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

ORIGINAL

APPLICATION OF THE NEW MEXICO OIL AND GAS ASSOCIATION FOR AMENDMENT OF CERTAIN PROVISIONS OF TITLE 19, CHAPTER 15 OF THE NEW MEXICO ADMINISTRATIVE CODE CONCERNING PITS, CLOSED-LOOP SYSTEMS, BELOW GRADE TANKS AND SUMPS AND OTHER ALTERNATIVE METHODS RELATED TO THE FORE GOING MATTERS, STATE-WIDE.

CASE NO. 14784 AND 14785

VOLUME 20

January 10, 2013
9:00 a.m.
Wendell Chino Building
1220 South St. Francis Drive
Porter Hall, Room 102
Santa Fe, New Mexico

THE COMMISSION:

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GREG BLOOM, Commissioner

DR. ROBERT BALCH, Commissioner

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(Note: In session at 9:00.)

CHAIRPERSON BAILEY: Good morning. It's 9:00 a.m. on Thursday, January 10th, 2013. We are in Porter Hall in Santa Fe, New Mexico. This is a continuation of Consolidated Cases 14784 and 14785. We broke last night after Mr. Feldewert had completed his cross-examination of Dr. Neeper who is on the stand.

Dr. Neeper, you are still under oath. At this point I need to mention that all three commissioners are here. To my right is Commissioner Greg Bloom, designee of the Commissioner of Public Lands. To my left is commissioner Dr. Robert Balch, who is the designee of the Secretary of Energy, Minerals and Natural Resources Department and I am Jami Bailey, director of the Oil Conservation Division. When we broke off it was time for cross-examination by Mr. Jantz, I believe.

CROSS-EXAMINATION

BY MR. JANTZ

Q. Good morning, Dr. Neeper.

A. Good morning.

Q. I have a couple questions for you. First is a question that Commissioner Balch asked Dr. Robinson, and Dr. Robinson talked about this a

little bit, but I'm paraphrasing, but the question was, if you pour 2500 milligrams per liter of chloride through a cubic meter of dirt or solids, what comes out the bottom?

A. I'm thinking it was a cubic foot.

Q. Cubic foot.

A. And relating back to the rule, the 2500 milligrams shows up in more than one liter. It is the rule per liter for many liters. If you took a single liter of that and poured it into some soil, that's enough to nearly saturate a cubic foot of average soil at average porosity, and thereafter it would slowly drain in unsaturated form under gravity. Chloride being mobile, it would mostly travel with the water. Doesn't mean you would leave a perfectly clean area behind because you are leaving some pour water behind.

Q. Would it travel uniformly?

A. No. It's likely to travel in most soils with some degree of fingering. That is, it will choose the fastest individual path it can find. Once fingers have developed, they will try to diffuse out towards the film of water in the other porosity, so if you wait long enough it will begin to look like a uniform plume, but initially you will

probably have leading fingers going down.

Q. Is that preferential flow?

A. Yes.

Q. The other question I had is one I asked Dr. Robinson. I didn't feel like I got a very satisfactory answer. We talked about the mobility of or I asked him about whether Benzene and BTEX were mobile. Do you have an opinion on that? Are they mobile?

MR. FELDEWERT: Object to the question on the grounds it's not germane to the conversion issue that you have noticed for the hearing today.

MR. JANTZ: Same response.

MR. FELDEWERT: Nor was it a subject of his direct testimony so it's outside the scope of his direct and it's not germane to the issues that you gave notice of the hearing today.

MR. JANTZ: If we are going beyond the scope of direct and start applying evidentiary principles, that's an entirely different discussion, I think. This is a rule-making. This is a question that was raised. It's an issue that OGAP believes is important for the Commission to understand, and I wonder if Dr. Neeper has an opinion about it. Second, it is part of the record now and something

that Dr. Robinson didn't really answer.

COMMISSIONER BLOOM: Madam Chair, our order was to see if we get to one unit of measurement and the unit of measurement that's been proposed is we go to milligrams per liter in part because it gives us the idea of how much chloride is mobile. And I think that would lead to the next question, which is BTEX, Benzene, et cetera, would that perhaps be better looked at in milligrams per liter?

CHAIRPERSON BAILEY: Counsel?

MR. SMITH: Well, we did go through this before and didn't manage to get an answer. I think it is the case that it's outside the scope of the direct but I think because it's a rule-making you can relax that. I would let him see where he goes with it but keep a hold of him.

CHAIRPERSON BAILEY: I think Mr. Bloom has a good point, so you may go ahead and answer.

A. Very well. In general, I would say yes, Benzene and BTEX, of which Benzene is one of the four complements.

Q. What are the other three?

A. Benzene, Toluene, Ethylbenzene and Xylene. They are chemically similar and have different

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properties in solubility of water. They are mobile; particularly Benzene is soluble in water, but we need to remember that is really not its primary means of transport. Benzene is quite mobile in the vapor phase as are the other volatile hydrocarbons.

I had one visiting colleague who had some volatile hydrocarbons including Benzene on the aquifer, and what was happening is the Benzene was evaporating moving ahead of the groundwater in the vapor phase and dissolving back in the water, so the Benzene was moving faster than the water and this was a complicated cleanup. So we have to remember with Benzene that it travels in a vapor phase. As such, right on the surface of the ground it will be ventilated back to the atmosphere.

And you asked for opinion. In my opinion I think that's why the Industry can tolerate a Benzene standard that is more restrictive than what you find if you immediately took a fresh sample, because if they leave a pit drying for a year a lot is going to evaporate off the surface of the material.

Q. Thank you Dr. Neeper. That's all I have.

CHAIRPERSON BAILEY: Ms. Gerholt?

MS. GERHOLT: With the Commission's

permission, I would like to sit where I did yesterday.

CHAIRPERSON BAILEY: Of course.

MS. FOSTER: Madam Commissioner, for the record, I don't believe I was asked yesterday on behalf of IPANM whether I intended to question Dr. Neeper, and I do not, just so the record is clear.

CROSS-EXAMINATION

BY MS. GERHOLT

Q. Good morning, Dr. Neeper.

A. Good morning.

Q. How are you this morning?

A. I'm doing well other than spending the night lying in bed because I couldn't sleep thinking about the various tests. Because really a lot of the testimony yesterday was very good.

Q. Maybe we will be able to use some of that sleepless night to our benefit today. I wanted to draw your attention to NMOGA's Exhibit 20, Page 41.

A. Okay. And you will have to either explain that or show that to me, because I didn't bring --

Q. It appears Ms. Foster is going to share the table with you.

A. I do have that. Thank you.

Q. There are technical reasons for having two separate tables; is that correct?

A. Yes, I would say there are.

Q. Could you briefly list some of those reasons?

A. Well, one table applies to the surface of the ground really. Table 1. And the threats are different. Yes, there is a threat to groundwater, but it has to leach all the way to groundwater to impact the groundwater, whereas the surface of the ground has biological things and so the threat is much more immediate. When you bury something in appreciable depth, the threat to the biological media is delayed and so you can bring that into your consideration when you are setting limits.

Q. In your opinion, should those surface materials, the soils, be analyzed the same way as pit contents?

A. I'm interpreting the words the same way as, so I'm going to need to expand them. The present proposal for pit contents is an adequate test. It uses acids, as we heard yesterday, that produce essentially as much chloride as possibly can be got out of the sample, including the immobile chloride. So we heard words to the effect of you

will get excess chloride by using this test. You will get all the chloride out essentially.

I see for tests on the ground surface that you're interested in the mobile quality, how it moves to the plants. It has to move a very short distance if there's going to be a plant on the surface. So if you contaminate that surface above the tolerance level of the plants you have immediate impact.

For the deeper material, the proposed test is adequate, but I have the same problem with it that I think the Commission had, and I would like to expand on that. First, the natural result of that test is an expression in milligrams per liter which is not immediately intuitively understood. That's asking one more thing of the operator, asking one more thing of the field office, to understand what that means, and in regulation, we should have regulation that protects the environment, that is intuitively understandable and doesn't burden the operator unnecessarily and that's efficient for enforcement.

And I see that when we use a test that's going to wash out even what I would call bound chloride and mineral chloride, we are complicating

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things. That isn't chloride that the operator necessarily put there as a result of the drilling fluid. At least it's not mobile. And what concerns us for chloride that moves down to the groundwater is its mobility. We are interested in mobile chloride. Likewise for chloride that goes up. Whether or not one wants to think it goes up, I maintain it does, it is the mobile chloride that's moving.

So I think in the regulation, after I have now thought about this through the hearing yesterday and the night, we should focus on mobile chloride and, therefore, I would tend to use the same test for both or at least the test that certainly comes out in the same units, but I don't see a need to use two different tests. The 300.0 test is characteristically used for soils. If you go to the EPA website or somewhere it says this is used for soils. Pit wastes are a lot like soils. I can't see any reason why that test wouldn't work for our purposes which concerns mobile chloride. That doesn't mean you necessarily have the same limits at both places. I might like to have the same limits, but it doesn't mean the Commission has to have the same regulatory limits.

Q. Okay. So keeping in mind this concept of the mobile chloride and also the Table 1 for soils, which is surface, and the concerns that are at the surface, and Table 2 is for pit contents and the modeling and the concern shown there is groundwater, are you saying the same test could be used for chlorides for both?

A. I can't see a reason why you couldn't use a 300.0 test for both. I sent both pit and surface samples to a standard laboratory and they used the same test for both. At that time it wasn't a 300.0, but I looked it up and it was some other standard EPA test, and I don't see such a significant difference in the origin of the samples as long as you recognize that you're concerned with mobile chloride.

If you wanted to know absolutely how much chloride is in this solid sample, almost say by an atomic count, then you would want to go to the test that leaches out even the immobile chloride. But I can't see that we are interested in the immobile chloride.

Q. If I can draw your attention specifically now to Table 1, the soil table. Do you agree with me that this is for soils -- not just pits but

below-grade tanks?

A. Yes, the table applies to pits and below-grade tanks.

Q. If there were a spill underneath the below-grade tank, that may not necessarily be reclaimed with four feet of soil on top; is that correct?

A. You brought up the word spill, and I will replace that with if there were a leak in the tank. I don't see -- it's one of my concerns with the rule. I don't see anything that would limit how deep that leak could go. If you had a little drip of a leak, it could leak five barrels a year and you would never miss it by dripping, and the tank can be on the landscape for several years.

This could go to an arbitrary depth, just depending on the soil. But all the operator needs to do is test the surface of the soil. Now, I will take just as an example, suppose whatever was in the tank was water of a concentration close to seawater, let's say. That would fill the porosity immediately under the tank and go down, so whenever the tank is removed, whatever is in the porosity is what would be detected in the testing. And that could -- at that level I could come out to close to the 5,000

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milligrams level that was proposed here but it wouldn't tell you anything about the spill. To my way of seeing it, you have replaced the Spill Rule.

Q. I have two questions for you. First question, you were here yesterday when Dr. Robinson testified that the only way to know the extent would be to sample; is that correct?

