Summary of Utility MACT Working Group
(Clean Air Act Advisory Committee,
Permits/New Source Review/Air Toxics Subcommittee)
November 5, 2001, 8:00 - 10:00 a.m.
Washington, D.C.

John Paul: Let's go ahead and real briefly go around and introduce ourselves. We have primarily one major presentation today and then we will do discussions on that and this is on the data that EPA has available. I think that probably at the end of all that, too, we will want to talk a little bit about the schedule. We have to make up our minds as to whether or not we are going to have a meeting between now and Thanksgiving. My name is John Paul and I am Supervisor of the Regional Air Pollution Control Agency, a six county local agency in Dayton, Ohio.

Sally Shaver, EPA

Larry Monroe, representing Charles Goodman from Southern Company.

Praveen Amar with NESCAUM. We represent eight States in the northeast.

Bill Wemhoff representing the Electric Cooperatives for Rich Midulla at Seminole.

Dick Wilson, National Environmental Strategies

Mike Geers representing Bill Tyndall of Cinergy

Felice Stadler, the National Wildlife Federation

Jeff Smith, Institute of Clean Air Companies

Patricio Silva, Natural Resources Defense Council

Michael Rossler, Edison Electrical Institute

John Shanahan, National Mining Association

Lee Zeugin from Hunton & Williams representing the Utility Air Regulatory Group

Pat Raher, Hogan & Hartson

Bob Wyman, Latham & Watkins

Tom Natan, National Environmental Trust

Rob LaCount, PG&E National Energy Group representing the Clean Energy Group

Sam Wolfe, PSEG

Bill Bumpers with Baker Botts with the Class of 85 Regulatory Response Group

Bill Becker with STAPPA/ALAPCO

[Presentation by Bill Maxwell, EPA. See separate file "MACT_data_110501.pdf".]

Bill Becker: Can I ask a question?

Bill Maxwell: Sure

Bill Becker: Did the industry believe that also? You said we, that is EPA.

Bill Maxwell: I don't know, you will have to, I guess. . .

Bill Becker: Is there a controversy about whether. . .

Bill Maxwell: I have heard of no controversy on the coal data. Part of this QA/QC, we found subbituminous from Virginia. There is no subbituminous in Virginia. We called the plant. This was back and forth with primarily EPRI but there has been some follow-up and oops, we checked the wrong box, but as far the adequacy or the accuracy of the data, I've heard no real dissent.

John Paul: Before we go to questions let's identify those that are one the phone. So, if you are on the phone, could you identify yourself, please?

Bliss Higgins, Louisiana

Michael Shore with Environmental Defense

Martha Keating with the Clean Air Task Force

Ann Weeks with the Clean Air Task Force

Michael Opalinski with Seminole Electric Cooperative

Jim Pew and Sandy Schubert with Earthjustice

David Schanbacher with Texas Natural Resources and ECOS

George Offen, Leonard Levin, and Paul Chu with EPRI

Ann Berwick with M. J. Bradley Associates and the Clean Energy Group

John Paul: Okay, any others? Well, welcome. Okay, let's see if we have any questions for Bill Maxwell.

Praveen Amar: Just a quick question first Bill. You mentioned NO_x control was not asked when you did the survey. I mean looking back....

Praveen Amar: Bill, I was going to ask you, you did not ask for NO_x control. Looking you back, should you have?

Bill Maxwell: We did ask for the type of NO_x control. We did not categorize the plants for being selected for method – Ontario-Hydro testing based on the NO_x control. We didn't categorize at that time based on whether they had or didn't have some kind of NO_x control.

Praveen Amar: But you do have the information?

Bill: Yes, we do have the information and based on the data that was received, we did do some finer categorization later for use in the national model. But the type of NO_x control was not one of the criteria that was used to categorize the plants initially.

Pat Raher: Bill, I had a question on page two of the little slides that you handed out, you talked about – and the last slide at the bottom -- "all coal-fired units categorized based on" and then about the fourth bullet down says "also categories for fluidized bed, coal-gasification, 36 populated categories" and yet on the very next slide you say "categories not based on" and we have boiler-type. I'm not sure I understand the difference when you are talking about the categories of fluidized bed and everything else and then you say categories not based on.

Bill Maxwell: We did not – for example, wall-fired versus t-fired versus arch-fired, we did not do that. We recognized that coal gasification and fluidized bed were both methods of, for example, SO_2 control and a type of boiler, so we did give them a category, but we didn't go farther like I said, front-fired or wall-fired or wet versus dry. Again, that is some of the information that we got in similar to the NO_x so that you could look at distinctions between wet versus dry, but that was not an original criteria.

