating from the scale included, I'd say it's approximately 2,500 feet.

Q. Does your area of responsibility include safety of miners in this area?

A. It does with regard to design and infrastructure aspects of the mine. Primarily here, we would be talking about ventilation risks and escape and refuge alternatives.

One of the major concerns that would exist around a proposal like this is the possibility that -- we would have people working in relatively confined spaces that are dependant on an atmosphere that is conducted to them -- and any possible contamination to that atmosphere by whatever means from a man-made source, whether that be in the mine or in proximity of some supportive facility on the surface.

Q. Dr. Bessinger, this morning I think we heard

from Mr. Charles Johnson from Anadarko, and his -- I guess his statement was that the risk assessment process had been discussed with San Juan Coal Company?

A. That is correct.

Q. Could you describe that process?

A. Well, the risk assessment process, we look at a wide variety of concerns that primary range across the spectrum from health, environment, safety, and community.

Those concerns are prioritized by likelihood and frequency, and of course, the greatest concern would be those that have a high likelihood and high severity which constitutes serious concerns, and those sorts of concerns are the ones that we would primarily target in investigating or pursuing our risk assessment.

Q. And the relation to the process of addressing the concerns of this project, can you address that?

A. Well, yes. Because we seem to have been underinformed in the process of transactions to date, it has come to be agreed between Anadarko and ourselves that we would pursue a mutual risk assessment and focus on risks with regard to likelihood and severity of the risks that had a serious score in that likelihood, and severity of product would be reasonably mitigated as a part of the design process for this proposal.

Q. With regard to Exhibit No. 1, could you -- is it

your testimony that that's an accurate depiction of the mine workings and -- maybe not completely current, but as accurate?

A. Yes. The workings presented there are accurate to within the date of approximately April of '09, and as indicated there.

MR. ROYBAL: Mr. Hearing Officer, if it would be helpful, we have smaller copies of this exhibit that could be admitted into the record of this hearing.

HEARING EXAMINER: Yes, that would be helpful.

MR. ROYBAL: At this time, I pass the witness.

CROSS-EXAMINATION

BY MS. MUNDS-DRY:

Q. I just have a few questions, Dr. Bessinger. I think you indicated the sort of white areas -- I think is what you called them, are those areas -- I think you indicated those are the mined out areas?

A. The long wall mining has been completed in the areas that are cross-hatched.

Q. And those long wall panels, I believe you indicated have been collapsed then?

A. The area cross-hatched in white has been effected by subsidence, yes.

Q. Okay. I also wanted to ask you for the record, Dr. Bessinger, what is the red line on the map there?

A. Well, that red line is a composite of various responsibilities that we have either through leases or permits for areas. Essentially, the area within the greatest concern for us is north of the red line and its principality.

Q. And Dr. Bessinger, I believe you indicated that you're somewhere in Section 36 there currently in a long wall panel?

A. That's correct.

Q. And so you plan to move northeast?

A. Well, we progress in a sequence that is easterly successively.

HEARING EXAMINER: Where the red line is, that is where you have a lease?

THE WITNESS: Leased and/or surface permits.

HEARING EXAMINER: So you have a lease where the well is situated?

THE WITNESS: I believe that's correct. And we do not intend to mine that area. So the fact that we have any coal rights in that area is not really relevant to the -- We have no future intent to mine that area.

HEARING EXAMINER: Why don't you want to mine it?

THE WITNESS: Well, the decision not to mine this area was principally related to the fact that for us

to long wall that area, we would have had to continue this panel further south, and to do so would have damaged the plant facilities and infrastructures.

And so in order to not damage those unnecessarily, we actually bypassed that coal.

HEARING EXAMINER: But the plan was that you obtained the lease to mine that area?

THE WITNESS: Right. I think the intentions around this were rather arbitrary. I don't think there was ever any actual intention to mine under the plant area. But the air plant, as an example, was actually constructed in conjunction with the mine.

HEARING EXAMINER: Okay. Go ahead.

Q. So Dr. Bessinger, if I understand correctly, in the second long wall panel there, you'll be there until 2010, approximately?

A. Approximately January of 2010.

Q. So you'll be moving away from the well each successive year?

A. That's correct, as a long wall itself, but until we complete mining here, we'll have to continue to have access and maintain the interests that's depicted there as the southernmost boundary in those works.

Q. And you expect to be done in approximately 2014 with those long wall panels?

A. Just estimating it casually, yes.

Q. Dr. Bessinger, did you listen to the testimony today of Mr. Gutierrez?

A. Yes, I did.

Q. And you're aware then that Anadarko plans to set the surface casing at approximately 1,100 feet?

A. Yes.

Q. And that the injection zone is approximately a thousand feet below your mine workings?

A. Correct.

Q. And you mentioned also in your testimony that you may have some other surveys and other documents that indicate where your vent shafts and your vent -- boreholes, is that what you call then?