A. Yes, you have to drill or excavate. I prefer to drill.

Q. So you agree with that, correct?

A. Yes.

Q. And then based upon your experience can most plants live in 5,000 milligrams per kilogram of chloride?

A. Not based on my experience. I hope I can say this. The sampling I did on the surface in absolutely dead areas that I showed on the screen, I think in direct testimony, was about 3,000. But the threshold for plants has been established elsewhere as variable, but I don't think we saw anything up around 5,000. It was much less than that.

Q. Based upon your experience can plants live in 600 milligrams per kilogram of chloride?

MS. FOSTER: I object. We are moving into the Spill Rule here and it's unclear whether Ms.

Gerholt is talking about a spill beneath a tank which is 12 or 15 feet beneath the surface or talking about a spill on the surface, and I think that's well beyond the scope of this portion of the hearing.

CHAIRPERSON BAILEY: Would you like to respond?

MS. GERHOLT: I would like to state that the table as presented is for soils beneath pits and below-grade tanks. It doesn't give a variation between whether that below-grade tank is placed directly on the surface without digging out or if it's dug out and placed four feet below the surface. I am trying to get clarification.

CHAIRPERSON BAILEY: Would you reframe the question then to be within the bounds of what this particular hearing allows?

MS. FOSTER: If I may also, Madam Commissioner, I believe that during the hearing when I brought up this line of questioning concerning any spills that came from the tanks and the test of the spills, I believe Ms. Gerholt at that time during my questioning stated that the OCD understood that any testing pertaining to tanks would have to meet the requirements of the Spill Rule.

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MS. GERHOLT: That is true. It would have to meet the requirements of the Spill Rule, and wanting to be assured that we are focused on -- well, I will withdraw the question and move on to a new line of questioning.

Q (By Ms. Gerholt) Dr. Neeper, you had to follow regulations during your period as a scientist; is that correct?

A. Yes. In particular, I was under RCRA for the investigations I was supervising.

Q. Based upon that experience, do you think it's important to have a consistent set of units in regulation?

A. Fortunately, RCRA dictated the units, but I think it's important in our case for the operator to have a consistent set of units. I puzzled over this for some time as a result of a conversation I had during one of our group meetings with operators, and the sampling was burdening him, and I recognized there is an easier quicker way to do this. There could be simple tests that he could use in the field and see that he is way below the regulatory limits and he shouldn't have to do anything more, and we could then use a more absolute laboratory certified test if he is getting anywhere near the regulatory

limits. But he should be able to understand it and deal with it and know what it means.

So it is my feeling we shouldn't have things that are obscure to where it takes a laboratory scientist to understand them. I'm glad somebody explained it yesterday. I read the regs but I got a lot of understanding out of yesterday's explanations.

Q. If I can now draw your attention to NMOGA Exhibits 22 and 23. Exhibit 22 is Method 300 or a portion of Method 300, and Exhibit 23 is SW-846 and portions of Method 1312.

A. I might have it on another thumb drive. If you have it or if you can ask the question without me seeing it, I might not have to look at it. Okay. 22. You are discussing 22; is that correct.

Q. I just wanted to ask you, did you undertake any review of Method 300 and SPLP method?

A. I didn't read the exhibit. I went to the EPA website and looked up the cited tests and read through them to remind myself enough of what they were and to ask is it suitable, and as soon as I saw 300 is really very suitable for soils, a common test for soils, even though it wasn't used on my own

samples, that's acceptable.

Q. And then you also looked at the SPLP procedure, Method 1312?

A. 1312? Yeah, I looked at it again just enough to satisfy myself that this will do what it says, and it seemed very complicated, but it will do what it says and it will one way or another get all the chlorides out of the sample.

Q. If I can now have you turn to your slide labeled Page 3 in the top right-hand corner, so your Exhibit 6, Page 3. Thank you. Your proposal was to convert milligrams per liter to milligrams per kilogram by multiplying that milligrams per liter number by 20; is that correct?

A. Yes. As a method for understanding what's happening.

Q. If the Commission were to adopt that math, would that cause there to be an error that would result in an operator reporting a level higher than what is actually in the pit contents?

A. I want to be clear. I didn't propose putting this arithmetic in law. I proposed this as a method for understanding what's going on. If we are going to state in law milligrams per kilogram, then we have to have a way of relating that. But

for the Commission to consider that at present, they have to know what the present proposed test would do.

If you go through this procedure and you use this factor of 20, how far off are you and in which way are you off? What we learned yesterday is that the initial pressure part of this test might squeeze more liquid out of the sample, and then as long as that liquid is not separated with oils, the liquids are combined or the results essentially are averaged. And so you would be literally multiplying -- if you squeezed out at the extreme one liter of liquid out of this imaginary kilogram, technically then you should be multiplying the result by 21 instead of 20 and that's the five percent error I may have referred to yesterday.

So if someone did that and they multiplied by 20 instead of 21, they would come out a little on the low side.

Q. To simplify for a non-scientist, if you have 1,000 milligrams per liter and multiplied by 20, that would be 20,000 milligrams per kilogram. That doesn't necessarily mean that in the pit contents there's 5,000 and that you erred to make it appear there's a much greater concentration than

there actually is; is that correct?

A. No, the error is small. You should have multiplied by 21 instead of multiplying by 20 if an extra liter of liquid came out during the pressure test. But it's not going to change the implied results of the test by more than that small amount. It's not going to change 1,000 to a 5,000 or some such thing.

Q. Finally, Dr. Robinson testified yesterday that in regards to soil testing, those tests are always reported in milligrams per kilogram. Do you recall that testimony?

A. I recall that.

Q. Is milligrams per kilogram closer to an EC measurement?

A. It is for me because I have a little method I showed of transferring between the two. If I were to try to take milligrams per liter on the 1312 test and transfer that to EC, I would have to go through the steps of getting the milligrams per kilogram and move that over. But EC has a somewhat different meaning. It is the electrical conductivity of liquid water that's in contact with the soil, and technically you could do that. I don't advocate doing it. I think to understand

what's going on you need to recognize where these three different sets of units roughly relate to each other so you can relate the biological testimony that was given in the hearing to the two different tests that are proposed.

Q. Thank you, Dr. Neeper. I have no further questions.

CHAIRPERSON BAILEY: Mr. Dangler?

CROSS-EXAMINATION

BY MR. DANGLER

Q. Thank you. Good morning, Dr. Neeper.

A. Good morning.

Q. I want to follow up on something I just heard on cross that was very interesting. As I understood your testimony, there might be an advantage to operators themselves in having a single number to refer to. That's what I heard you say. A little simpler to understand.

A. I'm simply trying to look at this from the point of view of the operator. If I were an operator I think I could understand milligrams per kilogram because I could picture a kilogram and picture some content in it.

Q. I think you said there might be a simple test they could do in the field that might actually

give them a number that would be related like that?

A. Yeah, there are probably two or three different tests you could do in the field that could be related. They are not certified in the sense of a standard laboratory. They will give you approximations but they would give the operator some idea of where he is.

Q. The test that EPA does, EPA is not regulating wastes?

A. No.

Q. The State of New Mexico is regulating the waste; is that correct?

A. Yes, the State of New Mexico is regulating the waste.

Q. You may not know and maybe no one knows and when Dr. Robinson gets up I will ask him the same question. Do we know if anybody has done this in another state, go to a uniform measurement?

A. I can't say a uniform instrument like this as a regulatory limit, but where I got on to it was through IPEC and Kerry Sublette, who was Industry's witness, I think, in the surface waste hearings from the University of Tulsa. And they were promoting little tablets you could buy for a dollar or two apiece that would give you a pretty good idea of

what the chloride content was.

Now, if there was something weird in the soil that could precipitate with silver, yes, you could get misled, but most of the time you know you have a chloride-containing medium. It's handy in the field. Within the hour the operator has the answer. You can practice using it, so I used it, and I found it satisfactory.

But there are other similar methods. I was in the field with a technician from an environmental consulting firm and she was using a liquid precipitation method to get immediate answers so we could guide the drilling. We were trying to get answers to guide the drilling.

Q. Okay.

A. The reason I am interested in this is that conversation with an operator where he was held up for some long time getting samples back from the lab before he could know whether to close the pit. He wanted to just close the pit. And I had it in my mind, suppose that pit is half the legal limit. It's to my advantage to have him close it and be done. It's to his advantage to close it and be done. I would like to have, underneath all of this, a simple method, and I think if we worked on it long

enough we could develop it.

Q. That's why I was intrigued. It seemed like a win/win and every once in a while one of those gets caught up in the numbers. But regardless of the numbers, that's a win/win for everybody so that was interesting to me. I also have to rehash a little of the territory we have gone over twice, in the questioning of Mr. Feldewert and also Ms. Gerholt have asked you about this, and I remain confused a little bit, so I want to make sure that I'm understanding this. What Ms. Gerholt asked you was the measure of error, and as I understood it you suggested there was a small additional error in the 20 times because of the liter that was taken out should be by 21. That didn't get to the heart of my doubt and what I understood from Mr. Feldewert's cross-examination and also from the direct, so I guess I have to summarize that which makes this a long question, and I apologize, Madam Chair.

My understanding from the direct was that because the acid pulls out the chloride, not just the mobile chloride but some of the immobile chloride, it tends to overestimate the concentration so that it's a good test, quote unquote, for mobility, which I think you just challenged the

concept we just talked about. But I think you agreed and everybody agreed it's pulling out more of the chloride. So wouldn't the number that you get be higher than the actual concentration number that you are translating it into? Do you see the problem?

A. I think I understand the question so I think I can answer. I will give it a try. The 1312 leach test will remove chloride from the soil equal to a distilled water test or greater than. If there's bound chloride in the soil it won't come out with water. The acid leach will bring it out. So you will get more chloride. That doesn't mean there's an error, it means you need to understand it's giving you more the absolute total chloride in the soil, whether or not it was mobile, whereas a water leach tells you this is just what it implies, this is mobile. This is mobile enough it would wash out with water, and so that will give you usually a smaller number. It doesn't mean that one is in error relative to the other. The error I was talking about was using this factor of 20. But it is still the larger amount of chloride that's applying.

Q. Now I think I understand and this is

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helping me a lot. So if we were to take the numbers and translate them, in terms of comparison with the other regulation there's going to be -- you really can't compare those two numbers exactly because one has been -- I don't want to say distorted, because as you pointed out, it's not a distortion but just another test with that other number translated. Could we go to the slide where you do that translation? I think it's the second slide.

A. This is the 1312 test. No, I don't think that's what you want.

Q. That's the theory of the 20 times but you actually changed it into numbers.

A. Oh, down on --

Q. Yeah, there you go. It's the simple one I want, if you can go back one. That one. So that's the regular one. Later you added in your numbers if you translated the per liter so that would be a little bit later I think you added that in. So it's still a later slide. Sorry about that.

A. These say the same things. If you want to understand the milligrams per liter that's approximately the other number shown in red.

