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

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

REOPENED APPLICATION OF WILLIAMS PRODUCTION CO., LLC, FOR APPROVAL OF A CLOSED-LOOP SYSTEM FOR THE ROSA SALTWATER DISPOSAL WELL NO. 2 AND FOR IN-PLACE BURIAL OF DRILLING WASTES AT ANOTHER WELL LOCATION, RIO ARRIBA COUNTY, NEW MEXICO — Case No. 14521

DE NOVO APPLICATION OF CIMAREX ENERGY COMPANY FOR A NONSTANDARD OIL SPACING AND PRORATION UNIT AND COMPULSORY POOLING, EDDY COUNTY, NEW MEXICO — Case No. 14418

REOPENED APPLICATION OF CIMAREX ENERGY COMPANY FOR A NONSTANDARD OIL SPACING AND PRORATION UNIT AND COMPULSORY POOLING, EDDY COUNTY, NEW MEXICO — Case No. 14480

APPLICATION OF AGUA SUCIA, LLC, TO REINSTATE DIVISION ADMINISTRATIVE ORDER SWD-559 FOR A SALTWATER DISPOSAL WELL, LEA COUNTY, NEW MEXICO — Case No. 14411

Case No. 10693; Case No. 11724; Case No. 11954; Case No. 11987; and Case No. 13048: Dismissed

Case No. 12276 and Case No. 12277, continued to December 9, 2010

REPORTER'S TRANSCRIPT OF PROCEEDINGS
COMMISSIONER HEARING

BEFORE: MARK E. FESMIRE, Chairman
JAMI BAILEY, Commissioner
WILLIAM C. OLSON, Commissioner

November 4, 2010
Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Commission, MARK E. FESMIRE, Chairman, on Thursday, November 4, 2010, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South Saint Francis Drive, Room 102, Santa Fe, New Mexico.

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ALSO PRESENT:

Florene Davidson

both your cabinet and Florene's.

Okay. At this time we will call the next case on the docket. It is the application of Agua Sucia, LLC, to reinstate Division Administrative Order SWD-559 for a saltwater disposal well in Lea County, New Mexico. It's Case Number 14411. Are there attorneys present?

MR. BRUCE: Yes, Mr. Chairman.

CHAIRMAN FESMIRE: Mr. Bruce, would you state your appearance, please?

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

MR. CARR: May it please the Commission? William F. Carr, with the Santa Fe office of Holland & Hart, LLP. We represent Armstrong Energy Corporation in this matter in opposition to the application, and I have three witnesses.

CHAIRMAN FESMIRE: Okay. Mr. Bruce, do you have an opening statement?

MR. BRUCE: Yes, sir

CHAIRMAN FESMIRE: Would you like to make it now?

MR. BRUCE: Yes.

May it please the Commission? We're here today concerning Government E Well No. 1, located in the southwest corner of the southwest quarter of Section 25,

19 South, 34 East.

In 1994 or '95, Division Administrative Order SWD-559 authorized injection into the Bone Spring formation in that well as to depths from 9,716 to 10,240 feet. Injection operations were conducted from that time until January 2008.

At that time a failure was discovered in the well and operations ceased. There has been no injection into the well since January of '08, almost three years.

The operator at that time, Louray Oil Company, attempted to repair it but was unsuccessful. In March to April 2009, Agua Sucia repaired the well at a cost of over $400,000. However, since injection had not occurred for over a year, injection had already lapsed, and reauthorization had to be obtained. Armstrong Energy objected, and the Division denied authority to recommence injection.

One thing that is striking about the Division's order denying this application is that it completely ignored the repair work done to the well in 2009.

Now, one thing Agua Sucia does not deny is that before it took over operations, there was a problem with the well. My witnesses will admit to it. Mr. Carr's witnesses will testify to it. However, that

problem was discovered, injection ceased, and the problem was corrected.

Our witnesses will show today that the well is ready to inject into without any harm to offsets. In fact, Buddy Hill, the Hobbs district supervisor, has stated that the well is ready to inject into.

And to prove that, Agua Sucia is ready to do at its own expense any tests that the Commission desires which are reasonably necessary to prove that the well is mechanically sound, such as radioactive surveys in combination with temperature surveys, so that the possibility of any channeling or any other type of problem with the well can be verified or, I should say, proven in the negative. This will satisfy everyone that injection can occur without problem.

It's Agua Sucia's position that the current wellbore integrity is the only issue before you today. From Armstrong you will hear a lot about what occurred before January 2008, when injection ceased. Again, Agua Sucia does not deny that there were problems before it took over operations of the well. There were well integrity problems.

But three things: Those problems were the responsibility of the prior operator, Louray; those problems have been fixed; and if Armstrong has any issues

with Louray, that's not a Division matter. That's a District Court action.

There are other items which Armstrong brought up in the first hearing. They claim, well, there's been oil sales from the tank battery onsite. Yes, there have been. Because the current situation, and it's been ongoing for a year or more, is that water is brought -- trucked onsite and put in the tank batteries. It's not injected.

But Agua Sucia gets skim oil off those tank batteries, and then the water is shipped off site to an adjoining Chesapeake waterflood. There has been no injection there's no production from this well. There's no injection from this well. And everything Agua Sucia has done is legal. They have complied with the Division's regulations.

And even though we claim that the current wellbore integrity is the sole issue, Armstrong has before and it will today state that substantial volumes of water were injected into the Government E No. 1 before 2008, which harmed their wellbore.

Again we're not sure of what occurred, but that's really not the problem today. We just want authority to inject going forward, and we will show that injection can be done without harm to offsets.

They might also state that, well, a lot of water has been injected into the Bone Spring formation by the Government E No. 1, which was a producing well originally, injections that exceeded the volume of fluids that were extracted.

Mr. Lee, our engineer, will testify that that is not uncommon in a Bone Spring well, and he will give examples of other Bone Spring injectors where that has occurred.

In short, Armstrong's position is based on what happened before 2008, which is, we believe, irrelevant, because those problems have been fixed.

Number two, they can merely speculate about what may occur if injection authority is reinstated. However, the exhibits and the testimony will show that the wellbore is sound and this application should be approved. Thank you.

CHAIRMAN FESMIRE: Mr. Carr, would you like to wait or --

MR. CARR: I think I'll open now.

Mr. Bruce accurately summarized the history of the well. But you have parties before you today that stand before you in very different roles.

I represent Armstrong Energy Corporation. And I also have with me Jerry Guy, of Guy Oil & Gas, and they

own the minerals under the acreage in which injection has occurred and, if the application is granted, will occur again. Agua Sucia comes before you asking for authorization to resume injection, and they have only a wellbore assignment and an expired permit.

While Mr. Bruce would like to characterize what our case is going to be, perhaps I should tell you why we're objecting. We're objecting for the very reasons the Division denied the application in the first instance. They've already put in the well 10 times the volume that was produced out of that well, and we can see direct communication between everything they have done in the past in that well and what happens in our offsetting producing wells.

But while they would like to ignore the past, just because you pass the hat around between various operators, it doesn't change the fact that they left behind a situation where they have a wellbore that isn't cased -- the casing isn't cemented behind the Queen, the San Andres and the Delaware; that they have pressured those up; that there has been evidence of direct communication between them.

They didn't put cement behind the casing. They put a liner in and in cemented it, so you can't put cement behind the casing. And we can produce water until

the cows come home, but we have to produce it out of the Queen, we have to produce it out of the San Andres, and we have to produce it out of the Delaware, because the way this well has been "repaired."

And we believe that when we come to you, the issue isn't the integrity of a wellbore liner that you can get from the surface to the Bone Spring. The issue is whether or not you're going to be authorizing and condoning the waste of oil and gas.

We also think there are other provisions of the Oil and Gas Act that come into play here. You're charged with duty to prevent crude oil or natural gas or water from escaping from the strata in which it is found into another strata. We have that here.

You are also directed to prevent the drowning by water of any stratum or part thereof capable of producing oil or gas or both, and we have that here. And to have merely re-established that you can put water at the surface and get it to the Bone Spring doesn't address the question of what's going on in the formation and what this injection in the future will do to the offsetting property owners.

And while they would like to say, "Well, we're going to look at the past, and we passed the hat; we're new people; now you only look at the wellbore," if you do

that, you will violate the law.

CHAIRMAN FESMIRE: Mr. Bruce, would you ask your witnesses to stand and be sworn, please?

(Two witnesses were sworn.)

CHAIRMAN FESMIRE: Mr. Bruce, who's your first witness?

MR. BRUCE: Ben Stone.

BEN STONE

Having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. BRUCE:

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

A. Ben Stone.

Q. And where do you reside?

A. Como, Texas.

Q. What is your occupation?

A. My wife and I currently own and operate SOS Consulting. We assist with regulatory processing. My wife is an oil and gas revenue accountant, and I do some database work.

Q. What is your relationship to Agua Sucia?

A. They contacted me in April of '09 to reinstate -- I thought to simply reinstate an expired saltwater disposal permit.

Q. And you're still employed by Agua Sucia?

A. I am.

Q. And have you worked with them on other regulatory matters involved with their operations in the state?

A. I have.

Q. Have you previously testified before the Commission?

A. No, I haven't.

Q. Would you summarize your educational and employment background?

A. My formal education is actually in graphic arts. But when I figured out I wasn't going to make a million dollars in graphic arts, I went into the oil patch and started wire lining in 1977. I've been in wire lining for approximately 15 years.

I eventually became a senior engineer for at least two different companies. I've run operations on something over 5,000 wells. I've got well over 15,000 hours' downhole experience.

Beyond that, after things slowed down in the service industry, I went to work for the Oil Conservation Division in 1992 as a petroleum engineer and specialist. I processed several hundred administrative applications, including saltwater disposal applications, in that

position. And in the last few years there, I became involved in their data management efforts, including the implementation of the risk-based data management system.

Q. You mentioned you worked for a couple of companies. Which companies did you work for?

A. I started -- wire line, I started off with Cardinal Surveys, went to Geo Source wire line. I went from there to Armadillo Wire Line. I was the district supervisor for that shop in Hobbs. I went from there back to Cardinal Surveys and managed their injection department to manipulate and pull together logging data into presentations.

And from there I wrapped up my career in wire line with NM McKolla for about three years.

Q. As part of your work in the private sector, did you become familiarized with radioactive tracer surveys?

A. Absolutely. My specialty was production logging, so I was intimately familiar with operations involving radioactive surveys and various tracers, various isotopes.

Q. Are you familiar with the matters involved with this application to reinstate the injection authority for Agua Sucia?

A. Yes, sir.

MR. BRUCE: Mr. Chairman, I tender Mr. Stone as an expert in Oil Conservation Division regulatory affairs.

MR. CARR: No objection.

CHAIRMAN FESMIRE: He'll be so admitted.

Q. (By Mr. Bruce) Mr. Stone, before we get into your exhibits, just confirm for me, Agua Sucia does not dispute that before January 2008, there were problem with the Government E Number 1 well?

A. That's correct.

Q. And that was at a time when the well was operated by Louray Oil Company?

A. Yes, sir.

Q. In your opinion, have those problems been identified?

A. They have been identified and, I believe, repaired.

Q. Will you talk about what has been done to correct the situation with the wellbore?

A. Sure. Do you want me to go into --

Q. First of all, Exhibit 1 is submitted as an exhibit. That's simply the order from the Hearing Examiner; is it not?

A. Yes, sir.

Q. And what is Exhibit 2?

A. That's the C-108 application that I submitted on behalf of Agua Sucia to reinstate the saltwater disposal operation.

Q. Could you go through that briefly for the Commission and discuss its contents? It's already getting late today. Could you hit the highlights?

A. Sure. It's pretty standard. This iteration is, I believe, the complete application, including a cover letter to the Director of the Division, just explaining what Agua Sucia sought by reinstating this application.

I also pointed out in that letter my phone conversation with Buddy Hill, district supervisor for OCD in Hobbs, where he stated that we had lots of issues with the previous operator, Louray, and that the well is technically sound and ready for injection.

After that is the C-108 form, with various pertinent data filled in, maps of the location, area of review, the updated wellbore schematics and tabulation of wells in the area of review, plugged and abandoned schematics as applicable, and a narrative description of the repair attempts that were made on the well.

Q. First of all, with respect to Government E Number 1, with the data you have, has the well been properly repaired such that it will prevent the movement

of fluid between zones?

A. I believe it has. They installed 5,700 feet of new four-inch liner. And it's been cemented top to bottom, which isolated all the bad sections of pipe that were identified in the well.

Q. And with respect to any of the abandoned wellbores, have they been properly plugged and abandoned?

A. As far as I can tell, yes.

Q. This is a partial disposal; correct?

A. Yes.

Q. What are the approximate volumes of disposal in this well?

A. I'm sorry, Mr. Bruce. I'm not sure what the actual volumes are.

Q. Will the applicant comply with the .2 psi per foot --

A. Absolutely.

Q. -- pressure limitation?

A. Yes, sir.

Q. What type of water is being injected into the well?

A. Generally, area of production, Bone Spring, Delaware production.

Q. About halfway through this, there's a C-108 supporting data, kind of a narrative of what was done

with the well?

A. Yes, sir.

Q. Could you go through that briefly?

A. I wrote up this narrative based on the field notes made by Louis Edgett during his first repair attempt, and that started on January 22nd, 2008. And it describes just their rigging up on the well, going in, trying to clean the hole out, and using a plug and packer to locate and identify the bad sections of pipe and isolate those.