A. Gob vent boreholes.

Q. Would you be willing to share those with Anadarko?

A. Yes. I think we certainly would be reviewing those. It's in the assessment protest.

Q. Thank you. Those are all the questions I have.

HEARING EXAMINER: Thank you. Before I proceed Mr. Roybal, do you want to admit that exhibit?

MR. ROYBAL: Yes, I would move for the admission of this Exhibit 1.

HEARING EXAMINER: Any objections? It will be

admitted.

CROSS-EXAMINATION

BY MS. ALTOMARE:

Q. Dr. Bessinger, you talked about workers that are working in a confined space that you were concerned about having contamination exposure. Are those workers provided with supplied air while they're working in those confined places?

A. Well, when I say confined space, I really contrast that to the general earth atmosphere. We don't consider it a confined space under the best mining practices, but relative to general earth atmosphere, they're dependant on atmosphere that's conducted to them from elsewhere and then flows through the ventilation system to ultimately be exhausted to the surface.

So they don't have quite the same benefit in the choice of atmosphere as you have with the general earth atmosphere.

Q. So they're provided air through a ventilation system?

A. Correct.

Q. But not through any kind of a personal ventilation system?

A. No.

Q. That they wear on their person or anything like

that?

A. No. In the normal conduct of work, it's much in the same environment we have here.

Q. Okay. And the ventilation system that we're speaking of, those vents, do they draw air in, or do they force air or gas out of the mining area?

A. In the case of the gob boreholes, they typically exhaust the gob atmosphere and fresh air is conducted through the mining ventilation system.

Q. Okay, so the ones that are under the surface actually are pushing air or gas out?

A. Right.

Q. Okay. The risk assessment process, is there a typical time frame that you normally see with that process?

A. Well, that's a process that in the case of something like this probably could be transacted in a relatively brief period of time of several days, but there may be milestone events that trigger review or perhaps information input into that process.

So the conclusion of it doesn't really conclude until we can see that the project is completed. But the biggest part of the exercise itself can be done in a period of a couple days, identifying the concerns, and those concerns would then be addressed, opportunity

permitting.

Q. Okay. And has San Juan Coal or BHP done a collaborative risk assessment process of this nature before with another entity?

A. We have, we actually do those kinds of things relatively routinely. And so I guess, yes -- I think the answer to that is yes, we have done those.

Q. And is your company happy with the cooperation that they are receiving from Anadarko at this point in time?

A. Yes, we seem to have an acceptable level of cooperation.

MS. ALTOMARE: Those are all the questions I have.

HEARING EXAMINER: Dr. Bessinger, what is the relationship between BPH and San Juan Coal?

THE WITNESS: San Juan Coal is a wholly owned subsidiary of BHP. It's the sole source of fuel for San Juan Generating Station.

HEARING EXAMINER: Okay, so BHP owns San Juan Coal?

THE WITNESS: Correct.

HEARING EXAMINER: You mentioned that before you came in here you were underinformed, you mentioned something about that. So after listening the your

testimony, did you learn something you didn't know before you came to the hearing today?

THE WITNESS: Yes. I think certainly we were exposed to newer information that is helpful in considering the process.

HEARING EXAMINER: Okay. You have no intention to mine in the area south of the demarked lines?

THE WITNESS: No, there is no current ambition to mine in any area that's south of the marked lines there.

HEARING EXAMINER: And the reason being that there is no coal down there?

THE WITNESS: Well, there is coal down there, but for a variety of different reasons, we determined that this is the likely southern extent of work.

We talked about the potential damage to the plant; the same is potentially true of the residential area over here. So because we want to balance our concern for the community impact and the environmental impact, we're trying to stay away from areas that have any significant man-made structures or artifacts in there.

HEARING EXAMINER: Okay. Very good. Could you tell me now from your testimony what impact this acid gas injection would have on your mine workings? I don't know what's going to happen because -- I'm just submitting the

information, I don't know what's going to happen. Suppose this is approved, what would be the impact on your operations?

THE WITNESS: Well, my vision of what would go forward based on the mutual agreement, we would conduct a risk assessment on any reasonable mitigations, that we would place those mitigating strategies, and then the project would probably proceed to a successful completion.

By virtue of the fact mitigations are in place and by virtue of the fact that time post 2014 we will have largely moved our activities away from the proximity of the site, then the combinations of those things should render the impact as limited to minimal.