Q. Right, 50,000 and 100,000. I thought you reduced that to a slide as well that showed the

percentage of salt in the ground.

A. We will try one more. I don't want to get past Slide 9.

Q. We can stay with that. There. Those numbers are really, really high.

A. This is another intuitive understanding of what does it mean.

Q. Right. What I'm doing is challenging this a little bit. I'm interested in it but I'm also challenging it a little bit, because if they are really different numbers then, in fact, you wouldn't necessarily have these kinds of concentrations, not that high, not 8.2 percent salt in the ground and not 16.5. See what I'm saying?

A. If you got 50,000, say, milligrams -- if we back up. If you got the prescribed limit for the 1312 leach test and you then said oh, in my mind that's kind of about equal to 50,000 milligrams per kilogram, you could then say in my mind how do I understand that? And if you said if that all appeared as sodium chloride and we admit often that sodium is out of balance with chloride, but if it all appeared as sodium chloride, what would that be? It might be something like about 8 percent. An operator can understand that and I can understand

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that. 50,000, I can't picture 50,000, and that's why I do this. I'm not proposing that the law be specified in percent.

Q. I understood that completely. This is just trying to create a link so we can compare one to the other, which --

A. So the Commission can.

Q. Yes.

A. So the Commission is unconstrained in its deliberations. That's really what I'm trying to do.

Q. But you see my point that perhaps it's not quite this high. And I heard testimony from the expert witness that would suggest that there might be a ten times error caused by the use of the acid.

A. Yes, because this is relating to the total chloride in the soil and that's what's in the soil. I mean, that's not an error, that's what's there. If it came from caliche, so be it. The operator didn't intend it and maybe it wasn't part of his drilling fluid but it's there. I don't want to penalize the operator with that, either.

Q. Okay. If, in fact, we were creating regs that would create this much salt in the ground, is that going to create a problem in the future if you can say?

A. My active testimony was that it's a matter of time. I'll say this and they can shoot me down. The analysis of every old pit shown in this hearing -- and I think I reported four and Dr. Buchanan reported one -- chloride moving out of the pit --

MR. FELDEWERT: I think I'm going to object to the line of questioning on the grounds that it's beyond the scope of this hearing and getting to more the impact of the limits and how it compares with pits around the state, all of which was the subject of hearings in May through August and, in fact, Dr. Neeper just said he would repeat what he testified to in those hearings.

MR. DANGLER: May I respond, Madam Chairman?

CHAIRPERSON BAILEY: Yes.

MR. DANGLER: Thank you. I appreciate the concerns about opening up things we are not supposed to open up. In general I agree with that. What I thought we were here for was the translation of numbers into other numbers, and all of my questioning really is based on just understanding these numbers. I'm just asking the final intuitive question, because as I look at 8.2 percent, not

being a scientist, or 16.5 percent, those seems like incredibly high numbers of soil. I am asking the intuitive question, I am not inviting huge amounts of testimony but I'm taking advantage of the fact that we have a soil scientist on the stand. And that's my purpose and it can be a brief answer, but I don't know what those numbers mean and I'm trying to have a sense of the numbers.

CHAIRPERSON BAILEY: Dr. Neeper, could you please refrain from going outside of the scope of this hearing in order to respond to the question, if you can?

MR. NEEPER: Very well. It leaves me trying to guess because I didn't know -- I was worried about it. So I will have to try to guess what is the scope here, because I was answering the question and I would prefer that the question be objected to before I give the answer.

MR. FELDEWERT: I don't know how you can phrase -- I mean, obviously what he is trying to do is ascertain -- we have been dealing with mobility but he is trying to ascertain the effect of these levels, okay? No matter what conversion. We handled that testimony on the effect. The question before the hearing is okay, we take the levels to

which we have had a lot of testimony about the effect and you try to convert them into milligrams per kilogram, for example, how would you do it.

But that's the conversion issue. The effect of these limits that have already been addressed in the hearings is the subject of the prior hearings. It's not the subject of this hearing. And now we have a question that goes directly into the effect of these levels that have been proposed, whether it's milligrams per liter or milligrams per kilogram or EC. That's been testified to.

CHAIRPERSON BAILEY: Would you respond, Mr. Dangler?

MR. DANGLER: Yes, Madam Chair. Thank you so much. If the tactics of the proponents had been different and they had given us these numbers themselves and then said through their excellent testimony why they thought that was a mistake, I would be even less concerned about the actual numerical number that we came up with. But because they chose to present that they couldn't translate, the translation itself becomes of great interest, it would seem to me, to the general public and to the Commission, which invites at least one question as

to what does that mean, the 8.2 percent and 16.5 percent. And maybe the answer is obvious and, therefore, we don't need to continue with this. But I just am interested in that final number that has been to some extent obscured.

MR. FELDEWERT: If it's a conversion of the number in the tables.

MR. DANGLER: That's what it appears to be.

MR. FELDEWERT: That's what it appears to be. It will have the same effect whether you talk about it milligrams per liter or a percentage of chloride or milligrams per kilogram. It will have the same effect. We have already had the testimony on the effect and we had the debates back and forth on what the mobility is of the levels and what the effect is at those levels.

The only issue here today is whether we can somehow express the limits that have already been testified to in a different format that fits within the testing methods in the current rule and which have been carried over in the modifications. That's the question before the Commission. We are not going back to what are the effects of the limits that have been proposed, whether expressed in

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milligrams per liter, milligrams per kilogram, EC or percentage of chloride.

MR. SMITH: Could you just repeat your question for me real quickly?

MR. DANGLER: Yes. I'm just wondering if this is expressed in terms of salt as 8.2 percent salt in the soil and 16.5 percent salt in the soil, would this give you concern. That's really my question.

MR. SMITH: Concern over the impact, the environmental impact?

MR. DANGLER: Just that number, would that give you concern, which is why it goes to the conversion. Just that number to me, it's an interesting question. Is that a lot of salt in the ground?

MR. SMITH: I think is that a lot of salt in the ground is one question. What the impact is is another.

MR. DANGLER: Let me ask it that way. How does that compare with background levels of salt in the ground? Let me ask it that way because I don't know what background levels of salt are in the ground.

MR. FELDEWERT: That goes beyond again.

CHAIRPERSON BAILEY: It does go beyond. I think we will have to sustain the objection and if you could move on to other questions.

MR. DANGLER: I will be happy to, Madam Chair. Thank you.

Q (By Mr. Dangler) You stated properly on the cross that you didn't want to tell the Commission what to do in terms of the different levels, the numbers being required inside the pit or outside the pit. Isn't there a reason why we would allow less contamination outside the pit? Isn't there a reason for that, than inside the pit?

MR. FELDEWERT: I think we are going down the same line of questioning.

MR. DANGLER: We are not. It was a totally different idea, but it was just to see if he had any ideas about that.

MR. FELDEWERT: I read that as what's your opinion about the effects of the waste inside the pit versus the effect of the waste outside the pit.

CHAIRPERSON BAILEY: That's the way I'm hearing the question also. Would you like to go forward?

MR. DANGLER: I don't think I need to, Madam Chair. I think I covered what I was curious

about. Thank you very much.

CHAIRPERSON BAILEY: Questions from the commissioners? Mr. Bloom?

COMMISSIONER BLOOM: Thank you Madam Chair. Good morning, Dr. Neeper.

THE WITNESS: Good morning.

COMMISSIONER BLOOM: I have one question for you in terms of the appropriateness of the tests. Just curious, did you look to see if there were other tests that would be appropriate to use for these measurements?

THE WITNESS: I did not look for other tests that would be, shall we say, competitive for the absolute upper limits that the Commission would establish as a regulatory limit. I looked for methods that I had hoped at some point we could institute which would simplify the operations, the conditions, simplify the task for the operator, and in that there could be simpler tests.

I believe Dr. Robinson yesterday said that there were other liquid style tests that could be used, that is using liquid reagents. I did call the laboratory that I had used before this hearing pursuing the same questions, saying why can't I just use a much simpler test? Why won't you use a

simpler test in the laboratory than 300.0, and his answer was, "That is such a routine for us. We put it in, we run it through the chromatograph and we know we are measuring chloride, not something else that might interfere with chloride. We are set up to do it. So yes, you could have a simpler test but we are set up to do this and this is what we do."

So at that point I dropped looking for another test that we would try to get a laboratory to do. They are set up for that one, let them do it.

COMMISSIONER BLOOM: That's all. Thank you, Dr. Neeper.

CHAIRPERSON BAILEY: Let's take ten.

(Note: The hearing stood in recess at 9:52 to 10:00.)

CHAIRPERSON BAILEY: I believe Commissioner Balch was about to cross-examine Dr. Neeper.

DR. BALCH: Good morning, Doctor.

THE WITNESS: Good morning.

DR. BALCH: I had a restless night as well thinking about tables and testing methods and I appreciate the moment of clarity you gave me this morning when I realized we were really talking about

mobile chlorides.

THE WITNESS: Thank you.

DR. BALCH: I want to talk about that a little bit. First I want to follow up on a question by Mr. Jantz that had to do with Benzene and that's a volatile element. Does it have preferential flow direction? How would it get ahead of the water plume?

THE WITNESS: It would move through the air-filled porosity in the soil.

DR. BALCH: Is that upward or horizontal versus vertical?

THE WITNESS: I have to address the question carefully. Barometric actions will cause the air in the soil to move up and down. That will pump it preferentially in a vertical direction, but the direction it's going is downgradient, that is going down from a higher concentration to a lower concentration, always going that way. It will go horizontally too. That will be mostly by diffusion unless there's something driving air motion in that direction.

Now, how could you get air motion driving that way? Several fractures in one point getting the barometric pressure ahead of the barometric

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changes in another point, so you get horizontal flow. These things are what people think of as effects too small to be noticed, but I have looked at them as means for remediating volatile contaminants in the soil.

DR. BALCH: There was also discussion and other cross-examination about what was addressed in Table 1 versus what was addressed in Table 2, and Table 1 you are addressing essentially a leaky tank or something similar. In those cases, I went back and looked in Exhibit 20, and we still have a requirement to backfill, contour, vegetate to whatever standard is assigned to that. So it's not like we are leaving this right on the surface. There will be some protection to the plants above, a covered-up leak?

THE WITNESS: There may be. Let's say if the bottom surface of your pit is lower than the bottom surface of the ground, that would be true. Or if you contour over the top of the pit.

DR. BALCH: I'm thinking more of tanks and surface.

THE WITNESS: With a tank, yes. It will depend on how deeply was the below-grade part of the tank below the grade, and there would be no

requirement for the operator to build up higher than that. So as a good probability it will be within what I think of as surface soils, soils that are reached by biological things.

DR. BALCH: I think I got from your other cross-examination that for chlorides in Table 1 and Table 2 we should be looking at mobile chloride.

THE WITNESS: That was my conclusion is that mobile chloride is what we are concerned with in terms of environmental protection.