They set a bridge plug and a cement retainer above that interval and pumped 760 sacks of cement between the eight and five-eighths intermediate spring and the five-and-a-half casings to try and cover that interval, including across the Queen section.

Q. Then there was the subsequent repair attempt; correct?

A. Yes, sir. On the following page, it's labeled as the final repair, March to April 2009. And that describes the work that was performed by Mr. Al Perry, who was a consultant that they hired to install the four-inch liner, get it cemented and finish up that repair job. They ultimately concluded that with a mechanical integrity test.

Q. Was that test satisfactory?

A. Yes. That was in April of '09.

Q. Approximately how much money was spent on this repair attempt, this subsequent repair attempt?

A. About $432,000.

Q. Are copies of those invoices submitted as Exhibit 4?

A. Yes, sir.

Q. It was after this March to April repair that the supervisor of the Hobbs District Office stated to you that the well was properly repaired and ready for injection?

A. Yes, sir. That was the result of a phone conversation I had with him about a month afterwards. So I would say that was on May 19th, 2009, about a month after the repair.

Q. One final thing on this. You have water analyses. Do you foresee any problems between the injection water and the formation water in this zone?

A. No, sir. They're all very high in chlorides. TDS is typically over 100,000 parts per million, so the waters are apparently compatible.

Q. Your next exhibit, Exhibit 3, is a sundry notice. Did you take care of filing that?

A. Yes, sir.

Q. And why was that filed?

A. Well, it just never had been done by the previous operator or Agua Sucia. And Mr. Carr pointed out to me that it had never been filed. And after further consultation with my client, we finally just filed the sundry in preparing for these proceedings, went ahead and tried to make sure we had everything covered.

Q. The next exhibit is Exhibit 5, which is an invoice. Why was that made an exhibit? The February '08 -- the one-page exhibit.

MR. BRUCE: Mr. Chairman, in going through my exhibits yesterday, I realize it's a one-page exhibit, an invoice. I thought I marked all the exhibits, but that is Exhibit 5. I don't know if it's marked in your package.

CHAIRMAN FESMIRE: It is.

MR. BRUCE: Invoice from --

THE WITNESS: Triple N Services.

MR. BRUCE: That should be marked Exhibit 5.

CHAIRMAN FESMIRE: Mine is.

MR. BRUCE: Maybe I just missed mine. I wanted to make sure they were properly marked.

Q. (By Mr. Bruce) Mr. Stone, you testified in the first hearing in this matter?

A. Yes, sir.

Q. And you sat through Armstrong's testimony?

A. Yes, sir.

Q. Did they ask questions of Agua Sucia's witnesses if there was any evidence of what was done on the February '08 completion -- or repair attempts?

A. They did. They pointed out that since the follow-up sundry had not been submitted, perhaps the work may not have been done or at least properly reported.

At the time, what we had available on the first repair attempt from Mr. Edgett's field notes that I paraphrased into the first repair attempt and what we've been able to come up with is the Triple N data activity field ticket. And the description of services there describes, including the volumes, matching up with what Mr. Edgett provided, substantiates everything that he had said had occurred on the repair.

Q. So this is simply submitted to show that repair work was attempted in February of '08 --

A. Yes.

Q. -- by Louray.

A. Yes.

Q. Mr. Stone, let's move on to your Exhibit 6, which is marked "Sample SWD well configuration."

A. Yes, sir.

Q. Could you identify this exhibit and discuss

its contents for the Commissioners?

A. Again, in preparation for these proceedings today, I wanted to take a look at typical saltwater disposal well configurations that are routinely approved by the Oil Conservation Division. So I got on OCD online. I looked through three or four dozen records, and obviously there's different criteria to different wells and such in the area of review.

I didn't filter -- use anything more than just looking at some zones and, in particular, the amount of cement isolation above the injection zone.

So if you all have that exhibit there, the first example is OCD Permit 572, issued in 1994. It shows the injection interval to be 650 feet long, and that's illustrated in the blue shading on the small wellbore diagram. And the isolation, the cement isolation behind the pipe and above that zone is approximately 374 feet. That's indicated by the pink shading.

Example Number 2 is OCD Permit SWD 896, issued in 2003. The injection interval is 1,225 feet long. The cement isolation -- I think the injection interval is 675 feet, again illustrated by the blue and pink shading.

Example Number 3, OCD Permit SWD 1237, issued 8/2010. The injection interval is 1,769 feet in length,

isolated by 519 feet of cement above that interval.

Example Number 4, SWD 1232, issued 7/30/2010. The injection interval is over 2,000 feet long, and it's isolated by 1,670 feet of cement. And I just made a note here that it's difficult sometimes to show on a complex wellbore everything in the small confines of an 8 1/2 by 14-inch paper, so the scaling gets off somewhere.

But it was interesting to note that the blue shading represents the injection interval, and that's 2,130 feet long. And above that, about an inch of pink shading represents the 1,670 feet of cement isolation behind it.

So sometimes just looking at how a wellbore is illustrated, you really need to look at depths and see exactly what we're looking at. I just wanted to point that out.

On Example Number 5, SWD 1203, issued 1/27/10, the injection interval is 1,275 feet, isolated by 650 feet of cement.

Finally, Example Number 6, OCD Permit SWD 754, issued 8/30/1999, 1,152 feet, injection interval, isolated by 485 feet.

Again, these were selected randomly. Obviously, there were some wellbores in there, some saltwater disposal wells that have been permitted that

are fully cemented top to bottom, all three strings, and they're well constructed. But these are typical of things that have routinely been approved throughout the years by OCD.

The next page I have labeled as "Illustration Number 1," called the "Generic SWD Configuration." If you look at that, we've got again shaded by blue, 500 feet of perforations. Above that, well isolated by the pink, we've got 5,700 feet of cement.

So I would propose that if myself and Mr. Carr and the Commissioners decided to form a saltwater disposal company tomorrow, we'd be rather excited to find this as a candidate well. This is something that would appear to be well suited for disposal purposes.

If you take a look at this configuration and then turn the page to Illustration 2, all I changed between those two illustrations is the insertion of the four-inch liner which we installed in this well, that's then fully cemented. So that's where our cement isolation comes from.

The original production string is isolated by over 2,000 feet of cement coming up and identified by a temperature survey with a top of 7,700 feet. So we've got over 2,000 feet of cement isolation above our injection zone outside the original production casing

which was damaged, but repaired by the four-inch liner, which is fully cemented 5,700 feet long.

So again, in effect, what we have is our construction illustrated on Illustration Number 1 as far as the injection interval and confining the cement sheath above that.

Q. Does this show that the Government E is -- that the configuration of Government E is at least as good as these other examples you used?

A. Looking at the other examples, it appears to far exceed what has been routinely approved.

Q. Let's skip forward to Exhibit 9, which is the plot you have in front of you. Please identify that for the Commissioner.

A. This is a radial bond log that Agua Sucia had run in July of this year. And in again preparing and trying to identify other tools or methods whereby we might be able to demonstrate to the Commission that our well is appropriately repaired, our engineer, Robert Lee, suggested that we go ahead and run a bond log to see exactly what we've done behind the liner and anywhere else that we can identify behind the pipe.

So this is a recently run bond log that shows good bond throughout. We've got several copies around the room, but I don't know how best to run through this

particular exhibit without people getting lost quickly.

Q. With the Commission's permission, if there is something you'd like to point out, could you flip to that particular page or that fold, and make sure you identify it for Mr. Carr? And if you need to point out something for the Commissioners, could you do that?

A. I could do that.

CHAIRMAN FESMIRE: May I clarify something? The four-and-a-half inch -- or the four-inch flush joint liner and the five-and-a-half inch old casing, the cement bond log that we're looking at here is a cement bond on the liner; right?

THE WITNESS: It is.

CHAIRMAN FESMIRE: And the liner is cemented back to tie back to the next string on?

THE WITNESS: Yes, sir.

CHAIRMAN FESMIRE: But the string that it's inside, it's the five-and-a-half?

THE WITNESS: Yes, sir.

CHAIRMAN FESMIRE: That's where we have the cement problem, isn't it?

THE WITNESS: Right.

CHAIRMAN FESMIRE: Would this cement bond log show that cement interval?

THE WITNESS: Actually, in many cases, it

does. That's why it's difficult to just pick a depth and say, for instance, because it's something that you need to kind of look at typically coming from bottom, coming up the hole. I would say just quickly that this is difficult to do.

MR. BRUCE: Mr. Chairman, if it's permissible for the witness to approach the Commissioners' table to point out certain items, certainly Mr. Carr could go there and see what he's look at, or Mr. Carr's witness.

CHAIRMAN FESMIRE: Mr. Carr, would you be adverse to that?

MR. CARR: No, if we can come up.

CHAIRMAN FESMIRE: Why don't we relax the rules for a few minutes and let him show us the cement bond log, and Mr. Carr and his witness.

THE WITNESS: Just quickly, so you'll have some references to what we're looking at, cement bond logs have changed quite dramatically over the years, but it's still the same fundamental type log. It's a sonic log that's conducted where a ping is sent out and received. So that ping travels through whatever fluid is in the wellbore, travels through the casing, cement sheath, and depending on the amplitude it's returned for travel time, et cetera, we can determine lots of things.

So we've got several different curves here. But I'd point out that historically, bond logs, since they've been run for the last 50, 60 years, this dark line here, this line right here, this is the amplitude. And we, for years, have relied on that and often label this track as the bond index.

So if we were coming this direction in this track, we would have a bond index of zero coming to one. So any place that this line falls close to here would indicate -- and again, this is very basic, without getting into some of the other curves and other data and information we have available here. But this would indicate good bond.

As a matter of fact, most logging companies or anyone would profess to you that a bond index of .8 or greater means that in these two chart divisions, we would have good bond. So just quickly, just running through here, this shows pretty good bond all the way through here.

What we have from the radial bond log, we have eight receivers or microphones that are picking up that signal that's returned. They're arranged in 45-degree increments around. So you've got eight receivers distributed around that tool.

So what we have here, these colored lines, are

individually represented for those eight receivers there. So we actually are looking at getting that picture back. This is then electronically turned back into what -- this final track here is called a cement map. If you would, imagine this is a 360-degree picture of that casing from the inside, unfolded. So this is everything outside that pipe, unfolded.

So this extremely boring black section here, we've got this bond coming through here. It appears that all through our four-inch casing -- four-inch liner, we have very, very good bond. And please stop me if I need to clarify anything else.

Now, there are some instances through here, for instance right here, where this apparently -- you would say -- well typically, if this is all we have is the old bond log from 30 or 40 years ago, you'd say, "Well, there's a section of bad bond right there."

Q. (By Mr. Bruce) What depths are you talking about?

A. This particular one is 8,420 feet. But just as an example, some of these -- what we can do then is look at these other eight curves and see that same thing. We're still -- by these eight curves, we're still measuring in that amplitude, same direction, same configuration here, that we're showing good bond. So

there's something else affecting that stop receiver on the tool that's indicating something else is going on.

Then we have to come over to the VDL, variable density portion, and see what else is happening here. And what we can tell is undoubtedly, since we've got good bond indicated by our eight radial distribution receivers, that we perhaps have very fast formation here, something very tight, 1 or 2 percent porosity, something like that.

Imagine, if you will, a pipe or a glass even, that if you were to take that empty glass and hit it with your finger, if you could ring it. We actually refer to ringing pipe on a bond log, just sending out that pulse that we're detecting. So if you ring that empty glass, you get a ring. This is the type of thing we look for.

If you put your fingers around that glass and try it, you'll dampen it. You change the amplitude that you're measuring. You change the travel time. So these are the things that we're looking at, that we're able to identify and interpret into some kind of bond log.

I would point out coming up the hole that our temperature survey, they look very good and clean all the way up to about 7,700 feet. I would point out that this is where the original temperature survey, when it was only the five-and-a-half inch pipe that was cemented in

the hole, that's where it would show the top of the cement. This is where we start seeing some pretty junky stuff, some sparse contaminated cement and other things that have fallen in there.

We never cemented this. We never squeezed this through the years or whatever. What we determined was that, in fact, the first repair attempt that we did not at the time have good data on, as it turns out, pumped down the eight and five-eighths and five-and-a-half. We actually did move that cement. That volume actually did pump down the hole here and stack up.

Because we immediately get back in -- before that repair job and before the liner, this would have all been blank. This line here would have been ringing over here. We would have seen the color green because again, with that ticking noise that would emanate from the tool, you'd actually see that color range. So you can tell when you're in free pipe, where there's nothing bonding behind that pipe.

As we come up here and we get through some of the junk is where that transition takes place from where the old cement job was, the new cement being pumped down through the top, globbing up down here, but finally accumulating and starting to stack, and we start re-establishing bond again.

It is kind of spotty. And you can see on this map, by these colored areas, we've got spots, but we do have excellent bond all the way up through here. We've got some spotty transition areas.

We see the new cement job that we pumped from the first repair coming in here. There's still some spots, but nothing that we're going to move fluid through. These little spots here, if you can imagine again it's a 360-degree picture. We've just got a little void sitting there on the side of the pipe, so we still don't have anything whereby we can transfer fluid up or channel behind that pipe.

Coming up here to the original zone that we did identify before we had some bad pipe, we can see things get very colorful and very spotty. This is getting up in that interval from 4,800, 4,700 feet or so down to 5,300 feet. Generally, that interval where we identified there was a plug and packer, that we did have some bad product, rotten casing in there. And that's what they were attempting to repair.