Felice Stadler: Do you have a – I know I've seen this before – a breakdown of the number of tests for each of the different categories with a better sense of how many stack tests you did run for those units that have SCR, SNCR versus some of the other control configurations?

Bill Maxwell: Yes, we have that. That is all on the website. I didn't bring that but we have broken it out based on what – into the finer categories and SCR/SNCR is one of the categories that we broke out into. That data is all on the web. I didn't bring it.

Jim Pew: I had a question about HAP other than mercury. What kind of emissions data do you have for those?

Bill Maxwell: We got no information through the ICR or any HAP other than mercury. The only HAP information for non-mercury is what is included in the Final Report to Congress.

Jim Pew: How are you going to set the standards for those HAP?

Bill Maxwell: We will be using that data and any other data that becomes available.

Jim Pew: But I mean if you don't have any non-mercury HAP data, what are you going to do to get it?

Bill Maxwell: We have non-mercury HAP, it is that that is included in the Final Report to Congress. We did not acquire any additional non-mercury HAP.

Jim Pew: So you don't have any plans to acquire any additional non-mercury HAP?

Bill Maxwell: Not at this time?

Pat Raher: Bill, again, on page two, your second slide on your background of coal analysis, you talked about the analysis method was not mandated by EPA. Can you give me a little bit of background whether or not it makes any difference, if let's say virtually everybody, I know this is not likely, every person, every site used a different analysis method? Would that have been a problem, do you think it is a problem, did you take a look at it?

Bill Maxwell: We did take a look at it to some extent. The people in the Emission Measurement Center felt that there was few enough different methods that could be used that that would not be a problem.

Bill Becker: I have two questions. I will start with the one is a follow-up to Jim Pew's question, which I thought was a fair question, about the non-mercury data. Do you feel confident enough about the information you collected from the Congressional Report to be able to make a determination on the non-mercury data? And if so, that's why you are not seeking additional information elsewhere or is there sufficient data there to make a determination one way or another? And then I have a follow-up question.

Bill Maxwell: I think the answer is yes. The determination was made based on the data we had. Mercury was the pollutant that seemed to be the most problematical with regard to "are there going to

be controls available," "what's the level of emissions." The other trace metal HAP, for example, behave like particulates. Good particulate control takes care of them. The acid gases, your SO_2 controls will take care of. Mercury was the pollutant that seemed to be, again, most problematic with regard to how much is really coming out and are there any controls out there that will do anything. So, yes, we feel like there is sufficient information. I guess that could be a topic for this group but we feel that the information is available to allow us to go forward with the other HAP, separate from mercury.

Bill Becker: And then I have a second question relating to the middle slide on page six and you mentioned that you took measurements before and after the last control device and is there any significance to doing it that way? Is there anything missing in between here? Are there other things or future configurations that could be made that would result in emissions that are not tracked through the testing before and after your last control device? I didn't understand the significance of doing it that way.

Bill Maxwell: I guess the question was why did we just test before and after the last control device. Did we lose anything? Well, the other options would be to test before and after each of the control devices, which imposes additional costs on those units that have more than one control device. We felt that by doing it around the last control device, we would end up with data for all types of control devices and that we could then use that data to assemble a plant that had more than one control and get adequate results. I don't think we are losing anything. Yes, there could be a new control device but if it is not out there now, we would not have been able to get test data on it anyway. I don't know if that answers you.

Pat Raher: Just a follow on Bill to what the question that Bill (Becker) was just asking. I'll try to make this simple. If I have three potential control devices that a facility could have and all three facilities end up with a wet scrubber as the last control device, but they don't all have the other two control devices. Some have all three, some have one, some have two. Isn't that going to effect somehow the data unless as you categorize it and pull it together, you know that devices one, two, and three with the last wet scrubber give you this set of numbers, whereas one and the last wet scrubber will give you a different set. Am I clear enough on this? I'm just wondering when you look, I think that's what Bill (Becker) was saying, when you look at just the last unit, if you don't take into consideration or somehow control or divide your data by what's in front of that unit, how does anyone know what the combined controls will result in?