DR. BALCH: You may recall yesterday in Dr. Robinson's testimony, I was cross-examining him about what happens when you create this mixed soil. Because I think from a physics point of view we tend to -- I would think of it as a soil with some contaminants in it and there would be a little bit of difference depending on that. If you mixed in native soils, arid climate soils, he said that caliche and things like that would tend to bind up some of the chlorides. If you had clays, particularly bentonite clays that are common in drilling muds, that would bind up some of the chlorides. So in essence, your concentration of the materials could be very high, but the free chloride could be relatively low. I think that's what I got

from testimony and cross-examination yesterday and today. I would like your opinion on that.

THE WITNESS: That's also what I got from Dr. Robinson's testimony yesterday. And I would agree. You might have a much larger amount of chloride released by the acid test. I simply felt what is our big concern here. If I had absolutely no concern with the convenience of the operator or with somebody understanding the rule, then I could say oh, go ahead and impose the most stringent condition. But this is a world humans live in, too, and the operators have to live with, and so I felt a uniform set of units and tests that test the thing we are really worried about, which is what's going to move or what can move, is probably where we should put our focus.

DR. BALCH: My thinking, one of the reasons we had the reopening of testimony on Tables 1 and 2 was I'm not going to speak for the rest of the Commission but I personally had confusion about how to understand what milligrams per liter was versus milligrams per kilogram, particularly when a lot of the evidence that was given to us to make a decision about what an appropriate level was, was from modeling by yourself and others that were given

in a concentration. So given that, I think I'm sharing, if I interpreted your responses correctly, a desire to still have a similar unit between Table 1 and Table 2 for chlorides and that would be the milligrams per kilogram.

THE WITNESS: I reluctantly concluded that, yes. It took me some time. In doing so, I had to balance all the things I was thinking of. If I wanted the absolute and hard, I would go with the 1312 test. Know absolutely how much chloride is out there. But is that what's impacting the things for which I'm an advocate? Not necessarily.

DR. BALCH: So if you were to go out to a drilling pit that was being reclaimed, they wanted to bury on-site so you'd be looking at Table 2, they took their pit, dried it up and then they mixed in up to three to one native soil until it passed the paint filter test and all that. If you took a sample from that material, whether soil or whatever, sent it to a lab and said, "I want you to do a 300.0 test on this and tell me what the chlorides level is," what would they say? Would they just do it? Would that be a normal occurrence?

THE WITNESS: I would think it would be a normal occurrence. They would say, "Where is your

checkbook?"

DR. BALCH: That's what I was curious about. Would that be an appropriate test protocol?

THE WITNESS: If you are talking to a standard -- somebody who claims to be a standard environmental laboratory and you say, "I want EPA 300.0" and they say, "We don't know what that means," you need a different laboratory.

DR. BALCH: They wouldn't say this is an inappropriate test for this material?

THE WITNESS: If they said so, you certainly should question then as to why they think that. Maybe they will come up with some reason that I can't think of.

DR. BALCH: These materials, when you send them for 300.0 test -- I have never done this before and I guess you have -- sometimes they are dry and sometimes they are partially saturated and sometimes they might be saturated materials?

THE WITNESS: I can't feature that we should be sending saturated materials from a pit. You have to stabilize the pit at least to where it will bear a load.

DR. BALCH: At least the paint filter test?

THE WITNESS: Yeah. You have to contour over it and you certainly don't want the dry coat sinking in the pit so it's probably not saturated. And from under a tank, if the soil is so wet as to be saturated, well, if the Spill Rule still applies it's clear that you have a spill.

DR. BALCH: I think that's a different issue.

THE WITNESS: Maybe that's a different issue. So I think it's rare that you are sending a saturated sample.

DR. BALCH: It could be partially saturated and they would oven-dry it and then they would proceed with the rest of the test.

THE WITNESS: I think that's the normal procedure.

DR. BALCH: I would refresh your memory again with Dr. Robinson's testimony about clays and the effect that clays would have on the 300.0. I think he was basically saying you would limit the amount of chlorides even further than you might expect. But since we're really only interested perhaps in the mobile chlorides, maybe that's not an issue for applying 300.0 to a mixed material in pit waste.

THE WITNESS: That is the conclusion I came to reluctantly, yes. If you have a lot of clay mixed in there, drying at 105 C may not release all the water and you could say maybe you are getting a wrong measure of kilograms. I'm saying no, by the test that's what you mean by kilograms. That's what a reasonable man would think by kilograms. He boils all the available water out of it that he can get and that's --

DR. BALCH: You are getting the underneath material through some sort of infiltration process using water.

THE WITNESS: I'm not sure I understand the question.

DR. BALCH: If you use 300.0 on a clay-rich material, you are going to get a result, a number, and the number will represent the amount of chlorides, free chlorides that are available to water in the infiltration.

THE WITNESS: It's going to approximate the amount of free chloride and the kilograms you relate it to may still contain a little mass of water because they are clays and water binds to clays. It won't be probably massive amounts by the time you treated it.

DR. BALCH: It's somewhat relative because if you put water back through, the water you take off up to 105 degrees is still going to rebind itself.

THE WITNESS: Yes.

DR. BALCH: Thank you.

CHAIRPERSON BAILEY: Many of us spent last night mulling and questioning.

THE WITNESS: I'm glad I'm not alone.

CHAIRPERSON BAILEY: There are disconnects and ambiguities that I was working on during my night, and I'm hoping that you can help me connect some of these areas. They deal with the proper use of your conversion of 20 times milligrams per liter in order to reach milligrams per kilogram, and so I have a series of examples based on this particular case. I work with specifics.

So yesterday I talked with Dr. Robinson and we were looking at Page 41 of NMOGA's Exhibit 20, which has to do with Table 2. Specifically I asked him to help me work backwards from the chloride limit that was proposed of 2500 milligrams per liter to determine what the concentration of the pit waste in place would be before the leaching or before the analysis, and we developed the number of

2500 milligrams per liter times 20, because that was the dilution factor times four, because of the mixing with soils, and came up with 200,000 milligrams per liter of the pit contents.

Using your conversion factor of multiplying milligrams per liter times 20, I look at the 2500 milligrams per liter, which is the proposed limit for chlorides, times 20 gives us the 50,000 milligrams per liter, and then mixing it, because that was mixed, the original pit contents was 200,000 milligrams per kilogram, which is the same figure that Dr. Robinson and I came up with.

So if it's appropriate to use your conversion factor in that instance, I went back to Mr. Mullins' modeling in which he used 1,000 milligrams per liter as his input into the model, and when the system was working with the four feet of cover and the vegetation and the liner and all of the components of that system to make it work, it appeared as though there was a negligible amount of chloride contamination of groundwater at 25 feet.

But the question comes up, if we are using the 1,000 milligrams per liter for the input, then is it appropriate to use your conversion factor there of multiplying that by 20 to give us an in-pit

mass of 20 milligrams per kilogram -- 20,000 milligrams per kilogram of chlorides in the pit? See what I'm doing? I'm working backwards to go from the leachate to what the original pit contents would have been that would have been measured in accordance with the low chloride fluid definition, which is another question I will be asking you.

THE WITNESS: Yes. What wrinkled my brow was your working backwards from the 1312 leach test via factor of 20 to the waste and then by another factor of four back to an original pit content, and that would then be a factor of 80. But you expressed the original content, as I heard you, in milligrams per liter. But this is transferring back towards an approximate number for milligrams per kilogram of the soil. You would get milligrams per liter only if the soil had a density of one kilogram per liter, which is a very rare soil. It happens. So I'm confused by the question.

CHAIRPERSON BAILEY: Help me work backwards. We have 1,000 milligrams per liter of leachate.

THE WITNESS: Right. Picture 1,000 milligrams trying to percolate down.

CHAIRPERSON BAILEY: Right. Prior to the

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SPLP test before the 20 times dilution, that would have been 20,000 milligrams per liter original fluid. See how I arrived at that? Because SPLP --

THE WITNESS: You mean the pore water in the soil?

CHAIRPERSON BAILEY: Yes.

THE WITNESS: Yes. Let me try to work the problem and tell me where I'm wrong, if I can. If we work backwards to the original pit content, we come up with very roughly a factor of 80 from the milligrams per liter in the 1312 test to milligrams per kilogram of soil, dry soil mass.

Now if we saturate that soil with water as would happen if much water were trickling through, you could have maybe a third of a kilogram of water in there. And if we say what's the concentration in that water, you would at first think oh, it's the factor of 80 up from whatever your test was. But if you get to a large enough concentration you reach saturation in the pore water. By saturation, I don't mean the concept that all of the pores are full of water, although we would expect that. I mean all the salt that can possibly dissolve has been dissolved, all the chloride has been dissolved, and there is still more available.

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Under those circumstances, you will be sending out not 1,000 milligrams per liter water draining below that imaginary layer, you will be sending out saturated brine until you deplete some of the content of that layer. And then the water will dissolve as much as -- as you move through, you will gradually wash out the remaining chloride from the pore water. But when you get to that very high concentration, what is going to leach out initially is going to be saturated brine. The leading edge of your first plume coming out from a high concentration is going to be saturated brine if you have that high a content in your soil. Does that make any --

CHAIRPERSON BAILEY: No, I still have a disconnect. I still have that disconnect. Because we have 1,000 milligrams per liter of leachate. What was the original pit concentration of chlorides in milligrams per kilogram?

THE WITNESS: Okay. Milligrams per kilogram, the original pit content would be about a factor of 80, 20 and 4. So it would have been about going from a one, you multiply by 80 to get 80 milligrams per kilogram if you had one in the leachate.

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CHAIRPERSON BAILEY: So Mr. Mullins' original pit was approximately 8,000 milligrams per kilogram is what you are saying?

DR. BALCH: Of mobile.

CHAIRPERSON BAILEY: Of mobile chloride?

THE WITNESS: I can't work that. You hypothesized a test in which you had a result of one milligrams per liter.

CHAIRPERSON BAILEY: One thousand.

THE WITNESS: Excuse me, 1,000. So there was 80,000 milligrams per kilogram in the original content.

CHAIRPERSON BAILEY: That's the number I'm trying to get to as part of understanding his modeling.

THE WITNESS: Yes, milligrams per kilogram, not milligrams per liter. That's how we were expressing that. The soil was about 80,000 milligrams per kilogram.

CHAIRPERSON BAILEY: Okay.

THE WITNESS: As measured by that test. It might be less if you measured it by strictly a distilled water test.

CHAIRPERSON BAILEY: But the definition for low chloride fluids is 15,000 milligrams per

liter.

THE WITNESS: Yes.

CHAIRPERSON BAILEY: When I mentioned this to Dr. Robinson yesterday, there was the question of is that after a leach test or is that straight analysis? And his comment was well, maybe we should put in that it's after the leach test to show that it's 15,000 milligrams per liter.

THE WITNESS: I think there was a confusion there. He might not have been thinking where we were, because by low chloride fluid we mean the actual liquid that's in the pit and being actively used for drilling, and we have established the definition for that as low chloride if it's 15,000 milligrams per liter liquid. And that isn't a leach test. You start with that and do whatever you need to do to get it into your chromatograph to get back the concentration. But if it's 15,000 milligrams per liter of liquid --

CHAIRPERSON BAILEY: So is it appropriate to use your conversion factor?