But what's interesting here is that we are actually starting to see bond. So we've got good bond around our four-inch out to the five-and-a-half inch pipe. So as we send that ping out, we've got something now to conduct and transfer that sound wave energy

through the pipe, through the cement, back, and be received.

And the reason we can tell that is on some of these here, if we look on this VDL, and -- if you all would like to know what the VDL is, I can describe that also. Quickly, it's just a stretched-out picture of the oscilloscope wave form that's being returned from the tool.

But what we see on here, we see these little tick marks that come in every so often, about 40 feet or so through here, those don't line up with our four-inch inside.

The only way we could see those would be colors on the outside. The only way we would be able to see those colors on the outside is to have good cement there to send that ping through and conduct that sonic energy through and have it returned and be able to identify something on the outside of that pipe.

CHAIRMAN FESMIRE: What does that tell us about the cement outside the five-and-a-half?

THE WITNESS: We don't know a lot about the cement outside the five-and-a-half.

CHAIRMAN FESMIRE: We've got a real good -- this shows us that we've got a good bond between the liner and the casing and the hole?

THE WITNESS: Right.

CHAIRMAN FESMIRE: But the problem appears to be, doesn't it, that it's the cement job outside of that --

THE WITNESS: Yes, sir.

CHAIRMAN FESMIRE: -- five-and-a-half?

THE WITNESS: Again, Mr. Chairman, we've established that we had a good 2,000 feet plus isolation when the well was originally cemented. We had our issue here when the casing rotted out in that interval, apparently across that Queen interval, but we sealed that off with the liner.

So again, from the Bone Spring up, we've got good cement isolation behind the five-and-a-half. We've never demonstrated otherwise, that we don't have good cement isolation behind that five-and-a-half pipe originally.

CHAIRMAN FESMIRE: So your testimony is that this log, where it's got good cement between the liner and the five-and-a-half, also shows good cement between the five-and-a-half and the formation; right? Is that what you're telling us that 2,000 feet of good cement down there is?

THE WITNESS: No, sir, we don't see that so much. We don't see that so much.

Again, down here inside the pipe, we can see -- again, we can see through because of that good cement sheath between the four inch and the five-and-a-half, we can see some things happening. We are still transmitting that sound out.

If there was nothing there, we wouldn't get that return signal. We're getting that, so we know we made contact through the cement to be able the return that signal. So we know that we've got cement down there. We know we had --

CHAIRMAN FESMIRE: You know you've got cement between the five-and-a-half and the formation?

THE WITNESS: Just from the original temperature survey and identifying the cement type.

CHAIRMAN FESMIRE: So what this log is telling us is that we've got good cement between the liner and the five-and-a-half; right?

THE WITNESS: Right. And we can see the five-and-a-half also has some kind of bond behind it. We can't put a qualitative analysis on that. We can simply see that we've got enough bond with the pipe strings there that we're actually sending that signal out and getting a return. But we can't put a qualitative analysis on that. We can only see that we're making that

contact. But again --

CHAIRMAN FESMIRE: To you, that's not a good bond between the five-and-a-half and the formation? That doesn't represent a good bond between the five-and-a-half and the formation?

THE WITNESS: We don't know.

But again, that's not what we're logging for, being inside that pipe. You calibrate your tools for what pipe you're in. We only had the virtue of being able to see that we had made contact. We have the original temperature survey showing that we had a cement sheath up behind there from the original cement job, but there was never a bond log run to identify what bond we might have had originally.

CHAIRMAN FESMIRE: I haven't heard Armstrong's testimony. But if I understand the documents that were filed, the question is whether or not we have sufficient bond between the five-and-a-half to keep the injection fluids from channeling up into their pay zone?

THE WITNESS: Yes, sir.

CHAIRMAN FESMIRE: Does this tell us that?

THE WITNESS: No, sir. That's never been questioned on wells that the OCD routinely permits. Seldom is an applicant requested to submit a bond log as evidence that their cement sheath is good.

Typically, if you cement the pipe, you're assuming you've got a well-designed cement job, which most of them now are, obviously. You assume you've got that. You run a temperature survey.

Frequently, we only calculate that cement top. But certainly the OCD very seldom -- unless there's some other circumstance that would cause them to request that information --

CHAIRMAN FESMIRE: Like an offset operator complaining of a flow in there on the pay zone?

THE WITNESS: Right. Or maybe even the OCD reviewer looking at it and having a question about the same thing. But again, its interesting to note that we see this transition at 7,700 feet.

CHAIRMAN FESMIRE: Which is --

THE WITNESS: The original transition temperature survey indicated that the original five-and-a-half cement job was out here, and we see this transition right in that area.

So at least from this log, again looking through two strings of pipe and that cement, we're seeing that we've got some connection through there. So we were actually quite impressed with the results of the log.

Bond logging in a nutshell.

Q. (By Mr. Bruce) Mr. Stone, a couple more

items. We have Exhibit 7, which I think is an inspection log. Could you discuss that for the Examiner?

A. It was brought up at the original hearing, during the testimony of Mr. Edgett, that he had conducted a casing inspection log, another type of log that is an electromagnetic log, that offers some evidence of the condition of the pipe. And so we can see pitting and scaling. And certainly if there's a hole that's corroded through the pipe or whatever, we can see some of those.

Mr. Warnell, the Examiner for that hearing, pointed out that we were not able to offer that log as an exhibit. This is the only copy we have. This is the log that Mr. Edgett was referring to.

It's a somewhat unremarkable log, even across the interval in question. Across the Queen, it just looks very typical of old casing with some scaling and pitting and buildup, but no significant hole is indicated. And even the logging company makes that note on their log, that there's no evidence of -- there's no apparent holes.

Q. Mr. Stone, you're testifying about something, a log. When did you get a copy of that?

A. I got this the day before yesterday, as a matter of fact, two houses down, in the rain.

MR. BRUCE: Mr. Chairman, this is one late

exhibit. That was something that was referenced in the prior order. Mr. Stone received it Tuesday, and I've given to it Mr. Carr. I've marked it Agua Sucia Exhibit 18. Mr. Carr can have his objections. And there is not a copy in your file because we didn't get it. I didn't receive it until yesterday.

CHAIRMAN FESMIRE: Mr. Carr, would you like to take a minute to look at it?

MR. CARR: I don't think we have an objection. It's a 2001 log that shows the condition of the well in 2001.

MR. BRUCE: It was referenced in the prior order that it wasn't available. And Mr. Stone obtained the single copy of the log Tuesday and --

CHAIRMAN FESMIRE: I don't think Mr. Carr is going to object.

MR. CARR: I don't object.

MR. BRUCE: Unfortunately, there's only one copy. I marked that 18, Agua Sucia Exhibit 18, Mr. Chairman.

Q. (By Mr. Bruce) Mr. Stone, there's something marked Exhibit 7, which is -- what is that?

A. Exhibit 7 or 18?

Q. Exhibit 7. I'm sorry.

A. This is a well inspection history report

generated out of the risk-based data management system.

Q. How did you obtain that?

A. I called the Hobbs office, and they were able to provide this for me.

Q. What does that reflect?

A. It's a history of all the inspections conducted by OCD on the Government E1, and it -- this particular report indicates that 73 inspection were conducted between February 1996 and January 2010.

Q. Is it routine for the Division to conduct well inspections?

A. Absolutely.

Q. Is that a lot of inspections for one well?

A. It's quite a large number of inspections. It's not completely surprising, the attention that this well garnered. But certainly they were paying close attention to this well for a number of years.

Q. Were there any violations?

A. No violations -- actually, there is one violation in here, but it's not related to the well. It is related to the pit at the time. I'm sorry. I don't -- I believe that was in April of '09. It says that the workover pit was open, liner bad, et cetera, et cetera. So it was -- the only violation was related to the pit and not directly to the well or any operations.

Q. I've marked Exhibits 8A through 8E, which are a number of assignments. Again, Mr. Stone, you sat through the first hearing; correct?

A. Yes, sir.

Q. And Armstrong Energy or Mr. Armstrong himself testified about the chain of title to this well?

A. Yes, sir.

Q. And are those exhibits merely submitted to show a chain of title into Agua Sucia, Dennis Schoenhofer's principal or Agua Sucia regarding an interest in the wellbore?

A. That's correct.

Q. And Agua Sucia only owns an interest in the wellbore; correct?

A. Yes, sir.

Q. To the best of your knowledge, it doesn't own any oil and gas working interest?

A. That's correct.

Q. And its rights are limited solely to the right to inject into that wellbore as to certain depths?

A. Yes, sir.

Q. The original owner of those rights was Armstrong Energy; was it not?

A. I believe so.

Q. Has there been any injection into the

Government E Well No. 1 since January '08?

A. No, sir.

Q. There is activity at that well site; is there not?

A. They do routinely take water in. It's trucked into the site -- it's a large facility -- main tanks to accommodate incoming waters and separating out and such. So yes, they take water in, skim oil, move water over to a waterflood. So yeah, there are daily operations going on.

Q. That complies with Division regulations; does it not?

A. I believe so.

Q. One final matter. Is there a way -- is there a method through various surveys to verify the integrity of the Government E1 wellbore?

A. Yes, sir. My recommendation and many others would suggest running a radioactive tracer in combination with temperature. This would identify not only the exit of the fluid from the wellbore, but the tracer material as it travels outside the pipe to a depth of about 18 inches or so, and locate that radioactive material and watch it behind the pipe, behind the cement.

To answer the Chairman's question, we could identify fluid movement using that method, anything that

traveled up immediately outside the wellbore. You add to that the combination of a temperature survey, and any time that you pump a fluid into a wellbore, you're going to retard the geothermal gradient of that well. In other words, you have whatever your ambient temperature is at the --

CHAIRMAN FESMIRE: You could have just said, "cool it down."

THE WITNESS: Geothermal is an important thing that we've got to look at. So we're going to cool down that temperature, but you don't always cool it down. If you ou pump acid sometimes in a shallow well, you'll heat it up.

Nonetheless, if you would imagine that anything you do, any fluid movement that you do, anything you inject in, anything that moves up behind that pipe is going to retard that temperature back up, the geothermal gradient.

Whatever volume you have, for instance, a channel skirting up the outside of the pipe, you haven't moved a lot of volume of water. So it initially retards that temperature, but it recovers quickly.

Wherever that fluid is being injected, you can do some type of qualitative analysis in that you've got a body, a reservoir fluid, if you will, sitting out there,

and it takes a long, long time for that to decay out and recover its original geothermal gradient.

So wherever our water is going -- and this is a commonly-used tool, it has been for decades -- you can identify by decaying that out. And sometimes you decay that out for 24 or 48 hours, and you can see those volumes of fluid, those bodies of fluid that have been left behind in the reservoir.

So it's a valuable tool, and it's essential that it's run in combination. We made an offer to run that, and that offer certainly stands. We would be happy to -- we'd be pleased to be able to inject in the well and be able to conduct that test to demonstrate that we have integrity around the well.

Q. Would the results of those tests show pretty quickly whether or not the wellbore has mechanical integrity?

A. Absolutely. It's a real-time situation. When you inject into it, generally the channel -- you'll see it turn that corner in a matter of seconds. You can actually watch it over one minute, two minutes, five minutes or ten minutes, and you can actually -- depending on the severity of the channel, you can determine the height, back that up with the temperature of decay curves that you run, and you can put some sort of qualitative

analysis on how you've impacted that and where your fluid loss is.

Q. If the tests show there was movement of fluid, Agua Sucia would have to shut it down; would it not?

A. Absolutely.

Q. But if it shows the other way, shows that the mechanical integrity of the wellbore is sound, then it should be allowed to inject?

A. I believe so.

Q. Mr. Stone, were Exhibits 1 through 9 and 18 prepared by you and under your supervision or compiled from company business records?

A. Yes, sir.

Q. In your opinion, is the granting of this application in the interest of conservation and the prevention of waste?

A. Yes, sir.

MR. BRUCE: Mr. Chairman I tender the admission of Exhibits 1 through 9 and 18.

MR. CARR: No objection.

CHAIRMAN FESMIRE: Exhibits 1 through 9 and 18 are admitted into the record.

(Agua Sucia Exhibits 1 through 9 and 18 were admitted.)

MR. BRUCE: I pass the witness.

CHAIRMAN FESMIRE: Mr. Carr?

MR. CARR: Thank you, Mr. Chairman.

CROSS-EXAMINATION

BY MR. CARR:

Q. Mr. Stone, when were you originally hired to work on this well?

A. April of 2009.

Q. At the time you were hired, were you aware that the injection authority had already lapsed?

A. Yes. They hired me to reinstate that authority.

Q. Were you aware at that time that there had been remedial work taken on the well?

A. Yes, sir.

Q. You were not involved at the time or advising anyone on the kind of remedial activity to undertake?

A. No, sir.

Q. You were originally employed by who?

A. I was originally employed by Louray.

Q. At the time you were employed, did you have any understanding about the ownership of the wellbore? Did you understand that Louray only owned the wellbore, not the minerals?