But the concern that we have is that somewhere in this process, it might have been possible for a mitigating step to have been overlooked as it might apply to us and we wanted to maintain our relevancy in the discussion.

HEARING EXAMINER: So you are going to work on those details and work it out?

THE WITNESS: Yes.

HEARING EXAMINER: I hope that presently the mine workers are not in any danger?

THE WITNESS: At present, no, there is not a hazard beyond acceptable levels of mitigations that are

in place. As it stands now, there seems to be adequate mitigations in place for the facilities that are just now -- and once we complete the risk assessment and implement the mitigations that might come about as a result of that assessment, we should return to a similar condition should the project go ahead.

HEARING EXAMINER: Okay, good. Redirect exam?

MR. ROYBAL: Very briefly.

REDIRECT EXAMINATION

BY MR. ROYBAL:

Q. The San Juan Generating Station, could you tell us who operates that?

A. Well, Public Service Company of New Mexico is the operator of the San Juan Generating Station, and it supplies a significant amount of power to the state of New Mexico.

So any disturbance in our activities becomes a key issue to a very large sector in society. Our need for sustained operations is significant because there is no ready alternative.

Q. The relationship between San Juan Generating Station and San Juan Coal Company is --

A. We're their only source of fuel and they are our only customer.

Q. But no ownership or --

A. No, we have no ownership.

Q. Very good. Thank you.

HEARING EXAMINER: Is there any impact on costs by this application to San Juan Generating Station because -- Counsel just asked you that question.

THE WITNESS: Well, provided that we're able to implement mitigating strategies, those strategies should render the impacts minimal in the case of the mine or the power plant.

HEARING EXAMINER: Okay. Anything else?

MR. ROYBAL: Not to ask any questions of this witness, but if you would indulge in a quick closing statement to summarize our position.

HEARING EXAMINER: That's what I'm coming to now, closing statements. Go ahead.

MR. ROYBAL: We appreciate the opportunity to appear before the Division and the Hearing Officer, and actually, the opportunity to have met with Anadarko to have discussions on this matter.

San Juan Coal Company neither opposes or supports this application, but we do believe that through the mechanisms we've discussed, the risk assessment, we can address our concerns and help fulfill not only our obligations to our workers and to the community, to the state of New Mexico and to our customer, San Juan

Generating Station, we believe that's what we're here to do today.

We do understand the OCD's position and that it does take into account other minerals within its jurisdiction, and the potash situation is a prime example in the southeastern part of the state.

I guess what we would ask is for the Division in its order to recognize our interests and at a minimum, to be given notice of any revisions to Rule 11.

I think that is probably under your rules, we'd probably get that anyway. But we do feel that the issues that we raised today and in this process should be taken into account as this project goes forward.

HEARING EXAMINER: Thank you very much. Any other closing statements? And that goes to what I said in the middle of the testimony, is that, have knowledge of what's going on by everybody.

I think if the operator -- or the applicant in this case -- has educated -- including the APDs, public, we wouldn't have had this -- You know. All you have here is the letters, comments, and most of them are based on ignorance, the way you read it.

So this is why we're having a hearing. We're having a hearing, everybody is authorized to come here and voice their opinion. So I'm glad that we are going to --

you know, have to continue this way.

But like I said, you guys, the operator wants to bring this acid gas injection -- Because all of them go to hearing at this time. We need to educate the public in the area. Because most people there -- If I were in their shoes, I wouldn't understand, then I'd raise concern.

I mean, if I'm living there, we do exactly what we're doing without having any knowledge. So that's why I'm saying that training might be a good thing to do.

Is there anybody here who was in the room when we started that wants to make a comment? Does anybody here want to make any comment, any one from the public? Okay.

Well then, at this point, Case No. 14329 will be taken under advisement.

(Whereupon, the proceedings concluded.)

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 14329 heard by me on 10/15/09

Examiner
Oil Conservation Division

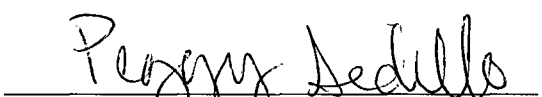
STATE OF NEW MEXICO)
) ss.

COUNTY OF BERNALILLO)

REPORTER'S CERTIFICATE

I, PEGGY A. SEDILLO, Certified Court Reporter of the firm Paul Baca Professional Court Reporters do hereby certify that the foregoing transcript is a complete and accurate record of said proceedings as the same were recorded by me or under my supervision.

Dated at Albuquerque, New Mexico this 10th day of November, 2009.



PEGGY A. SEDILLO, CCR NO. 88
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