THE WITNESS: No, the conversion factor doesn't apply to low chloride fluids. That low chloride -- what we have called low chlorides for drilling is not something that came out of the 1312

leach test. It's just water that's already there and chlorides have been added to make it what you want it to be or they have resulted in getting in there somewhere from somewhere.

You might have drilled through a salt water layer or brought up chloride to add chloride to the fluid. It might be deliberately added or come as a result of the drilling process but it doesn't come from the leach test and there isn't a way to relate that leach test to what we mean by low chloride drilling fluid.

CHAIRPERSON BAILEY: We will come at this another direction. The 15,000 milligrams per liter is the analysis of the drilling mud that is in the pit. Are we agreed with that?

THE WITNESS: It's the analysis of the liquid.

CHAIRPERSON BAILEY: Of the liquid. As the pit dries over time and the fluids evaporate or are taken away, the resultant chloride concentration within the mud would still be 15,000 milligrams per liter.

THE WITNESS: No.

CHAIRPERSON BAILEY: Okay, see, that's where I have an issue with your Page 3 in your

Exhibit 6, because it's showing 20,000 milligrams per liter as part of the solid waste is still -- 20 milligrams per chloride in the liquid leach. So the question becomes I have a drilling mud with 15,000 milligrams per liter. What is my equivalent in milligrams per kilogram?

THE WITNESS: The 15,000 milligrams per liter in a drilling mud refers to taking the liquid, filtering the liquid out of that muddy water and measuring the chloride content in that liquid. And so after the liquid has been sucked off of the pit as much as is practicable and the pit left to dry as much as is practicable, you can't absolutely relate what's going to come out of sampling that dry mud or testing that dried mud with a leach test. You can make some estimates and say well, if I know the porosity and how much water could have been left and there was 15,000 milligrams per liter in the pore water, but as the sun dries some of the liquid left on top of the pit, that concentrates more chloride and so you can wind up with a large range of chloride in the dried mud.

CHAIRPERSON BAILEY: So the best you can say is that the concentration in milligrams per kilogram is somewhat larger than 15,000 milligrams

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per kilogram? Because we cannot determine what the chloride content is in the waste that's left after the fluid is removed or evaporated?

THE WITNESS: I cannot state it like that, because it depends on how much water is left on that mud, how much dries and leaves behind its chloride in addition to how much was in the porosity of the mud at 15,000 milligrams per liter of porosity. So there are many steps in there that depend on the particular situation, and I could not -- I can give estimates but I can't give you a general answer to that. I can think of an analogy. I'm trying to think by analogy here.

If you have a soup that you have made that tastes just right and it has vegetables and various solid elements and you scoop off some of the liquid and then you boil the rest of the soup down or evaporate it until it's all solid stuff and starting to burn, how much of the flavor is left on the bottom? Some of it went away with what you took off and some of it is concentrated into the solid materials left on the bottom. I can't give a general answer.

CHAIRPERSON BAILEY: I understand your answer. I'm just trying to connect dots and have a

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perspective on the meaning and use of low chloride fluids in connection to your conversion rates.

THE WITNESS: The conversion rate, particularly as applies to the 1312 leach test, as you said on Page 3 of the exhibit, there just isn't a single logical connection.

CHAIRPERSON BAILEY: Then that's all I have. Thank you very much.

THE WITNESS: Thank you.

CHAIRPERSON BAILEY: But I believe you would have the opportunity for rebuttal from all of the cross-examination that you have gone through.

MR. NEEPER: There isn't any part of the cross-examination that I can see that was wrong per se. The objective of this whole testimony was to try to lend a lot of freedom with the Commission and perspective as to what these things mean, particularly not to have to be constrained because there wasn't something in the record that would let you talk about things. I hope we have achieved that, so I do not have rebuttal.

CHAIRPERSON BAILEY: Thank you for your testimony. I believe, Dr. Bartlit, you were also listed as a witness for Citizens for Clean Air and Water. If you would come to the witness stand and

be sworn.

DR. JOHN BARTLIT

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

DR. BARTLIT: Thank you Madam Chair, Commissioners. I have testified at earlier parts of this hearing before. My credentials are on the record. Just to briefly summarize, I'm a chemical engineer. I have worked as a chemical engineering student in oil refineries on the East Coast and the West Coast. I have worked as a chemical engineer at Los Alamos National Laboratory where I have designed and operated processing facilities. These did not refine oil but they did refine hydrogen isotopes and the chemical engineering principles are the same or similar.

I have also worked as to use my chemical engineering training and background and perspectives in the environmental arena as a voluntary citizen advocate both for the environment and for improved regulation for over 40 years, and all of this is the context in which I testify. My goal is to apply engineering principles to improve the environment and to improve the regulatory process. Chemical engineering principles includes economics,

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because all chemical engineering students have classes in process economics and basic economics, return on investment and all that. I don't claim to be expert in any particular aspect of that, and I'm not seeking that here. I'm giving my views and information from this background.

I participated at this hearing the last couple of days and for weeks before that. I would define those hearings as intensely legalistic in nature, and I emphasize the word intensely. By the nature of hearings, they become intensity legalistic. We have far more lawyers in the room, I think, than engineers.

Industry tries constantly to improve its processes to become more efficient. Efforts to extract oil from the ground and to refine oil and to produce products from oil constantly work to improve through the application of engineering principles the efficiency of those processes which means more product for less time and money to do it. That's what engineers do. And I believe this can and needs to be done as much in the regulatory arena as it does in the oil and gas business or the mining industry or computer chip manufacturing or anything you want to do. All those industries work very hard

and do a very good job of constantly applying the engineering concepts to get more and more efficient, produce their product at less cost and quicker, more efficiently, more productivity.

There is a huge conflict growing in this country. It's very large and continues to grow, between those processes and regulatory processes which are perceived by industry to add cost, delay, inefficiencies. We have all heard the complaints from all sides. And a lot of what we have sat through in this intensely legalistic hearing has not been very efficient. It's not anybody's fault, it's a matter of the legalistic system. But I believe there is a vast opportunity to interface more engineering ideas with the legalistic processes to make what we all want, which is a clean environment, do it cheaper, faster, easier, make it simpler, more productivity.

I have some ideas that I want to put forward in that regard.

MR. FELDEWERT: Madam Chair, I'm going to object in the interest of efficiency.

THE WITNESS: I already made my point.

MR. FELDEWERT: I'm going to object on the grounds that I have yet to hear, and I understand he

is a chemical engineer, but I have yet to hear anything relevant to the issues before you today, which is the issue of conversion that you raised that resulted in this hearing.

CHAIRPERSON BAILEY: Will you be addressing conversion of these specific tables within the context of the hearing?

THE WITNESS: I think so. We will see what the lawyers say. You will have to hear it.

MR. FELDEWERT: It's difficult when we don't have a question and answer format.

CHAIRPERSON BAILEY: That's true. It sounds as though maybe you will not be discussing conversion of the measurements?

DR. BARTLIT: You will have to decide. I am going to talk about measurement methods that relate to conversion. I can't predict what lawyers will object to, and lawyers can't predict -- competing lawyers cannot anticipate what will be objected to. I understand that. I have been in many, many forums of these kinds much I'm not being insulting to anybody. I'm talking about the system we have, which is an intensely legalistic system which tends to extract information for regulatory purposes in an inefficient form. But that aside,

I'm going to talk about methods of measurement that will give information that is related to those tables.

CHAIRPERSON BAILEY: Objection overruled.

MR. SMITH: You just have to be ready to jump in.

THE WITNESS: What I said so far amounts to my credentials, which Dr. Robinson spent more time on his credentials than a lot of other things, so that was not my testimony. That was my credentials to speak. So that is the background. That is why I said those things.

CHAIRPERSON BAILEY: Please proceed.

MR. SMITH: Let me ask this: Do you require to offer yourself as an expert with respect to the measurement methods related to the table that you're going to talk about?

THE WITNESS: Not an expert in those fields. I have been admitted as an expert in, I think, the general fields that I talked about previously, and I'm not trying to change that.

MR. SMITH: He's not testifying as to facts if he's not going to be an expert --

THE WITNESS: I am testifying to facts.

CHAIRPERSON BAILEY: Dr. Bartlit, it may

be more appropriate if you would sign up for public comment before lunch time so we can hear the entire set of comments you would like to make.

THE WITNESS: In that case, I am limited to five minutes.

DR. BALCH: How much time do you think it would take to basically read through your material?

THE WITNESS: Ten or 15.

DR. BALCH: I think we can allow that.

THE WITNESS: There was no public comment yesterday.

DR. BALCH: You can make up for yesterday.

THE WITNESS: I'm not long-winded. You know that.

COMMISSIONER BLOOM: Dr. Bartlit, you have your Ph.D. in chemical engineering?

THE WITNESS: Yes.

COMMISSIONER BLOOM: So you should be very capable in terms of translating units of measurement, correct?

THE WITNESS: I certainly have done a bunch of those things. My testimony is about suggestions for measurement which relate to efficiency. If efficiency of regulation is not a proper subject here we are in worse trouble than I

thought we were in.

COMMISSIONER BLOOM: I would be willing to hear your testimony if it relates to how we can do a better job with the units of measurements or something like that.

MR. FELDEWERT: Although I guess my only concern would be that it sounds like modifications to what has been proposed. And again, there were no modifications filed to what's been proposed. So I'm not sure from following our rule that we have done here with others in the room, I'm not sure he is in a position to stand up and offer some other method of measurement as a proxy or a substitute for what's been proposed.

THE WITNESS: Dr. Neeper just talked about information and was questioned by you and many others about those aspects of measurement that relate to expanding understanding of the Commission and the audience in that regard. I'm doing a similar thing. It's of the same kind.

MR. SMITH: It's true that if he's going to offer an amendment I think you are absolutely right. But if his testimony is relevant to what we have been hearing thus far, I think he can testify to it and if the Commission in deliberation has

heard anything in the testimony that would incline it to, on its own, make the changes, as long as those changes are a logical outgrowth of what was noticed up, then I think the Commission could make those changes on its own.

So I don't think you have to be constrained in terms of the testimony that you hear as long as it is relevant to what has been thus far offered or relevant to what was noticed up. So I certainly understand your point, but I don't think that he has to, in order to testify to something that's relevant, has to offer the amendments.

MR. FELDEWERT: Let me -- I hear what you are saying. My only concern, and it depends on how far you go with it, sounds like it's almost a backdoor to the filing of the modifications. In other words, I could be a party, I have modifications in mind and I'm going to bring a witness to the hearing and suggest those to the Commission. Well, I have just gotten around the procedure which would require me normally to file my modifications of what's proposed ahead of time so we all know what they are.