A. Yes, sir.

Q. And you were aware that there were the limitations under the assignment that Mr. Bruce reviewed?

A. Yes, sir.
Q. You prepared the C-108 applications as they relate to this well?
A. Yes, sir.
Q. You prepared an initial one for Louray?
A. Yes, sir.
Q. What information did have you at your disposal when you prepared that?
A. The original one?
Q. Yes, sir.
A. I had certainly what's available online through OCD online and whatever information I collected from Mr. Edgett, whatever depths, perforations, cement volumes, et cetera.
Q. Did you also receive information from Mr. Al Perry?
A. Not directly, no, sir.
Q. Were you aware of the prior problems with the well at the time you started to prepare the C-108?
A. No, sir.
Q. When you started working on this, did you discover evidence of problems with the well?
A. Certainly as I prepared the narratives about the repair attempts, it became quite obvious, yeah, that they had serious concerns, serious damage to the pipe for

several hundred feet, whatever that was.

Q. Were you able to see damage to the casing?

A. Able to see it?

Q. Um-hum. Were you aware of it as you worked through this problem initially?

A. I was aware of it by virtue of their actually using the plug and packer method to identify that section of pipe.

Q. Do you have an opinion on the status of the wellbore prior to the time it was shut in in 2008?

A. Prior to the time that it was shut in, nothing occurred to me.

Q. In your opinion, was the casing sound? Was the wellbore sound at that time?

A. I don't recall without having looked at the mechanical integrity test dates that were conducted.

Q. Are you saying you don't know?

A. I don't know.

Q. Is it your testimony that the wellbore is sound now?

A. Yes, sir.

Q. Do you have an opinion on what caused the waterflows in the offsetting properties, in the offsetting wells?

A. I believe that initially -- I believe we've

got some waterflow through the Queen. I believe we've got some impact from the offsetting waterflood unit. And I think at whatever point that our casing and apparently the tubing in the Government E1 did fail, that apparently we did inject water directly into the Queens.

I would say it was a combination effect of the offsetting waterflood and our well and whatever natural waterflow we have in the Queen through that interval.

Q. You testified today that the wellbore today, in your opinion, is sound and ready to use for injection?

A. Yes, sir.

Q. Did you look beyond the wellbore itself for causes of waterfloods in offsetting wells?

A. Most of that research was done by our engineer, Mr. Lee. I did identify on an old BLM -- and I don't recall if it was the sundry or the attachment to the APD -- that they ran into drilling an offset well in the area. If you recall that form I'm talking about, it has a section for significant oil zones, significant water zones.

The significant water zones on that particular form are usually filled in one out of 10 times. I found a well with those exact intervals approximately across the Queen where in drilling that well, they took the time to indicate significant water zones had been reached at

those depths. So I believe there was some natural waterflow across that interval.

Q. At the Examiner Hearing, you testified that you didn't do any in-depth analysis from a geological perspective or otherwise; is that true?

A. That's true.

Q. So are you here today testifying about the integrity of the formation outside the wellbore?

A. No, sir. I'm just telling you about the form where I saw that the significant water zone had been reached --

Q. You're not here saying that you have examined beyond the wellbore to determine whether injected waters stay in that well?

A. No, sir.

Q. If I look at the C-108 that's included as your Exhibit 2, is this the same C-108 that was presented at the Examiner Hearing?

A. Yes, sir.

Q. And this is the schematic that didn't have the cement shown behind the liner; is that right?

A. Right.

Q. Would it be better to go ahead and move back to the new data that you prepared, Tab 3, the sundry notice and attachments, to take a look at that wellbore?

A. Sure.

Q. Would that be more accurate? Does that show the current cement in the well?

A. Well, let me locate that.

Q. It's the last page on Exhibit 3. Not the last --

A. Yes, sir.

Q. -- the second page in Exhibit 3.

Does this more accurately show the current configuration of the well?

A. It does. I added the damaged interval, identified that on the schematic. And I simply put in some -- that purplish-color shading, indicating at the time, before we had the bond log or did any serious calculations, not knowing exactly what happened to the 760 sacks of cement that was pumped on the first repair attempt. So I just used that purple shading to indicate that we know -- we obviously got some cement pumped down there. I just didn't put a solid top and bottom on it, not knowing. And I did this prior to -- or about the same time that we ran the cement bond log.

Q. Originally you indicated in the original hearing that you thought the cement was from the surface to 4,168 because there were perforations there. Do you recall that?

A. Yes, sir. Not perforations there. I thought that's where the hole and the problems --

Q. Are you changing that testimony today?

CHAIRMAN FESMIRE: You mean perforations in the sense that there's a hole there?

MR. CARR: There's a hole there and that the cement went into the hole, instead of going on down the casing.

A. Corroded pipe sections there, not perforations shot through the pipe.

Q. (By Mr. Carr) Are you changing that testimony today?

A. I'm -- at the time, I thought that perhaps that would flow down to -- back into the pipe and settle out on the bridge plug that they had set. So I thought somewhere in that depth would probably be what we were looking at.

Q. I want to understand what you believe the configuration of the cement to be in this well. If I go back to the first repair attempt, I have understood your testimony to be in the past that you thought you had good cement outside the casing to a depth of 4,168; is that true?

A. Yes, sir.

Q. That you also, in the second repair attempt,

had good cement from the total depth up to about 7,700 feet; is that correct?

A. Yes, sir.

Q. And that you had put a liner in the well, and you have a good cement bond behind the liner?

A. Yes, sir.

Q. My question is, from 4,168 to 7,700, can you tell me you have a good cement job between the five-and-a-half casing and the formation?

A. Since we've obtained -- since we've run the cement bond log and obtained that information, I was pleasantly surprised how good the bond --

Q. I don't want to know if you're pleasantly surprised how good it was. The question is, do you have an effective cement bond on the casing from the surface all the way to total depth?

A. I believe we do.

Q. So inserting the liner and pumping cement behind that was unnecessary, in your opinion?

A. I don't believe that's correct.

Q. Why was it necessary if you had a good cement bond behind the casing?

A. We were still leaking. When they pumped into it, Mr. Carr, they still had some fluid loss. I believe they could pressure up to a couple thousand, 2,500 psi,

and they would lose about a half a barrel a minute.

Q. Where were you losing that; do you know?

A. It's somewhere across those intervals. I couldn't tell you for sure.

Q. Across what intervals?

A. I don't know for sure what intervals. I assume where the casing was damaged.

Q. Could that have been in the Queen?

A. Absolutely.

Q. San Andres?

A. Absolutely.

Q. Delaware?

A. I don't know that our damaged pipe got down to the Delaware, but wherever a half a barrel a minute could leak off to.

Q. And if it leaked off there, would it be your opinion that it would stay in the Queen if it was in the Queen?

A. I would assume so.

Q. It wouldn't move to the San Andres?

A. Again, it's got to have some sort of conduit to move to make that transition.

Q. If there are exhibits that show pressure and fluid responses over this broad interval, you would say it wasn't anything to do with the wellbore?

A. Since our -- I'm sorry.

Q. I'm talking about the vertical movement outside the casing.

A. Since the repair job? Pressure data since the repair job?

Q. Since the repair job.

A. I'm sorry. Could you ask that again?

Q. Are you saying that the way the well is configured today and the cement you have in the well today, that you cannot have vertical movement outside the wellbore between the Queen and San Andres?

A. I can't say that.

Q. Okay. If there are questions about the integrity outside the casing from 4,168 down to 7,700, by putting a liner in the well and cementing it, are you able to go back and pump additional cement behind that casing?

A. Only outside the five-and-a-half.

Q. Could you go through the liner and through the casing to get out there to add additional cement, or does the placement of that liner make that extremely difficult, if not impossible?

A. You can certainly shoot perforations to squeeze --

Q. And you'd be willing to do that or recommend

that if that needs to be done?

A. If that needed to be done, we would certainly consider whatever seems appropriate if additional repairs were need.

Q. If I look at the new sundry notice to bring things up to date, that is dated about two weeks ago, September 23rd; is that correct?

A. I believe that's more than two weeks ago.

Q. Let's just say September 23rd.

A. Yes, sir.

Q. It's been recently done?

A. Yes, sir.

Q. You've been working on the well since April of when?

A. '09.

Q. And this is when you decided to do that? Was it in preparation for today's hearing?

A. That was certainly part of the consideration. But it was also going back through and making sure that we had done everything that was prudent to do. And that was something that we identified that had been overlooked on several occasions, and I insisted that we get that filed.

Q. In your written summary, there is the statement that a length of bad casing was located between

5,332 and 4,168?

A. Yes, sir.

Q. Does that still exist behind the cemented liner?

A. The casing was damaged, cement was pumped, and a liner was installed.

Q. So you have that damaged casing, cement and a liner over it?

A. And that casing is still damaged.

Q. And that is where potentially fluid moved into the formation?

A. At the time that we apparently had a tubing leak also in the well, yes, sir.

Q. When you say the wellbore is sound, what you're telling me is that I can put water in the surface and get it to the Bone Spring; is that correct?

A. Yes, sir.

Q. We have a whole bunch of statements in this. And even though we don't want to talk about anything that the prior operator did, these are all statements for work on the well that were paid by the prior operator; isn't that true?

A. Yes, sir.

Q. They spent a lot of money on the well. You testified to that; is that right?

A. Yes, sir.
Q. You were not employed at the time this work was done; correct?
A. Correct.
Q. It's the prior operator who did this before you were on the scene?
A. Yes, sir.
Q. Was there an approved C-103 for the work done that was done on that well?
A. Not to my knowledge.
Q. There was no OCD authorization to do it; is that correct?
A. Correct.
Q. In fact, there was a C-103 that was denied by the OCD on February 6, 2008; correct?
A. Yes, sir.
Q. Yet the work was done after the OCD denied authority to do this very work?
A. Yes, sir.
Q. Wouldn't you think, if you were advising somebody today, that if they went out and worked on the well after the C-103 had been denied, they were taking some risks spending that money?
A. Absolutely.
Q. Again, your Exhibit Number 7 from Triple N is

just a summary of the work that was done without an approved C-103?

A. Exhibit Number 7?

Q. I'm sorry. Exhibit Number 5.

A. Yes, sir. I believe that's correct.

Q. I want to go to Exhibit 6. This is your new exhibit, with a number of sample well configurations?

A. Yes, sir.

Q. I think you stated that these were typical saltwater applications that were routinely approved; is that right?

A. Yes, sir.

Q. I think when you look at these -- and then at the end, you compared it to this well. You stated that the current well application exceeds what is routinely approved by the OCD in other circumstances?

A. Yes, sir.

Q. You administered the underground injection program for the OCD for a number of years; did you not?

A. Yes, sir.

Q. In that time, you processed hundreds of saltwater disposal applications?

A. Yes.

Q. Did you process some of these that are included in Exhibit 6?

A. Undoubtedly in the time frame 1994, they could possibly have been mine.

Q. But that wasn't the basis for selecting them; is that fair to say?

A. That's correct.

Q. You're familiar with each of these examples that you presented here today?

A. Only to the extent of reviewing the wellbore diagrams and seeing that it illustrated what I was trying to present.

Q. Were you trying to show that saltwater disposal wells were approved where there was no cement behind the casing at certain intervals?

A. Certainly we have limited amounts of isolation in lots of the injection zones.

Q. Were all of these six examples for new injection well applications?

A. I'm not sure.

Q. Are you aware of any of these wells that had been previously used to inject fluids into a reservoir?

A. I'm sorry, Mr. Carr. I didn't review that. I just went through -- went to the wellbore diagram, saw that it met what I was looking for.

Q. I have the applications here. Would you just accept that none of these are wells in which there had

been previously fluids injected into the reservoir, or would you like to look at them?

A. No. That's fine.

Q. You accept that?

A. They were selected completely at random.

Q. If you don't know that, you don't know whether or not any of these were applications for disposal, I assume, in the formations in which prior injection had substantially exceeded the withdrawal from those wells; correct?

A. That's correct.

Q. Were there objections to any of these applications?

A. Again, I didn't go into any in-depth of reviewing the applications.

Q. You can take them. But would you accept that there were no objections at the time any of these were approved?

A. Sure.

Q. Had the work already been done on any of these pursuant to a C-103 or one that had not been approved, or do you know that?

A. I don't know that.

Q. When you were approving hundreds of applications, you got objections from operators from time

to time; did you not?

A. Yes, sir.

Q. When that happened, you went back to the applicant; did you not?

A. Yes, sir.

Q. You looked to them to prove that the injection could be safely accomplished?

A. Yes, sir.

Q. When you approved an application for injection, you approved them because you were also concerned about preventing waste of oil and gas; were you not?

A. Yes, sir.

Q. You were also concerned about correlative rights, that they weren't impaired?

A. Yes, sir.

Q. You were also looking at these to be sure that oil, gas and water stayed in the zones into which they were injected?

A. Yes, sir.

Q. To do that, didn't you have to look at more than just the integrity of the wellbore in a single mechanical integrity test?

A. We would just look at the area of review, the wellbores in that area of review that penetrated the

proposed injection interval, any plugged wells that were in that AOR, to see that they were properly plugged. I'm not sure if that answers your question or not.

Q. If the application before you was an application that required notice to offset operators, and one of them objected, saying, "You're going to water out my well," didn't you make that applicant prove it would not?

A. If that's the case and there was no settling between the parties at that point, it was sent to hearing.

Q. And the applicant had to prove they could safely inject? Isn't that just the normal process?

A. Yes.

Q. If you had an operation over in the vacuum area where you knew there were waterflows or had evidence of it, you looked beyond the wellbore, didn't you?

A. Sure.

Q. Here, you just made a cursory review of the geology outside the wellbore that's not an area that you're testifying to?

A. I looked at the area of review wells and the plugged wells, and there was only one wellbore in that area of review that penetrated the injection interval.

Q. But you did have an objection in this case?

A. Yes, sir.

Q. To approve a well where there was an objection, the same things were going on in the formation, you would look for more than just a bond log; would you not? That only tells you about the wellbore.

A. Would you repeat the question, please?

Q. If you have an objection -- an application to which there was an objection about something happening in the reservoir, you would expect the applicant to produce more than just a bond log that told you only about the wellbore itself?

A. I would like for them to be able to run a radioactive tracer survey and present some pressure bond tests in other offsetting wells.

Q. You recommended the radioactive tracer survey; did you not?

A. Yes.

Q. Do you recall I asked you if you could run that, and if there was a problem in the formation, that you might run a tracer and never see it?

A. Yes, sir. That's why you run the temperature in combination --

Q. And that was your testimony?

A. Yes, sir.

Q. If we go to Exhibit 7, the well inspection

history --

A. Yes, sir.

Q. -- we have a lot of inspections out here, I guess, that you testified to?

A. Yes, sir.

Q. In the letter that you sent transmitting the C-108, Mr. Hill stated that, "We had a lot of problems with the prior operator. Maybe that's why they were inspecting."

Do you think that that's why it could be?

A. Yes, sir.

Q. Mr. Hill said the well was technically sound and ready for injection. That again would just be a statement consistent that an MIT test was passed?

A. Yes, sir.

Q. If we go to the well inspection history, page 4, the item for November 20, 2006 -- can you find that? It's the fourth or fifth one down.

A. Yes, sir.

Q. It says, "Gauge showing 1,990 pounds. Will check again later"?

A. Yes.

Q. Do you know, was that above the authorized injection pressure for this well?

A. I believe the injection pressure was slightly

below that. It's 1,900, I believe.

Q. This is evidence that they even injected over the authorized pressure?

A. Possibly.

Q. And finally, on October 22nd -- maybe that was the one that was two weeks ago -- you got an assignment of the Government E1 well into Agua Sucia; isn't that right? That was the new title document you testified about, the assignment into Agua Sucia?

A. Yes.

Q. And that was just done two weeks ago; is that right?

A. The assignment to Agua Sucia?

Q. Yes. I thought your title data showed that that was dated October 22nd, 2010.

A. Yes, sir.

Q. Who owned the well before then?

A. Before?

Q. Before August 22nd, 2010. Mr. Schoenhofer?

A. Yes.

Q. So the well had been in Agua Sucia, assigned on that date?

A. Right.

MR. CARR: That's all I have. Thank you.

CHAIRMAN FESMIRE: Why don't we take a

10-minute break before we begin with the Commission's questions and reconvene at 3:30?

(A recess was taken.)

CHAIRMAN FESMIRE: Let's go back on the record. Again, we are in the regularly scheduled Thursday, November 4th, 2010, meeting of the New Mexico Oil Conservation Commission. The record should reflect that all three Commissioners are present. We've just returned from break. We are about to begin with the Commission questioning of Mr. Stone.

Commissioner Bailey?

EXAMINATION

BY COMMISSIONER BAILEY:

Q. Mr. Stone, you said you were not here to discuss geology. Will there be a witness for discussion of geology?

A. I think Mr. Lee could better address technical geological questions.

Q. Okay. The old log that you brought in today, I assume you had a chance to review it, to analyze it, to determine whether or not you see any repeat sections or possible fractures indicated through the zones in question here, the Queen and the Bone Spring and

intervening ones?

A. Are you referring to the casing inspection log?

Q. Is that the log that you brought in that you said you received two days ago?

A. Yes, ma'am. That particular log wouldn't identify those types of things. It's simply an electromagnetic tool to run inside the casing that picks up pitting, scaling, general condition of the steel and the pipe. And I have reviewed it, but I have not analyzed it, just running through there.

The wire line company made the statement that there are no holes apparent, so there was no in-depth analysis of it. It just generally looks like old casing, very typical of what you see in any old well.

Q. I did not realize that it was not part of the original sweep of the logs that would have been run. However, would the pipe thickness show up on this log that was run -- what's the date -- 2001?

A. I'm not sure how pipe thickness is identified on there. I think it shows more of an internal scale of the inside of the pipe.

Q. So it would not show if there were any corrosion holes or anything along that line? Is that what you're saying?

A. It does identify that.
Q. But you do not see any?
A. That's correct, nor did the company that ran it.
Q. So there are none present?
A. Right.
Q. Okay. There was mention of a nearby waterflood.
A. Yes, ma'am.
Q. What zones are they flooding?
A. I believe that's the Queen interval also.
Q. Is it?
A. Yes, ma'am.
Q. If water was escaping or was -- had found fractures or any other type of conduit between the nearby waterflood and the Armstrong wells, could that explain some of the watering out of his production?
A. Absolutely. That is what we believe, is that at least the initial breakthrough waterflow was created by that offset waterflood. The Queen is the interval producing out of, and that's the zone that they are injecting into.
Q. How close is that waterflood that we haven't had a lot of information about?
A. It's outside, just a half mile radius.

Q. It is within the area of review?

A. Just outside the area of review.

Q. Okay. So it's just a half mile --

A. There may be one well that's actually -- I'm sorry. There may be one well of the waterflood that's actually in the area of review. Give me just a moment.

No. It's just outside the area of review map to the south and west of the red AOR circle. There's the blue well symbol with a line through it. That's the nearest Mescalero Ridge water injection well.

Q. Would it be real easy to jump to the assumption that since the flood is in the Queen and the problem with the Armstrong wells are in the Queen, that we should look at that potential problem?

A. We have looked at that, and we believe that certainly that is a contributing factor to the waterflow that the Armstrong is experiencing.

Q. And Merit Energy is the unit operator there?

A. They were. I'm not sure if they still are.

Q. Did you look at the frac jobs or acidizing that was done on this well when it was in production to see how heavy some of those procedures were for opening up the formation?

A. I did not.

Q. The areas where the cement is shown to be bad

through the Queen were probably bad when the well was drilled; is that right?

A. On our well, the Government E1, there was no cement across that interval. And that's very typical of a completion. You cement the lower portion of your production string and bring that up to whatever height the engineering staff would determine.

So frequently you're going to have a void of cement up behind that production string. And frequently even the intermediate string, you'll have that void above that. So it was nothing unusual that that void was there.

COMMISSIONER BAILEY: Those are all the questions I have.

CHAIRMAN FESMIRE: Commissioner Olson?

COMMISSIONER OLSON: I think Commissioner Bailey asked some of the questions I had on the waterflood issue.

EXAMINATION

BY COMMISSIONER OLSON:

Q. I guess coming, Mr. Stone, to your recommending that something we might look at is other tests before operation of the well, is that a like radioactive tracer?

A. Yes, sir. But again, to conduct that test,

you obviously have to inject into the well to be able to perform that test. But we think that that is essential to come to any kind of conclusion of what that fluid is actually doing.

We contend that the fluid -- that the well is correctly repaired and that we would have injection directly into the Bone Spring without any issue. So we have to inject into the well to make that determination and run those types of tests.

Q. How long would you need to inject in the well to run those tests?

A. Mr. Olson, they can run what's called a pump-in tracer, where you can actually get out there with a pump truck, load water and pump in and do it in a few hours' time. That is okay, except obviously as long as this well has not been injecting, we're going to need to charge some things up.

So in other words, what you may see if there is anything going on, that behavior -- that fluid flow may change. The dynamics of that may change as we start to fill that reservoir pressure back up. I would say certainly we can do a pump-in tracer in a one-day few-hour situation.

To be more conclusive about it, you want to run it after some period of injection and then repeat

that maybe in a month. And if that's good, six months, and then maybe go on an annual basis to continually check and make sure that everything is being confined to the zone.

Q. If it's not confined to the zone, does that give you some liability for impacting their production for Armstrong?

A. If it did impact their production. But frequently you'll see water -- if you inject water at a zone, it's not normally a situation where you're impacting something.

It's just -- you can identify -- you may pump it up to another sand string or whatever and put some water away and identify that you have a poor cement sheath or whatever.

So certainly Agua Sucia would understand at that point that there would need to be either additional remedial actions or make a decision on what they want to do.

Q. What are the closest wells of Armstrong's to the Agua Sucia well?

A. The main well is their Superior Number 6, and it's located just 370 feet to the north.

COMMISSIONER OLSON: That's all the questions I have.

CHAIRMAN FESMIRE: Okay.

EXAMINATION

BY CHAIRMAN FESMIRE:

Q. Mr. Stone, just to make sure I understood what you were trying to show us with that log, you've got a four-inch flush joint liner hung in a five-and-a-half at 3,843; right?

A. Yes, sir.

Q. And the five-and-a-half is from 3,843 to 9,597?

A. The five-and-ahalf is from surface.

Q. You're right. The four-inch flush joint is from 3,843 to 9,597, and the five-and-ahalf is from surface to TD -- essentially TD 10,277?

A. Yes, sir.

Q. And we've got a cement -- not a cement bond log, but a thermal temperature survey that shows the top of the original cement on a five-and-a-half at 7,700 feet; right?

A. Yes, sir.

Q. And you're comfortable with the bond between the liner and the cement and the five-and-a-half, and the five-and-a-half in the hole up to the 7,700 feet? That was the pure black section on that log?

A. Yes, sir.

Q. And your contention is that that is a reflection of the good bond through both the annulus between the four-inch flush joint and the five-and-a-half, and the five-and-a-half and the seven and seven-eighths hole; right?

A. Again, you're seeing -- primarily you're seeing that sheath outside -- it's between the four-inch and the five-and-a-half. You're seeing the obvious evidence that you've got bond.

You've got some insulation, something between to carry that sonic signal out to the next layer, the five-and-a-half and the cement sheath.

But my point of that is there's no reason to suspect anything is wrong with the original cement job on that five-and-a-half anyway. And whatever qualitative issues there may be I think are trumped by the sheer height of that isolation.

Q. You've got nearly 2,000 foot of --

A. Right.

Q. But you're not telling us from the log that that is a good bond?

A. We can't tell that that's a good bond. We just know there is bond.

Q. So it could potentially be -- it could potentially have a water channel in there? We can't say

that for sure from the bond log we ran?

A. We can't say that for sure. But again, that's why cement jobs are designed to elevate that height.

So again, where you've got 100 feet, maybe you'll get through it. At 200 feet, you reduce those chances. At 500 feet, 2,000 feet, you reduce those chances tremendously that you're ever going to squeeze anything up through that cement.

Q. From the 7,700 foot up to the casing sheath at eight and five-eighths at 4,089, there is no cement behind the five-and-a-half; right?

A. No. We believe that cement -- because we can see -- again, because we have bond between the four-inch and the five-and-a-half, we can see through there, based on the variable density, the squiggly-line portion. We can see other color rings because there is some bonding between those strings.

Q. But the original temperature log that was run when the well was drilled showed that top at 7,700 feet?

A. Right.

Q. Have you done any volumetric calculations to see how high the cement should have come?

A. On that original --

Q. On the original cement job.

A. No, sir, I didn't do that.

Q. But your theory is that there is bond above the 7,700 foot that the temperature log showed?

A. From the first repair attempt, the 760 sacks that they pumped between the eight and five-eighths and the five-and-a-half --

Q. They pumped that from the surface --

A. Yes.

Q. -- down?

A. Right.

Q. Okay. They would have had to displace the fluid in that annulus somewhere. Where did it go?

A. I assume that that would go into whatever porosity was available through that interval. You're not talking a huge volume of water. But certainly cement is going to displace water and push it away, so --

Q. So you got some bond from that repair attempt?

A. Yes, sir.

Q. Has this well ever been frac'd?

A. I don't know that.

Q. And it was initially a lower Bone Spring producing well?

A. I believe it was a Bone Spring producer. I'm not sure. I believe it was.

Q. Now, Armstrong has a point. You've injected or the predecessors to your client have injected four

times the volume that they removed from the well?

A. Yes, sir.

Q. Where did that water go?

A. I would prefer to defer that to our engineer, as he is prepared to testify to the volumetrics.

Q. Just neglecting for a minute the compressibility of the oil and the gas that were produced, if the formation were truly holding that fluid, your pressures would be significantly higher than the original bottomhole pressure, wouldn't they?

A. Yes, sir.

Q. We don't see that indication on this well, do we?

A. Right. I think, again, Mr. Lee could better answer those questions.

CHAIRMAN FESMIRE: I'll talk to Mr. Lee about that. I have no further questions.

Mr. Bruce, any redirect?

MR. BRUCE: Just a couple.

REDIRECT EXAMINATION

BY MR. BRUCE:

Q. Mr. Stone, Mr. Carr asked you about payment of the 2009 invoices. Those were paid for by Agua Sucia; were they not?

A. Yes, sir.

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Q. And Mr. Carr mentioned a recent assignment from Dennis Schoenhofer to Agua Sucia. What's the relationship between Mr. Schoenhofer and Agua Sucia?

A. He is a principal of Agua Sucia.

Q. And again, getting to this, Mr. Carr asked about some sort of conduit which would allow injected saltwater to come up to the Queen or wherever.

Again, your tracer and temperature surveys would show whether there was a conduit?

A. Yes, sir.

Q. And in answer to Commissioner Olson's questions, there could be a quick test done which would show something immediately; right?

A. Yes.

Q. But you would like to inject into the formation for at least a short period to conduct a more thorough evaluation? Is that what you're saying?