I can't sit back and wait and come in through a witness under your logic say, "Commission,

here is what I want you to think about," and you can go ahead and do it because you are the Commission. We haven't had notice of anything, of any of those proposed modifications. So I don't think -- in terms of what's a logical outgrowth of testimony, yes. But for a witness to come in and advocate for a certain modification to the table is something different, and you can't do that if you haven't filed your modifications ahead of time because no one has gotten notice of what you are proposing. That's the distinction.

MR. SMITH: I understand what you are saying there. But what we are talking about here is whether the kind of testimony that he can give -- if he wants to give testimony on testing methods, because that's what we have been talking about here -- I don't think we can foreclose that. What the Commission does with it, nobody can control that. But the question, it seems to me, is whether his testimony is relevant to what has been offered or to what was noticed up, and if it is, then I think the Commission should hear it.

MR. FELDEWERT: I guess that's the issue and I haven't heard anything yet or a proffer of anything yet that's relevant to the issues here

today and the testing methods that have been proposed.

MR. SMITH: No, neither have I. But --

THE WITNESS: I gave my credentials.

MR. SMITH: He says he hasn't testified yet.

MS. FOSTER: I would also object to having this witness testify at this time on the grounds that the discussion pertaining to his expert witness qualifications is unclear. I don't know how he is going to be considered to be an expert witness. I think I would agree with Commissioner Bailey that his comment is really more in line with public comment and then he can talk about efficiency and we don't have the issue with whether this impacts the table or not.

MR. SMITH: I think that's the larger problem, and that's up to you whether you want to hear him as an expert witness or whether you want to take public comment. He is sworn in either way, right?

CHAIRPERSON BAILEY: Yes.

MR. SMITH: And he is subject to cross-examination either way.

CHAIRPERSON BAILEY: That's right.

MR. SMITH: But it may make a difference in terms of the weight that you give his testimony.

COMMISSIONER BLOOM: I don't think we have heard from Dr. Bartlit yet about what his testimony will be. I think if it's related to the units of measurement it can be given now and if not it can be given during public testimony.

MR. SMITH: But the question that is being raised is whether you will accept him as an expert in the area in which he is going to testify.

MR. FELDEWERT: Of course, he hasn't proffered himself as an expert and that's his prerogative.

THE WITNESS: There was previous -- when I testified previously in this hearing. Is this a totally separate hearing? I don't know. Okay.

MR. SMITH: No, you are right. He doesn't have to proffer himself as an expert, but if he is going to be giving opinion, then he probably should. And if he is not going to proffer himself as an expert --

MR. FELDEWERT: He is going to testify to facts.

MR. SMITH: He is either going to testify to fact or be doing public comment, it seems to me.

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That's the issue that I think you all are faced with.

MR. FELDEWERT: I just believe he has some facts with respect to the testing methods and the resulting unit of measurement, I understand that would be germane.

MR. SMITH: I mean, you could hear the testimony and then determine from that, based on his background, whether he is an expert. You could have voir dire on it at that point since nobody knows what the man is going to say.

CHAIRPERSON BAILEY: Dr. Bartlit, please proceed.

THE WITNESS: Thank you. The lines between what environmental effects or situations, conditions are acceptable or unacceptable to environmental groups are not sharp and distinct. You cannot draw a line and say salt concentration X somewhere, if it's higher than that, problem. If it's lower than that, no problem. There is no line that's sharp and distinct and clear. That's why we have hearings that go on for weeks, is because searching for that line.

It will never be found. There is no line that exists between this level is acceptable and

this level of milligrams per liter is unacceptable. Those lines don't exist.

But we work in a legalistic forum in which those lines are everything, and that's what we have heard for two days here and we heard it for weeks before, that we must find this exact line between acceptable and unacceptable in environmental effects or health effects or concentrations or numbers in a table, regulatory levels. We want to get close, we want to get as close as we can, but they don't exist technically. Perhaps legally they do, and that's part of the aspect here.

We heard a lot of talk yesterday -- I mean, it was a point of discussion -- about test 300.0 and Test 1312 and these are -- accuracy is fine and determined and the formality of it, the definition of it is all well and good and that's fine. But in doing so, the regulatory system is imposing this exactness to find an inexact line and the result of all that is long hearings, inefficient regulation, great costs. These tests cost a great deal and the cost is not the subject of this hearing, but if someone says cost is irrelevant and we can start the hearing over, I don't believe cost is irrelevant.

So what can be done along these lines? Dr. Neeper presented the notion of EC, electrical conductivity, and showed his chart. We might even -- can we show the chart? Anyway, he showed a correlation between electrical conductivity that correlated milligrams per liter into milligrams per kilogram. Dr. Neeper testified that it was approximate, it's not exact. There was great discussion of how exact was it? Was it inexact? Yes, it's inexact? Was it useful? In a technical sense yes, in a legalistic sense, no, but that was put into evidence.

This morning ideas have come out about ways to make the enforcement, the use of these charts, which are proposed and going to be there, make them more efficient, cheaper, faster, easier, clearer for all parties. All parties means industry, the operators, the lawyers representing industry, bureaus, agencies, the Commission, environmental interest, the public and taxpayers who are paying for everything. Well, no, they are not paying for the lawyers. But there's a great tax investment in what we are doing here. Taxpayers are paying for some of the lawyers in this room. That's not a knock on lawyers, but it is a defense of

taxpayers, if you will.

So what are the ways we can use as a screening level, EC, at a level that was suggested by Dr. Neeper of half the regulatory limit, and if you are getting close to that magical legalistic line, now you need to spend more money for the test maybe or the correct test.

There are other methods. I got these ideas from Dr. Neeper. They are not mine. There's a quan tabs company which he has used to measure slides, dips the quan tabs. You dip it and get a decent measurement of chloride. Does it meet regulatory definitions? No. Is it good enough when you are far from the legal limit? Yes. Is it very cheap and very fast and very clean for all parties? Yes. It's not relevant here, but we have suggested at other hearings the use of tracers to track fracking fluids. Just another example of an engineering principle that reduces cost, improves enforcement, reduces taxpayer money, better environmental result, and I believe it is very important to pursue -- I won't say pursue in this forum but to plant the seed in this forum that these are the kinds of changes that need to be added to what else we have done here.

If I do this not on this record -- and I have done it. I talk in the hallway to Industry. I can talk to you overnight, and it's lost, right? And it's more important than that, I think, that these things -- people think about these things in this context. Not off work, not in the hallway. There is important or more important in my view than all the other stuff we have talked about. I mean, we talked about 300.0 for endless hours. I have been talking for six minutes.

So I believe these things are important. I offer those for ideas. These relate to economics. They save cost, time for all parties. They help industry, they help the agencies, they help the taxpayers, and it's a mindset which is counter to the intensely legalistic forum that dominates our minds. I understand why it does. The legalistic system compels to create complexity and specificity, and Industry is worried that if they have a test they have to know exactly what number. If they are a tenth below that and they get arrested -- I use the word loosely -- there's enforcement action, that's serious.

But there's ways around all of these things if we start here under oath before all the

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parties, and I'm doing that, and I thank you for indulging this.

Let me just say in closing, I have been writing columns in the Los Alamos newspaper on the environment for 40 years, first biweekly and now monthly. I write about a lot of topics including regulatory engineering and regulatory efficiency of the kind I have talked about here. I would be happy, after this hearing, anybody who wants to get on my E-mail distribution list for my columns which talk about this subject in detail and will continue to talk about it, so it remains viable long after this hearing closes, I would be happy to take their card or E-mail address.

So that is what I wish to say. I thank you for listening to it. I thank the audience and the lawyers for tolerating it, but I think it comes a lot closer to what needs to be added to what we have done here, what is the missing part from what we have done here is. This doesn't replace what we have done here, but it's the missing part and I don't know any way -- I will pursue this in every forum I can, and the more formal the forum the more people will listen. Thank you for your indulgence. I stand for questioning.

CHAIRPERSON BAILEY: Do you have any questions?

MR. FELDEWERT: No, and I will say that I'm not sure this is a subject for cross-examination. I'm not diminishing the comments made here today, but I think we can look at it as informing public comment. I'm not diminishing it. This is not the type of testimony that I think is the subject of cross-examination.

MR. SMITH: Well, public testimony, I think, is subject to cross-examination, but there has been no offer or acceptance of the doctor as an expert so I think you can move forward if anyone wants to cross him they can.

CROSS-EXAMINATION

BY MS. FOSTER

Q. Dr. Bartlit, your comments were extremely interesting. I'm a little bit confused because after listening to your comments I think you said it a couple of times during your statement that field testing effectively is something that needs to be added to this process.

A. It could be. This or another process.

Q. Are you making a modification to IPANM's petition making a recommendation to the Commission

that the Commission requires field testing to occur before we actually go and do lab tests?

A. No.

Q. And you understand that if a company decides to do field testing it would be an internal regulatory or business decision in order to do field testing?

A. Could be or could not be. Field testing certainly can be incorporated into the formal regulatory process. That's conceivable to do. I have not proposed that today, but it certainly can be done. There's no question it can be done.

Q. So effectively what your statement is saying is that you think it would be a wise decision for companies to do some field testing in order to determine if they are going to meet the standards before they go to the labs?

A. And regulators as well, and to incorporate them later in regulations. Yes, all of those things are good.

Q. No further questions.

MR. JANTZ: No questions.

CHAIRPERSON BAILEY: Ms. Gerholt?

MS. GERHOLT: No questions.

CHAIRPERSON BAILEY: Mr. Dangler?

MR. DANGLER: No questions. Thank you.

CHAIRPERSON BAILEY: Commissioner Bloom?

COMMISSIONER BLOOM: No questions.

DR. BALCH: I will ask you a question. I always have questions. Thank you, Dr. Bartlit, for your testimony. I'm also very interested in the process efficiency.

THE WITNESS: Excuse me, by process do you mean the legal process or the technical process?

DR. BALCH: I'm talking about technical, engineering.

MR. SMITH: There is no legal process efficiency.

DR. BALCH: I'm a scientist and engineer at times. I'm not a lawyer so that's not the kind of efficiency I'm concerned with. In Dr. Neeper's cross-examination he talked about sending samples to a lab and requesting tests and they said well, this 300.0 is what we are set up for and what we can do efficiently in the lab. So in that sense, going from Table 1 to Table 2 measuring chlorides, in your opinion would the efficient process be to use what the labs are already set up to do?

THE WITNESS: You could say that, but this is also true of -- you know, in the oil industry

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they get gas and oil out of the ground by certain process, operations. And when they are doing that now, they are doing it the most efficient way they know how and it can be done now. But a new idea comes along, maybe fracking. At some point that was a new idea. And I'm not picking on fracking, for or against it, but they get a new idea of how to improve that process.

Their operations, when they change the operations, they lose efficiency. They know how to do the old process really well, and all the workmen in the field know how to do it, from the guy with the smallest job to the boss to the companies, they know how to run the way they are running now.