A. Right. I think it would be more conclusive.

Q. And if there was a conduit or something showed up that there was a conduit, Agua Sucia would have to shut the well in?

A. Yes, sir.

Q. And cease injection until it was further repaired?

A. Yes, sir.

Q. And between the work that was done and the these tracer surveys that you mentioned, you believe that Agua Sucia can show that it can safely inject into this well?

A. I believe they can.

MR. BRUCE: That's all I have, Mr. Chairman.

CHAIRMAN FESMIRE: Mr. Carr, anything on that?

MR. CARR: Just a follow up.

RECROSS-EXAMINATION

BY MR. CARR:

Q. Mr. Stone, in his opening statement, Mr. Bruce made a big deal about Agua Sucia not being Louray. We talk about Louray doing all this work without an approved C-103?

A. Yes, sir.

Q. And you just told me that Agua Sucia paid for that.

A. Dennis Schoenhofer paid for it.

Q. So Mr. Schoenhofer was involved back at that time?

A. He was backing Louray.

Q. So although we have a new operator and we've assigned the well in the last few weeks, we have the same

people involved way back?

A. Well, again --

Q. Well, Mr. Schoenhofer paid the bills in 2008; right?

A. Yes, sir.

Q. And he's involved --

MR. BRUCE: I'm objecting, Mr. Examiner. He's mischaracterizing the evidence. I was talking 2009 versus 2008. Lets be clear about who paid for --

Q. (By Mr. Carr) You only paid for the work in 2009? Is that what you said?

A. Correct.

CHAIRMAN FESMIRE: "You," being?

MR. BRUCE: Agua Sucia.

CHAIRMAN FESMIRE: But Louray paid for the work in 2008, and that was Mr. Schoenhofer?

MR. BRUCE: No, no. That was Mr. Edgett.

CHAIRMAN FESMIRE: Was he being backed by Mr. Schoenhofer?

THE WITNESS: Not at that time. Not to my knowledge. I believe Mr. Schoenhofer came in when the final repair job was done, and the expenses exceeded the wherewithal of Louray to keep up with. And at that point is where that relationship started.

CHAIRMAN FESMIRE: So what is the

relationship between Louray and Schoenhofer at any given point in time?

THE WITNESS: He backed them at that point. And at some point, Mr. Schoenhofer felt like he was far enough into it that perhaps he needed to own the operation, rather than being a silent backer of such an operation.

CHAIRMAN FESMIRE: So when did Mr. Schoenhofer start putting money into Louray; do you know?

THE WITNESS: I believe with that second repair job in 2009, March/April 2009.

CHAIRMAN FESMIRE: Mr. Carr?

Q. (By Mr. Carr) After Mr. Schoenhofer started putting money in, he had an operating agreement, and Mr. Edgett was designated the agent for the company; did he not?

A. Yes, sir.

Q. And he continued operating the property for Mr. Schoenhofer; did he not?

A. That's my understanding.

Q. You indicated, in response to Mr. Bruce's question, that there might be a quick test that would show everything?

A. Yes, sir.

Q. As I understand your testimony, if you run a tracer into this well and they found an area of less resistance or flooding off into the Delaware, you might never see that. Isn't that what you said?

A. I'm sorry, Mr. Carr. If I can expound on that --

Q. I want to ask you what your testimony was. I want to ask you -- you can expound to Mr. Bruce.

Did you not testify that if you run a tracer in the well, you might never see it?

A. In response to the question about it showing up in another well.

Q. Would you go to Exhibit Number 17, which is the transcript of the prior hearing, and please turn to page 171? On Line 9 I asked you the question, "Mr. Stone, if we were to run a tracer -- a radioactive tracer to try and chase the migration of a large volume of fluid through a fracture system, do you have any idea how long that would take?"

What was your answer? Would you read it, please?

A. "It's hard to say. Just based on Mr. Stubbs' testimony, we think that that may be occurring rapidly, say in a week's time, so you could watch it."

Q. Go on.

A. "You actually have to monitor it for an extended period of time, maybe give it a couple of days prior to 24-hour monitoring of the wellbore that you suspect it may be communicating over to so you can see some sort of detection. Again, you've got your half life working against you, and also dilution of your material. So it's a -- it's a long-term, around-the-clock situation. But again, using the MCA project just as an example, we can detect after six weeks the introduction of radioactive material to the offset wellbores."

Q. Question, "But it might take longer than that?" Answer?

A. "You may never see it."

Q. Thank you.

A. From one well to another.

Q. So while we're waiting and may never see it, you get to inject?

A. From one well to another.

Q. That's where you'd expect to see it; correct? Where else are you going to see it?

MR. BRUCE: I ask that Mr. Stone be allowed to answer the question.

CHAIRMAN FESMIRE: Why don't you go ahead and complete your answer?

A. We're confusing methods. The quick test I'm

talking about is pumping into the well, introducing your radioactive isotope into that well and watching it exit and perhaps channel up and around. This is immediate. It's real time.

The context that we were just discussing here was in response to Mr. Stubbs talking about the immediate response they had from our wellbore to their wellbore. So we were describing a situation of, for example, the MCA pilot project, where you introduce a radioactive material, different method, similar study.

But this is long term, actually traveling great distances from one wellbore to another. This is long term. You may never see it show up over there. It's two different tests, two different situations.

Q. If I understand, the short-term test is around that wellbore. It's not measured far out into the formation?

A. Yes, sir.

MR. CARR: Thank you.

CHAIRMAN FESMIRE: Mr. Bruce, anything on that?

FURTHER REDIRECT EXAMINATION

BY MR. BRUCE:

Q. Once again, Mr. Stubbs was talking about if water is injected and it's going out of the zone, it's

going to be over at his well immediately?

A. Right.

Q. If that occurred, once again, Agua Sucia would have to shut down?

A. Yes, sir.

CHAIRMAN FESMIRE: Thank you very much, Mr. Stone.

Mr. Bruce, would you like to call your next witness?

MR. BRUCE: Yes. I call Mr. Lee to the stand.

ROBERT LEE

Having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Please state your name for the record.

A. Robert Lee.

Q. And where do you reside?

A. Midland, Texas.

Q. What is your occupation?

A. I'm a petroleum engineering consultant.

Q. Have you been retained by Agua Sucia with respect to this application?

A. I have been.

Q. Have you previously testified before the Commission?

A. I have not.

Q. Would you summarize your educational and employment background for the Commissioners?

A. Sure. I went to school at Rolla, Missouri, between 1975 and 1979. I worked for Tenneco Oil out of San Antonio until 1989, and then I went to work for HEYCO Oil & Gas in Roswell, New Mexico, for about 10 years. Then I moved to Midland and became a consultant in Midland, Texas.

Q. With respect to your consulting business, have you testified previously or prepared materials for clients regarding saltwater disposal wells or other injection wells, such as for waterfloods or pressure maintenance?

A. Yes.

Q. Are you familiar with the engineering matters related to this application?

A. Yes.

MR. BRUCE: Mr. Chairman, I tender Mr. Lee as an expert petroleum engineer.

MR. CARR: No objection.

CHAIRMAN FESMIRE: Mr. Lee, are you

licensed professional engineer in New Mexico?

THE WITNESS: No, sir. I'm licensed in Texas. I was in New Mexico, and it lapsed several years ago.

CHAIRMAN FESMIRE: You know the Governor needs $180. If you're going to be working on New Mexico projects --

THE WITNESS: Let me give that to you right now, if you think that will help.

CHAIRMAN FESMIRE: Let's wait until after the meeting.

MR. CARR: I object.

CHAIRMAN FESMIRE: The point is, we try to encourage people working in New Mexico be registered in New Mexico.

THE WITNESS: Yes, sir.

CHAIRMAN FESMIRE: So we'd appreciate it if -- it costs $180 a year. I just had to renew mine.

THE WITNESS: Uh-huh.

CHAIRMAN FESMIRE: It's a great bargain, compared to what you pay in Texas.

THE WITNESS: Right. It's 200 there.

CHAIRMAN FESMIRE: Plus the tax.

THE WITNESS: Yes

CHAIRMAN FESMIRE: He'll be so accepted,

in spite of being a Texas-registered engineer.

Q. (By Mr. Bruce) Mr. Lee, to start off with, do you believe the Government wellbore is mechanically sound and can be injected into?

A. Yes, sir.

Q. Have you reviewed the data in the C-108, and do you agree with Mr. Stone's analysis of that data?

A. Yes, sir.

Q. Now, you testified at the original hearing in this matter?

A. Yes, sir.

Q. And so you heard the testimony from Armstrong regarding where the well -- what happened before 2008 and where the water came from, et cetera?

A. That's correct.

Q. Have you prepared a series of exhibits to show what you think happened during that time frame?

A. Yes.

Q. Would you identify your Exhibit 10 for the Commissioners and briefly describe what that shows?

A. Yes, sir. Exhibit 10 is a production decline curve of the original Government E Bone Spring well. It shows down in the lower left-hand corner that it has produced 181,000 barrels of oil, over in the right-hand corner, half a bcf of gas. There's a little box up there

on the curve saying it's produced 121,000 barrels of water. It was shut in back in 1993, at the time it was converted to injection.

Q. Will that form the basis for your later testimony regarding the reservoir voidage, et cetera?

A. Yes, sir.

Q. What is Exhibit 11?

A. Exhibit 11 is a plot of the Government E injection volumes, showing that it starts injection in 10 of '94. The scale for water injection volume is shown on the left-hand side, and those are in thousands of barrels a month. So where you see 10, that's 10,000 barrels a month, up to the next logarithmic scale, that would be 100,000 barrels a month. So when they started injection, it was about 20,000 barrels a month.

Across the top, I noted where they had issues, tubing leaks, problems with the well. And they ran MITs that were satisfactory, the last one being in 9 of '05.

The period in 2001, where the well is shut in, is a time frame of -- between operators. The original well was converted by a company called Subsurface. And a man name Lowell Deckert was the operator, and he sold the well. He shut it in in 2000 and sold the well to Louray, and he commenced injection in 2002.

Q. So that period where there was no water that

was injected, it wasn't due to any mechanical reason. It was just a change-of-operator situation?

A. That's correct. And also, on the box on the curve in the lower right-hand corner, cumulative injection to date, almost 3.2 million barrels of water.

Q. Now, what is Exhibit 12? It's several exhibits stapled together.

A. Exhibit 12, the front sheet is a plot of all the Armstrong wells in Section 25.

Q. Are these Queen producers?

A. Yes. On this curve, I'm showing oil, gas and water production. Oil is green, gas is red, and water is blue. I've got some of the same notes of what was going on in the life of the Government E1, showing when it was converted, various MITs, things of that nature.

Q. And as you noted on your exhibit, about the time the Government -- the Government E1 was shut in in early 2008; correct?

A. Yes.

Q. Or stopped injecting, I should say?

A. That's correct.

Q. And the water production on the first page of Exhibit 12 shows that it decreases?

A. That's correct.

Q. Now, it later goes back up, the water

production.

A. That's correct.

Q. Could you comment on that?

A. Yes. Kind of in the middle of 2009, the water takes a jump from about 3,000 barrels a month up to about 5,000 barrels a month.

When I was looking around at why that may occur, we found the offset injection of Well Number 15 in the offset flood, which is in unit letter A of Section 35. It had been a producer for a while -- and we're going to get to that exhibit in a minute. I kind of jumped ahead on the story.

It was a producer, and then in 1998, it was converted. It had been shut in right at the beginning of 2008. And it's the closest injection well to the Armstrong lease. And in mid-2009, it comes back on injection for about 8,000 barrels a month. And I thought that kind of would explain where the water came from.

In the last hearing, there was testimony given that the Well Number 5, the Armstrong Superior Well Number 5, had been shut in, but brought back on production.

And that's why we attached the individual production curves for the Armstrong wells in Section 25. Because if you look through those, the water jump in kind

of mid-2009 occurred on Wells Number 2, Number 3 and Number 4. And Number 5 did have a jump in water production, but it was in 2010.

And those three wells that showed the increased water production are three of the further west wells offsetting the -- it used to be Merit. It's operated by Linn now, Queen flood called the Mescalero Ridge Unit.

Q. Linn is L-i-n-n?

A. Yes.

Q. Another thing on this -- we'll get to the Merit info in a minute. The other thing, looking at the oil production, at the same time the water production goes up, there's no increase in oil production, is there?

A. I don't see it on this curve, no, sir.

Q. Does that indicate to you that the water is not coming from the Government E well?

A. It can't come from the Government E. The Government E was shut in at this point in time.

The other thing is, on the water production, there was, in 2001, a pretty significant jump in water production from about a little over 10,000 barrels a month up to almost 30-, dropping down to about 25,000 a month there in the year 2001. But that's also the year that the Government E well was shut in.

And once again, I think that the water that was impacting this lease early on was coming from the Queen waterflood. Later on -- I mean there's no doubt they -- Mr. Carr and Mr. Stubbs presented testimony that --

CHAIRMAN FESMIRE: Mr. Bruce, may I ask a real quick question?

MR. BRUCE: Sure.

CHAIRMAN FESMIRE: If it was coming from the Queen waterflood, wouldn't we expect to see some sort of response in the oil?

THE WITNESS: Not necessarily. Well, okay. If I look at the 15 well --

Q. (By Mr. Bruce) Let's stop for a second. Let's identify for the Commissioners info regarding the Mescalero Unit injection. Is that reflected in Exhibit 13?

A. Yes.

Q. So maybe the Commissioners should have Exhibits 12 and 13 in front of them.

A. That may be handy.

Q. Could you then respond to the Chairman's question?

A. Yes, sir.

Exhibit 13 is a plot of the injection wells in

Section 35. You can see there's a pretty big jump in injection in 2008. And if you just flip that page, the Mescalero Unit Number 15 is kind of the culprit there. It comes on injection in mid-2008. And you can see that it's putting away almost 28,000 barrels a month for a few months, and then it drops down to 10-, 15,000 barrels a month and kind of injects on through there.

Like I say, it shuts in in 2008 and then picks back up again in 2009.

Q. Again, early 2008 is when the Government E stopped injecting?

A. That's correct.

Q. And then right around 2009, you see an increase in water production from the Armstrong wells?

A. Yes, an increase in produced water there.

Q. Produced water?

A. Yes. So by the time that they convert this well in 2008, you know -- and there may be work orders involved. But you do see bumps in the oil production.

But if you're just injecting water and it's not -- you should get some increase with the flood front moving through to your producing wells.

But if you're not getting containment and support from offsetting injections while we make our patterns five spots, because that way, I get pressure

support from all directions, you may not see as much of an oil bank or much of an oil increase, increase in oil production, as you may expect.

CHAIRMAN FESMIRE: What probability ratio are you looking at in that flood; do you know?

THE WITNESS: I don't know. I didn't look at the viscosities. No, I did not.

CHAIRMAN FESMIRE: Even if you've got an adverse mobility ratio, you should see some sort of response in the oil production if you get a water response into the pay zone; right?

THE WITNESS: You should. If I look at my curve, my oil curve for, say, '93 through '96 --

MR. BRUCE: On what exhibit?

THE WITNESS: I'm sorry, on Exhibit 12. That's about a 15 percent decline in those first three years. There's a breakover in production, where it kind of -- there's a flattening in production in '97. There's a water increase in early '96. So maybe instead of really a response, maybe I'm getting a flattening in their oil production.

CHAIRMAN FESMIRE: So you're saying the jump in production during 2002 is that response that we're looking for?

THE WITNESS: I don't have enough

information on the operations of the wells and what was going on on the lease. I don't have the well files or anything to see -- well tests to see what was going on on that lease, so I don't know what happened. Maybe it was acidized wells and the fallout response from that.

CHAIRMAN FESMIRE: But at the end of 2004, your water production doubled, and there was no change in the oil response.

THE WITNESS: That's correct.

CHAIRMAN FESMIRE: Wouldn't that indicate that the water is coming from a zone other than the pay zone?

THE WITNESS: If I'm having injection into 35A in the Well Number 15, I'm not going to necessarily expect to flood the whole section of 25. I may have --

CHAIRMAN FESMIRE: But if you get a better response, you have some sort of sweep.

THE WITNESS: Maybe I had a breakthrough. I don't know. I'm sitting here going, "What could create that?"

And I could have a situation where I had water come up to the first wells, and I'm seeing this flattening. I get a little bit of incremental oil out of it, and then here comes the water. The production curves don't really indicate that, though.

The production curves I'm seeing, as far as the reported data sees various jumps in production, jumps in water production, water production drops, and it behaves very erratically on the production curves. So in this situation, I'm going to say I can't definitively explain why I'm not seeing an oil response.

In other situations, if I have an offset flood, once I get to my first wells, the water hits that, that's the pressure you're seeing. Probably my waterflood front doesn't go past the first wells to impact the rest of the lease. But I'm not seeing that on the data here. I'm not sure what's going on here.

CHAIRMAN FESMIRE: Mr. Bruce, I apologize. I just wanted to ask that while we were there.

THE WITNESS: Good question.

Q. (By Mr. Bruce) But again, if you compare Exhibits 12 and 13, the first page of each, Mr. Lee, somewhere around, say, '99, the Armstrong wells did see an increase in production?

A. That's correct. And I can't explain why.

Q. If you look at Exhibit 13, there was increased injection starting in late '98 into the Mescalero offsets?

A. Prior to that, yes, sir. It's going to take a while to fill up the volume there from the Number 15

because it was still a producing well and had just been converted there in '98. So maybe it took a while to get there, yeah. That's what I'm seeing. That's why I'm saying that.

Q. It's certainly a reasonable inference that the increase in water production in the Armstrong wells is coming from off lease?

A. That was our contention. But towards the end of it, we know that there's a problem. And you know, we know we have a good MIT at 9/05. And shortly after that, looking at Exhibit Number 11, the water injection in the Government E takes a pretty dramatic increase.

So if I was to look at what point in time this tubing casing failure may have occurred, I would kind of point to that in 2006. And it was shortly after that that these wells in Section 25, looking at the total curve, start going from 7,000, 7,500 barrels a month up to nearly 9,000 barrels a month.

Q. Do you could have anything further on those exhibits?

A. I don't think so.

Q. What is Exhibit 14?

A. Exhibit 14 is a table, the tabular production data for the Superior wells for 2010.

Q. Why is this included in your exhibit package?

A. It was just to also -- we also looked just to make sure that when I pulled data out of IHS, that I'm not picking up anything erroneous. This is what's actually reported to the State. And it confirmed the numbers that we see on our production curve on Exhibit 12.

Q. What is Exhibit 15?

A. Exhibit 15 is a compilation of the Mescalero Ridge Unit. And what I was trying to resolve here or figure out is, you know, if I want to say that I've got water going off lease, I had better have excess injection where I say it's coming from.

So here I'm showing the lease history. You can see the oil production, water production, water injection, in purple. And if I look here, the total historical oil cum. right now is almost 2.8 million barrels, and water production is almost 9.4 million barrels. The cumulative water injection is almost 19 million barrels. And I estimated reservoir voidage on the Queen, oil of 1.22. That 2.771 million barrels translates to 3.381 million barrels of reservoir volume.

So I added my reservoir volume oil, my water production, and got about 12.7 million reservoir barrels taken out of the formation. So the injection was almost 5.8 million barrels greater than the production.

Q. You don't think that's unusual in an injection situation, do you?

A. No. We see that. Water is not contained by the lease lines, and it moves to the point of least resistance.

Q. What is Exhibit 16?

A. Exhibit 16 is the same type of presentation, but I included everything -- all the Queen production from Section 25, once again seeing how the total system injection/withdrawal ratios may look.

And here my oil numbers go up. I got almost 3.6 million barrels of oil and 4.4 million reservoir barrels. Water production was 10.4 million barrels. So my estimated reservoir voidage was about 15 million barrels, and injection is still about 15.6 -- I mean 18.6. So the injection is about 3.7 million barrels greater than the production.

CHAIRMAN FESMIRE: Mr. Lee, can I take another --

THE WITNESS: Sure.

CHAIRMAN FESMIRE: -- divergence here?

Since 2003, your water injected and water produced curves have basically been tracking, so they are operating this waterflood above the bubble point. That doesn't look like a reservoir that's got some sort of

external influence that isn't pictured on this curve, does it?

THE WITNESS: An external -- no, I don't think there's an external influence. I think it's almost a --

CHAIRMAN FESMIRE: But this doesn't include the Government E injection, does it, this curve?

THE WITNESS: No, it does not.

CHAIRMAN FESMIRE: But this just includes the unit injection; correct?

THE WITNESS: That's correct.

CHAIRMAN FESMIRE: Yet the unit injection and the water produced are essentially tracking like railroad tracks here. That doesn't look to me like a flood that's got some sort of external inflow into it.

THE WITNESS: Right. They were just basically putting away their produced water.

CHAIRMAN FESMIRE: There's no make-up water going into it either from the surface or the --

THE WITNESS: There has been make-up water going into this. I don't know if there is now or not.

If you look back when the flood kind of started in 1974, you can see that they were injecting quite a bit more water than they were producing.

That's one of the things that was brought up

at the last hearing, is that they were using fresh water. And there's a difference in chlorides from the Mescalero Ridge Unit. And we have stuff later on where we see low chloride produced water in wells down in Section 36, indicating once again that the injection water was going off lease and impacting wells in Section 36.

CHAIRMAN FESMIRE: I apologize, Mr. Bruce. Go ahead.

Q. (By Mr. Bruce) Mr. Lee, although you don't have -- we didn't submit an exhibit, did you check other Bone Spring saltwater disposal wells with respect to voidage of the reservoir when they produced, as opposed to the injection into the reservoir when they were converted to injection?

A. Yes, sir.

Q. What did you find?

A. I found that it's not uncommon for Bone Spring injection wells to have sometimes significantly higher injection to withdrawal ratios than -- more injection than was pulled out of the reservoir.

Another thing that I found when I was looking into this, knowing that was becoming an issue, because I seen it before, so it wasn't a particularly alarming thing. But the Government E well was producing out of the Lee Bone Spring field at a depth of about 9,700 feet,

and it's located there in Section 25.

But if you move to the south, there's probably about seven or eight other Bone Spring wells producing out of the Lee Bone Spring field. And I didn't get a log and build a cross-section, but the completion depths are comparable, around 9,600 to 9,700 feet. So it looks like it's all part of the same reservoir.

When you look at the production from those wells, I calculated that there was nearly 2.2 million barrels of -- reservoir barrels taken out of the system in oil and water, and my Government E is tied in to that same reservoir. That's another place where I could see water going into the zone.

When you include the other wells, it drives that -- instead of 10 to 1, it drives it down to about one-and-a-half to one.

Q. In your experience, is it unusual to see ratios like that, injection to reservoir voidage?

A. No. I don't know. I've wrestled on this a lot, you know. It's like, "Why is that? I've got this liquid-filled system, take the barrels out, put the barrels in." There's an extra leprechaun somewhere in the picture.

But I think what happens is that it's not necessarily always a liquid-filled reservoir. Sometimes

when we drill these, there's some free gas in the reservoir. Whenever you go out and drill a well and you perforate it and it's a wet well and you produce it back, it's not uncommon to see gas come back with that. You have some fizz in the water and you smell gas. I think that these reservoirs have some free gas component in it that will compress. And like I said --

CHAIRMAN FESMIRE: At 9,700 feet?

THE WITNESS: Um-hum, possibly. It depends on what the makeup of the water is, the makeup of hydrocarbon is. And I didn't do a PBT analysis or anything like that.

But just looking at the initial GOR, and assuming a reservoir pressure at a .4 gradient, it looked like, in the Government E Number 1, that there may have been some free gas in the reservoir when it was initially drilled, based on the GOR that I saw.

Now, am I reading the chart wrong? I'm not going to say there was free gas. I'm saying that my standing correlations indicated that there may have been. Like I said, that's not something I brought to testify to. But I think that there's free gas in these reservoirs, and that's why you're able to inject more than was taken out sometimes.

Plus, the Bone Spring is a huge, massive

reservoir. And there's lots of places where the water could go, I mean, because it's so thick.

MR. BRUCE: Just a couple of things briefly.

If I may approach the witness?

CHAIRMAN FESMIRE: You may, sir.

MR. BRUCE: I think, Mr. Chairman, I marked two exhibits 16A. The one that I just handed Mr. Lee is from Cardinal Laboratories. I marked that 16, and I think it probably should be 16A.

CHAIRMAN FESMIRE: Are these the exhibits that --

MR. BRUCE: -- that were filed late.

CHAIRMAN FESMIRE: Okay. Does the court reporter have a copy?

MR. BRUCE: I submitted six copies to the Commission. If not, Mr. Lee can hand his exhibits to the court reporter.

CHAIRMAN FESMIRE: Let's make sure she's got an exhibit here. It's marked "Cardinal Laboratories." I hand delivered them to the Division yesterday.

MR. SMITH: I have these. Do you want me to give these to her?

CHAIRMAN FESMIRE: Let's make sure she's

got one that's labeled 16A.

MR. BRUCE: What I marked as 16 should be 16A, is what I'm saying. I already had Mr. Lee testify as to Exhibit 16.

MR. SMITH: Why don't you go ahead and mark it?

Q. (By Mr. Bruce) What is Exhibit 16A, Mr. Lee?

A. This is a water analysis done by Cardinal Laboratories, a water analysis on the Armstrong 6, Government E Number 1, Mescalero Ridge water, and a well call the Sarah Sue Number 3, which is located in Section 36, unit letter D.

Q. If you turn to page 2 -- why did you submit this exhibit?

A. If I look at the -- looking at the water characteristics, I look at the sodium up there in the first column, the Na, and I see that the Mescalero Ridge Unit has a sodium content of about 48,000. The Sarah Sue, which is a Queen producer, has sodium of about 37,000, whereas the Armstrong 6 and Government 1 had 55- to 60,000 parts per million or milligrams per liter sodium.

And when you look at the chloride content, you see a similar thing. The Mescalero Unit had 98,000 parts

per million, and Sarah Sue, 76,000 parts per million.

So that was indicating to me that there was Mescalero Ridge water impacting the Sarah Sue Number 3 well, which is in unit letter D of Section 36, outside the unit.

Q. It's just showing that the water -- in your opinion, water from the Merit waterflood was migrating off lease?

A. That's correct. This well is just a little bit closer than the Superior Number 5.

Q. Then finally, Exhibit 17, which is a stapled-together invoice from Triple N, how did you get that exhibit?

A. I called Jim Newman to see if he remembered anything about this well. He was with Triple N at the time the work was done. He's with Basic now, and he was able to dig this out of his file and send it to us.