To get more efficient they have to make a change, and change is an obstruction, if you will. It takes time and energy and effort and money sometimes to make change. You have to buy new equipment. Maybe closed-loop systems are more efficient than open-loop systems. I'm not proposing that. I'm not saying change your system. But when you make the change to that, it costs more money and it takes some time. You have lost time and money to make the change. For a regulatory body to get more efficient, it needs more computerization of data.

It costs time and money to make that conversion.

So there's a difference between the steady state efficiency and changing from a less efficient system to a more efficient system which has inefficiencies in that change. That's why people resist change. It's an inefficiency in change but if you don't change you get further and further behind in the larger efficiency. That's how industry operates. The public does not operate that very well. Regulatory bodies do not have that same focus in the same way, and I'm trying to encourage it needs to be that way.

DR. BALCH: I like to think of kind of what you are talking about as best practices. You want to make your regulation nimble enough to adjust to changing circumstances so it comes up with a better test, better method?

THE WITNESS: Technology keeps advancing all the time.

DR. BALCH: I do note in NMOGA Exhibit 20 Page 41 on the tables that they have an asterisk with their testing methods for EPA 300 and the asterisk reads, "Or other test methods approved by the Division," so hopefully that might allow for some of that nimbleness.

THE WITNESS: It's a step. I think as I looked into this more over 40 years, I see opportunities, huge opportunities to increase the regulatory efficiency by regulatory engineering that are not -- this is a new concept in the world, I think, the notion of regulatory engineering. You can go to college and get a Ph.D. in regulatory engineering just like you could in petroleum engineering or mining engineering or automotive engineering or aero engineering. There's no reason not. It's the same thing to try to get that process more efficient, and it takes high level work and thought and focus to make that thing. There should be regulatory engineers just like automotive engineers, and that's not going to happen today.

I'm not proposing this body take any action. But that's what I'm talking about. And it's a whole -- you can have Ph.D.s doing research in regulatory efficiency. It includes technology, includes process efficiencies. We can't revolutionize the regulatory system and all systems at once, but if we don't start we will be where we are now 20 years from now, and as you can tell, it frustrates me.

CHAIRPERSON BAILEY: No questions. Thank

you very much. Does that conclude the presentation from Citizens for Clean Air and Water?

MR. NEEPER: Madam Chairman, other than one rebuttal of less than five minutes it does.

CHAIRPERSON BAILEY: Then you have the rebuttal of five minutes?

MR. NEEPER: At this time?

CHAIRPERSON BAILEY: Are you talking about at the end of the hearing?

MR. NEEPER: Yes.

CHAIRPERSON BAILEY: Closing?

MS. FOSTER: Before our rebuttal?

CHAIRPERSON BAILEY: Yes. Mr. Jantz, do you have witnesses to put on today?

MR. JANTZ: Perhaps. In the interest of efficiency, I would like to disclose beforehand our witness and what we propose to have the witness testify on in order to get a determination by the Commission out of the way beforehand, before we waste time with qualifying the witness as an expert and the testimony itself.

OGAP intends to proffer Dr. Tom Myers as an expert in hydrology and hydrogeology in order to address the question that Dr. Balch posited to Dr. Robinson yesterday about 2500 milligrams per

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liter of fluid going through a volume or a mass of soil in a pit, and in particular we would like to talk about preferential flow and dispersion, which Dr. Robinson touched upon, as well as perhaps have him express an opinion about the mobility of Benzene and BTEX?

CHAIRPERSON BAILEY: Do I hear comments?

MS. FOSTER: Before we make our argument, Madam Commissioner, I would like to get clarification what exactly OGAP is asking for at this time. Because this statement that Mr. Jantz made is a very generalized statement. It is an expansion, however, of the statement that he made in the prehearing notice to parties, and I'm curious as to what the impact of your decision would have. Obviously, he is not asking you to qualify the gentleman as an expert witness at this time. I guess the decision would be whether he is going to testify or not specific to the, I guess, three points you raised.

MR. JANTZ: Whether the three points are within the scope of the hearing.

MR. SMITH: I think whenever objections are made, which I'm assuming they will be. I think there are two issues there. One is, is the

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testimony within the scope of the hearing as noticed, or does the testimony relate to prior testimony that was given. I would think that under either of those circumstances the testimony that he is describing would be fair for the Commission to hear. It's the latter one that concerns me more than anything, because I don't have that good a recollection of everything that was testified to before.

MR. FELDEWERT: I would disagree with you in the sense that, for example, he wants to testify on preferential flow and dispersion and mobility of Benzene.

MR. JANTZ: And BTEX.

MR. FELDEWERT: And BTEX. Those were the subjects of the hearings from May through August. Now they want to call a witness to address those issues. The stand that you are now allowing a party to call a witness to directly address those subjects, then you are moving beyond the scope of this hearing.

I think there's a distinction there. If there's a question from the Commission that they have of a prior witness, that's the Commission's prerogative. But to have a party call a witness

specifically to address subject matters that are not the subject of this noticed hearing presents a real problem, and I think goes beyond what you have noticed, beyond what the parties are prepared to present, and we run the risk of now opening up this matter again and having another round of witnesses like we have had from May through August this past summer.

MR. SMITH: Well, I would agree with that. We are not in disagreement there unless what his witness is going to discuss are topics that were directly addressed by, for instance, Dr. Robinson, which is the claim that was made by Mr. Jantz. And that, I think he can do that, but I think it would have to be limited to whatever it was that Dr. Robinson may have said on those topics.

MR. FELDEWERT: If we break that down, Dr. Robinson didn't discuss anything about preferential flow and dispersion.

MR. SMITH: I don't remember that either.

MR. FELDEWERT: He didn't offer an opinion on the mobility of Benzene because that's something he had not prepared.

MR. SMITH: What else?

MR. JANTZ: BTEX. Beyond the preferential

flow, the mobility of BTEX, Benzene and dispersion? That was all we were going to offer.

DR. BALCH: There was the follow-up to my question about the impact of --

MR. JANTZ: But I mean essentially that was the context under which the dispersion --

DR. BALCH: My question was asked in the context of chloride.

MR. JANTZ: Right, but the answer was in the context of that question which mentioned preferential flow. I don't know if they used those words exactly, although I think you did. And dispersion.

MR. FELDEWERT: So my bottom line position is I don't see how they have brought a witness here that is prepared to address the issues that are the subject of the hearing, which is the conversion issue.

MR. SMITH: Do you have specific statements made by Dr. Robinson that you aim to address?

MR. JANTZ: I would have to get the transcript read back. In my notes I have a comment about -- if my recollection is correct, the question involved putting the saline solution, 2500

milligrams per liter, through a mass of soil in a pit, what comes out the bottom. And Dr. Robinson gave his opinion about not being able to do the math but talked about it preferential flows, depends on dispersion, and those are, I think, things that Dr. Myers should are clarify.

MS. FOSTER: I think the witness specifically stated that he couldn't respond without specific calculations. I think the way Mr. Jantz just characterized the testimony, that goes directly to modeling and that goes directly to all the testimony that Mr. Mullins gave previously in the several weeks that we were here, and, you know, again, I think allowing this witness to testify about that really does open the door again to the modeling question and effects on the environment of having the chlorides in the pit. That's well beyond the purpose of this hearing and well beyond what was noticed for the purposes of this hearing.

MR. FELDEWERT: I do say I think, Dr. Balch, you know your question. My recollection is that your issue was how much -- it was either one milligram or 2500 milligrams per liter, how much of that fills up a cubic foot, as I recall. But the bottom line is it was not a type of testimony,

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question or discussion that dealt with preferential flow issues generally, dispersion issues generally, the mobility of Benzene or BTEX. It was a specific question related specifically to chlorides that related to the conversion issue because you were dealing with milligrams per kilogram versus milligrams per liter.

COMMISSIONER BLOOM: Mr. Smith, two quick points and a question for Mr. Smith. I thought when we came back from the break that Dr. Robinson gave an answer to the question that Dr. Balch asked.

DR. BALCH: Into one cubic foot.

COMMISSIONER BLOOM: Correct. And since the order was to get to one common standard for all the tables, and we heard that mobility might be an issue and that it would best be served to stick with milligrams per liter, we might want to look at BTEX and Benzene in terms of milligrams per liter. My question is more procedural. Is Mr. Jantz' witness that he will put on, is that a case that he is presenting or would this be more correct for rebuttal witness or something along those lines? Because he is rebutting testimony that we heard during the proponent's case.

MR. SMITH: I think I would characterize

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it more as a rebuttal, although I think in this room context doesn't make a lot of difference which way you characterize it. The question, it seems to me, is if it isn't within the context -- if it isn't viewed as something that falls within the content that you would have anticipated hearing based on the notice and the transcript from the November 15 hearing, the question is does the testimony fairly rise from the testimony that was given before, in this case apparently by Dr. Robinson.

Now, it sounds to me like the argument here is a question was asked by Commissioner Balch and Dr. Robinson said, "Well, I can't really answer that without taking into account various factors," and then he came back and without discussing those factors in particularity he gave an answer to the question. So the way that this would arise would be to say OGAP says, "Well, he can't give you that information but we sure can."

And I honestly think that's peripheral. I think if the objection is that this testimony is outside the scope of what was noticed up, I think that is probably the case and I think the fact that the words were mentioned in the testimony of Dr. Robinson is not enough to open it up to this

kind of testimony, so I would say that the objection, though not plainly stated as I appreciate the objection from the argument, I think it's well taken.

CHAIRPERSON BAILEY: Then on the advice of counsel, we cannot hear the witness testify on those points that you mentioned.

MR. JANTZ: In that case, OGAP has no witnesses.

COMMISSIONER BLOOM: Could this person again be heard as a rebuttal?

MR. SMITH: I don't think so. There was no opinion discussed there. I mean as I appreciate it, what Dr. Robinson said, "I can't answer your question without taking into account various factors." And he mentioned that language but I don't know that I think that's enough to open it up unless this testimony is strictly limited to answering Dr. Balch's question.

DR. BALCH: If I may make a comment on the question. I ask a lot of questions because I'm curious, not necessarily because they follow the rules.

MR. SMITH: I don't know that you can make that distinction, Commissioner Balch. I mean, that

would open it up enough to respond to that one question, but I don't think that you can at this point undertake a long, involved discussion of any of these principles. So if you want to put your witness on and Dr. Balch reiterates the question and your witness can answer that question, I think that will probably be okay, but I don't think it opens it up beyond that.

MS. FOSTER: You are also assuming that he would be qualified as an expert to be able to answer the question?

MR. SMITH: He would have to be qualified as an expert to answer the question.

MR. JANTZ: If we are limited to answering that question in that context and we are not allowed to extrapolate and say reality -- I mean, we will abide by the Commission's decision.

MR. SMITH: I don't know about reality. I don't want to get metaphysical. I'm just saying I think that's what you can do in the context of the hearing.

CHAIRPERSON BAILEY: So you choose not to put your witness on?

MR. JANTZ: I think the Commission has made its parameters clear.

MR. SMITH: Within those parameters you don't want to call the witness?

MR. JANTZ: Within those very narrow parameters, I don't think our witness would add value.

CHAIRPERSON BAILEY: Ms. Gerholt, you have no witnesses?

MS. GERHOLT: That is correct, the OCD calls no witness.

CHAIRPERSON BAILEY: Mr. Dangler?

MR. DANGLER: No, no witnesses.

CHAIRPERSON BAILEY: Then we have concluded the presentations, so it's now time for rebuttals. Dr. Neeper, do you have rebuttal?

MR. NEEPER: Yes, ma'am, we have one short rebuttal directed to a statement of Dr. Robinson.

CHAIRPERSON BAILEY: If you would go ahead and present your rebuttal.

MR. FELDEWERT: May I ask as a matter of procedure, I'm confused. Dr. Robinson was on the stand first. You then called Dr. Neeper to provide his testimony. During his testimony he did rebut what he chose to rebut of Dr. Robinson's testimony. There has been no additional testimony by Dr. Robinson. Dr. Neeper indicated he wants to come

up and rebut something that Dr. Robinson said the first time, so I'm not sure that -- this is not a true rebuttal.

MR. SMITH: I think that's exactly right. I do recall Dr. Neeper saying in his testimony yesterday, "If I had the ability to go get something or do something" or I forget what it was, "I would like to rebut something." He expressed the desire to rebut it at that time but did not have in his possession what he needed to do it. I think if this were an adjudication probably you might be able to foreclose his testimony, but since it's a rule-making, I think it's all right to let him go ahead and testify to this, whatever it is.

MR. NEEPER: May I address the objection?

CHAIRPERSON BAILEY: Yes.

MR. NEEPER: I am not aware in prior hearings that rebuttal testimony necessarily had to be included in one's direct testimony. In fact, I thought the two were separate.

CHAIRPERSON BAILEY: Then we will go ahead and hear your rebuttal.

MR. NEEPER: Very good. Dr. Robinson yesterday, near his conclusion and in response to questioning, mentioned that he had seen the results

of some modeling. As close as I can get to his words, they were like this: "Some of the models assume that water is going to move down, so they actually had the negative soil water contents in the surface in order to allow enough water to fill the model to make the stuff go down." He was addressing modeling.

I don't think that applied to Mr. Mullins' model, as best I can imagine, so I believe it must have applied to my modeling. My model was driven by actual soil moisture, measured several times per day by the National Resource Conservation Service. There was no such thing as negative water. If one tried to have negative water in that kind of a code you would get a computer crash.

MS. FOSTER: I'm sorry, Dr. Neeper. I'm going to object to this rebuttal testimony. I don't know if it's directly responsive to what Dr. Robinson said yesterday, and I think the longer he speaks we are going to end up going down the road again of modeling. I believe that Dr. Neeper had several opportunities during the regular hearing to put on direct testimony, rebuttal testimony. He did talk about his modeling that he did in contrast to Mr. Mullins' modeling, so if my objection is

overruled at this time, which it probably will be, but I think we are going down that road of modeling. I propose that direction at this time.

MR. SMITH: I think that I can recall some testimony like that. If you all do, as long as this testimony is limited to that specific comment, I think he can give it. I don't think that opens the door to extensive discussion about modeling. It shouldn't anyway.

CHAIRPERSON BAILEY: Dr. Neeper, do you have a response?

MR. NEEPER: I believe the most expeditious thing would be to say I was within one sentence of concluding my remarks.

MS. FOSTER: Okay.

MR. NEEPER: And I would remind the Commission that it was Dr. Robinson who brought up modeling.

MS. FOSTER: Then I would withdraw my objection and let the witness propose the last sentence and we can go to lunch.

MR. NEEPER: My final sentence, I believe no models in this hearing had the artificiality of negative water content. Thank you.

CHAIRPERSON BAILEY: You may be excused.

It's 11:35. Why don't we take lunch and return at ten minutes to 1:00 o'clock. That gives us an hour and 15 minutes.

MR. JANTZ: Madam Chair, is there any business left to do?

CHAIRPERSON BAILEY: Do we have any other rebuttals?

MR. SMITH: No one seems to be interested in talking.

MR. FELDEWERT: There is one issue that we may need to address, and I don't mean to cause you any time. I can call you and let you know if we are going to address one other issue by way of rebuttal, but I need to visit with the people and ascertain what needs to be done.

MS. FOSTER: At this point on behalf of IPANM we will not be presenting rebuttal witnesses.

MR. SMITH: We are going to have to -- I think you need to throw out the possibility of whether they want to submit anything prior to your taking up deliberation again, based on the new stuff. So --

CHAIRPERSON BAILEY: Closings and --

MR. FELDEWERT: We can probably address that now. I am not anticipating any kind of

closing. I understood you were going to take the testimony for what it's worth and continue with deliberations.

MR. SMITH: Do you have any additional findings or conclusions you want to submit?

MR. FELDEWERT: No.

CHAIRPERSON BAILEY: Do you, Dr. Neeper?

MR. NEEPER: I had thought that we would have findings and conclusions and I made notes for the written version thereof. I would not have anything prepared verbally.

CHAIRPERSON BAILEY: So you would prefer to allow time for findings and conclusions and closings?

MR. NEEPER: If the Commission allowed findings and conclusions I would prefer that those are submitted in written form. If the Commission called for those.

MR. SMITH: OCD?

MS. GERHOLT: We second.

MR. SMITH: You want findings and conclusions? What about OGAP?

MR. JANTZ: We reserve the right to submit findings and conclusions.

MR. SMITH: No, I understand. Nobody is

foreclosed from doing it. The question is whether or not you all want the Commission to build some short period of time in for you all to be able to submit additional findings and conclusions. It would have to be limited solely to what has arisen in this hearing, of course. Reopened hearing.

MR. FELDEWERT: We would object to that on the grounds that there's some built-in additional delay there that I don't think is warranted nor anticipated when you decided in November to hold a public hearing to obtain comments. My understanding in being at that hearing, looking at the transcript, looking at the public notice, is that the intent was you were going to come in, address this narrow issue, and then proceed with the time that you set aside to continue with your deliberations on the pit rule.

I'm concerned we get into the mode of additional findings and conclusions, number one, trying to keep them within the parameters of the proceeding is going to be difficult, given what arguments we have had here today. Number two, it's a built-in delay, and I don't see what benefit the Commission is going to get from that built in delay. The testimony is in your head now. In my mind, you

are set to go.

MR. SMITH: I think if the Commission wants findings and conclusions there's no reason you shouldn't have them.

CHAIRPERSON BAILEY: Commissioner Bloom, would you like findings and conclusions?

COMMISSIONER BLOOM: I think they would be helpful and I think they would be very limited and we could probably have them submitted within a week or two.

DR. BALCH: I think I could deliberate after lunch without additional findings and conclusions. The scope of the testimony is fairly narrow, and I think questions regarding the table and conversion factors were the only things that were substantially addressed and we would have to deliberate on.

CHAIRPERSON BAILEY: I believe our attorney in drafting up an order would find the submission of conclusions and findings to be helpful.

MR. SMITH: They are always helpful. Sure, they are. In this context I would check to what the commissioners feel like they would like to have to help them deliberate. I wouldn't want to

hold it up on my account. It is helpful.

CHAIRPERSON BAILEY: I think it would be helpful for me also as well as Commissioner Bloom to have those. How quickly do you think you would be able to submit findings and conclusions?

MR. NEEPER: Speaking for myself, three days.

MS. GERHOLT: Next week, Madam Chair.

MR. SMITH: How soon could you get the record out for people to be able to use if you were going to really speed it up?

THE COURT REPORTER: Monday.

CHAIRPERSON BAILEY: We have a regularly scheduled hearing for the 17th but we have nothing on the docket. So that time has already been scheduled for us. Are the attorneys available if necessary? We would be able to resume deliberations.

MR. SMITH: I think you can resume deliberations regardless of the availability of the attorneys. You set your deliberations last time without taking into account schedules, I think.

CHAIRPERSON BAILEY: Then we can resume deliberations this afternoon is what you are saying?

MR. SMITH: Yeah.

CHAIRPERSON BAILEY: Continue on, and take into account the findings and conclusions from this reopening before we make any determinations?

COMMISSIONER BLOOM: The issue. There are other things we can deliberate on as well. If we reach a point where our need of findings and conclusions, we can delay at that point.

MR. SMITH: I would suggest if there are other things that you want to deliberate on, deliberate on those. I would hold off on deliberating on something where the topic has been discussed in this hearing until you get your findings and conclusions since you are going to allow people to give them to you. So to the extent that you can segregate that, I would. And then if you are going to deliberate this afternoon you can continue that deliberation until whatever date it was.

CHAIRPERSON BAILEY: The 17th. All right. Until tomorrow and then the 17th if necessary. If the findings and conclusions are given to us by close of business Wednesday, we would have them in hand for deliberations on Thursday, the 17th. So that would be possible for parties to present their findings and conclusions on this particular

reopening of the cases by close of business Wednesday, the 16th.

MS. FOSTER: The session starts on Tuesday, but I could -- if I have the transcript on Monday I can probably squeeze and get it to you. But again, as a petitioner, IPANM would reasonable like to see a conclusion to the hearing.

MR. SMITH: I'm sure the Commission wants to drag it out. Note that was said in jest. Can you do your findings and conclusions, Mr. Feldewert, by Wednesday?

MR. FELDEWERT: If that's the decision of the Commission for findings and conclusions, yes.

MR. SMITH: Mr. Jantz?

MR. JANTZ: Yes, we can do that.

MS. GERHOLT: Yes.

MR. SMITH: I thought she said she could.

CHAIRPERSON BAILEY: Mr. Dangler?

MR. DANGLER: Yes. Thank you.

CHAIRPERSON BAILEY: All right. Then we have concluded the reopening of the cases for this particular -- except for the findings and conclusions.

MR. FELDEWERT: Well, I think I mentioned earlier that there's one issue I would like to visit

about. I asked if we could delay until after lunch to ascertain whether there's any additional information that we feel we need to provide to the Commission.

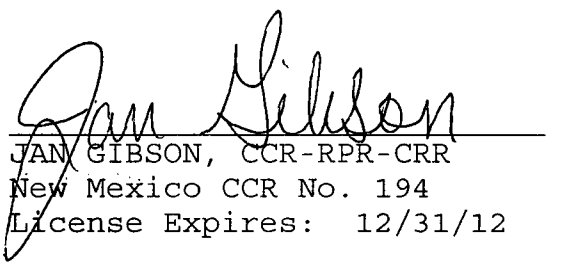
CHAIRPERSON BAILEY: Let's go ahead and take our lunch break and return at 1:00 o'clock this afternoon. Do we have public comments? Okay. Thank you.

(Note: The hearing stood in recess at 11:45 to 1:00.)

REPORTER'S CERTIFICATE

I, JAN GIBSON, Certified Court Reporter for the State of New Mexico, do hereby certify that I reported the foregoing proceedings in stenographic shorthand and that the foregoing pages are a true and correct transcript of those proceedings and was reduced to printed form under my direct supervision.

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



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