Q. This relates to the work that was done by Louray back in February of 2008?

A. Yes, sir, the original first attempt squeeze job that was done.

Q. And you were at the prior hearing when Armstrong questioned Agua Sucia's witnesses about evidence of work done at that time?

A. Right.

Q. So what is the purpose of this exhibit?

A. This does demonstrate that the work was done. It wasn't something just that -- Louis Edgett noted it was actually from the company that did the work with the volumes and pressures and rates that they pumped the cement away at.

Q. Just a couple of things from the prior order. One of the findings in the prior order was that something -- it was actually Finding 11(N), about something is allowing direct communications between the Bone Spring, Delaware, San Andres, and Queen formations in this area. Do you agree with that finding?

A. No.

Q. Why is that?

A. It seems like the water impacting the Armstrong lease was either coming from initially the Merit flood and later on, certainly from the Government E Number 1.

I have not seen anything from a geological standpoint that would indicate there's fractures from 9,700 feet up to 5,000 feet out here, or a fault. I do have a log on the well. There's no repeat sections, nothing that indicates a fault from the injection zones that they are putting water away in.

Not only was it the zone that they produced

out of, but they added an additional zone in that well whenever Subsurface turned it into a water disposal well. But between that interval and the Delaware, there's hundreds of feet of Bone Spring carbonate with 2 percent neutron porosity. It just looks very, very tight, very dense. I don't believe that this water is going to be migrating through that, through any vertical permeability that may exist there.

Q. In other words, again -- and you've testified about this before, Mr. Lee -- there could have been -- during the period of time before January 2008, when Louray operated the well, there could have been injection water going into the Queen?

A. Yes.

Q. But there wasn't any water coming from the Bone Spring up to the Queen? Is that your opinion?

A. Certainly I do not believe through the formation, and probably not even through the injection. The only way it would do that is if they ever shut down the injection, the Bone Spring may come out and back flow up to the Queen. I can see that being a situation.

As long as I'm putting water down the well, it's not going to come out of the Bone Spring. The injection water is going to hold it back, and it's going to go out the Queen or go down to the Bone Spring,

wherever the path of least resistance is.

Q. In your opinion, is the granting of this application in the interest of conservation and the prevention of waste?

A. Yes, it is.

Q. Were Exhibits 10 through 16 prepared by you?

A. Yes, sir.

Q. And was exhibit -- where did you get Exhibit 16A, the water analysis?

A. 16A, I had asked Mr. Stone to contact Mr. Edgett to see if he had any water analyses on the Sarah Sue well -- it shows the operator on that well -- and he did.

Q. And you personally obtained Exhibit 17, the Triple N information?

A. That's correct.

MR. BRUCE: Mr. Chairman, I move the admission of Exhibits 10 through 15, 16, 16A and 17.

CHAIRMAN FESMIRE: Any objection?

MR. CARR: No objection.

CHAIRMAN FESMIRE: The record will reflect that Exhibits 10 through 15, 16, 16A and 17 are admitted.

(Agua Sucia Exhibits 10 through 16, 16A and 17 were admitted.)

MR. BRUCE: And I pass the witness.

CHAIRMAN FESMIRE: Mr. Carr?

CROSS-EXAMINATION

BY MR. CARR:

Q. Mr. Lee, just a few questions. Let's go to Exhibit 10.

A. Sure.

Q. This is just a production history on the Government E well before it was converted to a disposal well; is that correct?

A. That's correct.

Q. We have 181,000 barrels of oil and 121,000 barrels of water taken out of that well?

A. Yes, sir.

Q. That totals approximately 310,000 barrels?

A. We have --

Q. 302,000?

A. Well, yes, based on what you see. But because I've got gas, I've got to put the gas pump back in the solution. That's why --

Q. That's the total volume of oil and water taken out of the well?

A. That's correct. That equivalates to about 400,000 reservoir barrels taken out. Yes, sir.

Q. Now, go to Exhibit Number 11. Doesn't that show the cumulative injection into that well?

A. 3.2 million barrels.

Q. So you put 3.2 million in, and you've taken 302,000 out?

A. Yes, sir.

Q. Where did that go?

A. The --

Q. Was it in the Bone Spring?

A. Yes.

Q. Didn't you also have some going into the Queen?

A. Yes. I think --

Q. Do you know how much went in any of these places?

A. You know, if I -- it would take some figuring. I'm going to say before 2006, I think those volumes were going into the Bone Spring.

Q. And you think the wellbore integrity was established in 2006?

A. Yes. And the reason I say that is in '95, we had an MIT that was good. So the train wreck occurred some time after that. Looking at that injection curve, just with those volumes going up, something changed. And so that would be a point that I'd point to and say, "Maybe it happened then."

After that, I think some of the water is going

down into the Bone Spring. Maybe some is going into the Queen. We know some is definitely going to the Queen, because that's what you showed us last time.

Q. If we look at your Exhibit Number 12, the integrity of the well, I believe you just testified that you believe it was sound through when?

A. 9 of '05.

Q. Anything beyond that?

A. Previous to that, I think the well had integrity because my MIT was good.

Q. When you saw that the Government E was shut in in early '08, you would agree you do see a drop in the water production?

A. That's correct.

Q. That was before the time there was any potential increase in wells in the Mescalero Ridge; is that not true?

A. Well, the Number 15 was shut in at --

Q. Are you telling me that this decline that you see on the water production has nothing to do with Government E?

A. Oh, no. It does. I think it's a combination of things.

Q. So when there was water coming out of the Government E into the Queen, that would be causing some

of this water to be shown produced in 2006, '7 and '8; right?

A. Yes, because --

Q. And you also had a fairly steady bit of production of water back from '2, '3, '4, right along; did you not?

A. Right along before that or --

Q. Yes. Uh-huh.

A. Yes.

Q. Do you think that none of that was from the Government E well?

A. I'm not sure where it was coming from, but I'm going to say it wasn't from the Government E. It appears that we had mechanical integrity.

Q. So there would be no influence on that water curve from the Government E?

A. Based on the data that I've looked at so far, I would say yes.

Q. We had that new log that you produced today -- I don't know what you call it -- inspection log. That was in 2001. That also showed the integrity of the well in 2001?

A. Yes.

Q. When you stopped injecting in the Government E during 2001, we also see a decline in the water during

that period; do we not?

A. You saw an increase.

Q. You don't see in the year 2001, from January to December, a decline in the water production?

A. I see a tremendous increase from like October of 2000 to the first part of 2001.

Q. What about to the end of 2001? What does the water do in that 12-month period?

A. It drops off.

Q. It drops. But we have wellbore integrity then, too; do we not?

A. That's correct.

Q. So you're seeing all this water jumping around, you see all the oil production fairly constant, but you think it's not coming from an outside source? Is that your testimony?

A. That is correct. And I guess one reason I think that is, when I look at my Exhibit 13, I look at the offset injection in 35, that water injection also started dropping in mid-2000. It takes a little while for a response to kind of get there. So by the time 2001 rolls around, I severely cut back my Section 35 injection volumes also.

Q. I believe you testified that you think the wellbore is sound today, so you have integrity today?

A. Yes, sir, after all the work was done.
Q. And we had integrity through, I guess, about 2006?
A. That's my guess, yes, sir.
Q. And so what we have today, we're going to see something comparable to what we had prior to 2006, because we have a sound Government E both times?
A. You want to see something comparable --
Q. The wellbore was sound from 2006 until today?
A. Yes, sir.
Q. So we're back to where we were then?
A. Not necessarily.
Q. All this --
A. The reason not necessarily is because I know we've put water into the Queen. So there was water that went out that's out in that reservoir right now that's going to need to be produced. I don't know how much that is, but I know that there was water that went into the Queen. So that's something that's different now.
Q. But you're telling me that the way the water curve jumped around prior to 2006 has nothing to do with the Government E, and the wellbore was sound at that time?
A. Based on the data I see, yes, sir.
Q. And then when the wellbore developed problems,

we don't see a change in the curve. But that didn't have anything to do with the Government E; right?

A. No. The water production went up. It went from like 7,000 to almost 9,000 barrels a month.

Q. And the volumes you're seeing was injected out of the Government E?

A. No. I'm saying that would be the volumes that would injected out of the Government E that passed through the reservoir that came out the producing wells. There could be -- because the reservoir is somewhat --

Q. There could be a lot more water there?

A. There could be water left in the zone, yes, sir.

Q. And if I was trying to produce in that zone, I'd have to deal with that water now; would I not?

A. Yes.

Q. And that's been put in by a prior operator, so you wouldn't have any responsibility for that? Is that true of your testimony?

A. I wouldn't have any responsibility for the water that's in the formation?

Q. That it's okay. We have a new operator today, and the water is there?

MR. BRUCE: I would object insofar as that calls for a legal conclusion.

MR. CARR: I think the answer is obvious. That concludes my examination.

CHAIRMAN FESMIRE: I'll sustain the objection.

Commissioner Bailey?

EXAMINATION

BY COMMISSIONER BAILEY:

Q. Look at Exhibit 12 for the year 2009. We see water production take a significant jump during 2009?

A. Yes.

Q. The Government E is shut in?

A. Yes.

Q. So that jump in water production cannot be attributed to the injection well?

A. No.

Q. Do you have an explanation of why that production would have jumped?

A. My research showed that the Well Number 15, which is in unit letter A of 35, just offset the Armstrong unit --

MR. BRUCE: Is that a Merit well?

THE WITNESS: Yes, it was Merit at the time. It's Linn Energy now.

In this curve, it's shown in Exhibit 13, the second curve back. It starts injecting kind of in the

middle of 2009.

So seeing an increase in water, seeing my offset injection well come back on line, I looked at that and said it seemed to be logical to think that that may be where the water was coming from.

COMMISSIONER BAILEY: That's all.

CHAIRMAN FESMIRE: Commissioner Olson?

EXAMINATION

BY COMMISSIONER OLSON:

Q. Just a follow up on that. How far away is the -- I guess the Number 15 from Armstrong wells?

A. I'm just going to guess here, because I'm looking at a map here.

I'd like to also say that that Sarah Sue well that we saw was about maybe 1,000 feet from the Number 15. And the Armstrong well, the closest well, would be the Number 5. It's maybe 11-, 12-, 1,300 feet, maybe, so somewhat comparable. Their well is a little further away than the Sarah Sue well. It's a location away, basically, cattycorner.

COMMISSIONER OLSON: That's all I have.

EXAMINATION

BY CHAIRMAN FESMIRE:

Q. Along those same lines there, we see essentially, in the short term, a doubling of the water

production due to an injector in the pay zone coming on line, and no increase in oil production. This looks like it continues down the decline curve.

A. You know, based on what I'm showing, I would say you're probably right. I wish I had -- and I don't know how it would look, frankly. There's been -- injection was going on on the Mescalero Ridge Unit since 1974, I think.

If I was to look at the rest of the whole Armstrong curve back to 1974, I don't know if I would have seen an increase in there or not. Frankly, I wasn't really looking at it that hard from that perspective. I was looking at it more up here, within the last, you know, 10, 12 years of the life of it.

Q. Okay. I think, from this curve, from what happened in 2008, we can definitively say that the Government E was affecting it. But it looks like there are other things affecting the Armstrong wells also, aren't there?

A. I would agree, yes.

CHAIRMAN FESMIRE: I have no further questions.

Mr. Bruce, anything to follow up on?

MR. BRUCE: No.

CHAIRMAN FESMIRE: Mr. Lee, thank you very

much.

THE WITNESS: Thank you.

CHAIRMAN FESMIRE: Mr. Bruce, do you have another witness?

MR. BRUCE: I rest my case.

CHAIRMAN FESMIRE: Mr. Carr, do you have a witness?

MR. CARR: I know you'll be glad to hear I have several.

CHAIRMAN FESMIRE: You understand that we may not get to them all today?

What is the pleasure of the Commission? Seriously.

MR. BRUCE: Mr. Chairman, could I interrupt? Could my witnesses be excused? Because they need to change their flights right away. If they could be excused from the room temporarily --

CHAIRMAN FESMIRE: As long as you don't think you need them.

MR. BRUCE: We will do whatever the Commission pleases.

MR. CARR: What is your pleasure? We've got a while.

CHAIRMAN FESMIRE: If I remember correctly, it says two hours or something.

Commissioner Bailey?

COMMISSIONER BAILEY: I brought food.

MR. CARR: It may not take that long.

CHAIRMAN FESMIRE: Commissioner Olson?

COMMISSIONER BAILEY: I brought food to share.

MR. CARR: Can we take about a five-minute recess?

CHAIRMAN FESMIRE: Okay. Why don't we do that?

(A recess was taken.)

CHAIRMAN FESMIRE: At this point, after discussion with counsel and recognizing the time, we are going to go ahead and continue this case until the December 7th meeting -- or December 9th, I'm sorry. And we will reconvene in this room on December 9th at 9:00 a.m. We'll see you all there.

(The hearing was adjourned at 5:00 p.m.)

REPORTER'S CERTIFICATE

I, JACQUELINE R. LUJAN, New Mexico CCR #91, DO HEREBY CERTIFY that on November 4, 2010, proceedings in the above captioned case were taken before me and that I did report in stenographic shorthand the proceedings set forth herein, and the foregoing pages are a true and correct transcription to the best of my ability.

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

WITNESS MY HAND this 17th day of November, 2010.

Jacqueline R. Lujan, CCR #91
Expires: 12/31/2010