Bill Maxwell: As we looked at the data, and I think as EPRI looked at the data, there was some indication that you could almost believe that the way the mercury behaved in the last control device was dependent on what was before it. But in testing before and after, we were able to get percent reductions and so we would apply those reductions to if a unit, for example, had an ESP and a scrubber, we would have data on ESP's and what they would remove and then taking that outlet data, apply what the scrubber did. That is what we did. You talk about three controls, that's where the NO_x came in. We found out that SNCR or SCR did in fact, maybe, play a part. So here was the third

control that we fit into the system. That data are pretty limited so there is more research going on the impact of SCR and SNCR but that's what we did.

John Paul: Let me follow up on that. One of the presentations that we had in our first meeting listed a table and in the table would be listed various combinations of control equipment and then with a percent reduction listed there, so it would have a hot-side ESP and several other things and then it would list it and I guess the question that's going here is that when you have that combination and you have 95 percent control, but then when we see your presentation here and the fact that the percent removal was just measured at the last device, so I think that's what's generating the question. Can you have 95 percent listed as a control for a certain combination, but the stack test was just before and after the last device?

Bill Maxwell: Yeah, like I say, that is where we use the percent reduction. I mean if your ESP got 30 percent then whatever went into that, we took 30 percent and you only have 70 percent going out and then apply the removal for the scrubber against that 70 percent.

John Paul: The question was, though, if you are just measuring before the last device how do you know what the previous devices, what their percent reduction is?

Bill Maxwell: You don't. You use the data from other facilities with a similar device. That is what we did.

John Paul: Okay, then the question is let's say it looks as though a certain combination is the best and that can get you 95 percent. Do we have stack test data before and after that whole combination in one place?

Bill: No

John Paul: But someone else might have that data?

Bill Maxwell: Might. We may have it in one case. I think one of the DOE tests, that's what they did before and after ESP and then after the scrubber, but that is just one case.

John Paul: Okay, does that help, Pat? Bill?

Bill Becker: That was good

Bill Bumpers: I hate to take us off this topic, but will you at some point do a presentation on the data that you have for oil-fired units that shows what the test methods were, the adequacy of the data, and what the results are?

Bill Maxwell: We don't have plans for that at this time.

Bill Bumpers: Do you have the data that you can share with us who care about this so we can try to figure it out ourselves, then?

Bill Maxwell: Yeah.

John Paul: Maybe once you have seen that, you can let us know whether or not you think a presentation to the group would be appropriate?

Bill Bumpers: We have a fair amount of data ourselves and we already think that it would be appropriate. We'll look at what you all have so that we can try to expand on that.

John Shanahan: Yeah, I want to take us to the point about the data sets and the Ontario-Hydro method. We were looking at the correlation test data and you are doing your data points, you are doing that within the confines of the Ontario-Hydro test methodology. My question is really getting to what are other methods of testing the coal did you use, even if it wasn't the primary methodology and you have more scattered data, and how does that comport with the Ontario-Hydro data? How closely do those measurements, different measurements of the coal, track each other?

Bill Maxwell: The Ontario-Hydro method is only for the stack gas, not for the coal, so you can't...

John Shanahan: I'm talking about, when we are talking about your mercury content, when you are measuring your mercury content.

Bill Maxwell: Okay, the Ontario-Hydro is used to measure the mercury content of the stack gas and so there is nothing to compare it with. The coal data is separate. That is ASTM methods or something like that.

John Shanahan: Maybe you can walk through why they differ, how it differs, the different aspect of what is measuring, and why you have differences between the mercury content as you go up the stack. You got input and output, trying to understand how this differs from measuring the coal itself.

Bill Maxwell: As the coal is burned, the mercury is liberated in different forms, particulate, ionic, or elemental. The Ontario-Hydro method only measures those gaseous forms in the stack gas. I mean the particulate form or ionic or elemental. The mercury in the coal, you can't differentiate between the different forms because they haven't formed yet. Perhaps I'm not fully understanding your...

John Shanahan: I guess I'm not. I'm trying to understand when you say you can't measure. Is there not a total mercury content either when broken into the various gaseous forms?

Bill Maxwell: The total – the Ontario-Hydro method will give you a total mercury content, a total mercury out also. You just add up the pieces.

John Shanahan: Excuse me?

Bill Maxwell: I guess I'm not understanding. To me the coal – you get a total mercury in the coal and you can get a total mercury off the stack, but by two completely different methods. You can't use the Ontario-Hydro on the coal.

John Shanahan: If your total – just walk me through, I'm a non-technical person, as you are walking through using both methodologies shouldn't the totals comport with one another? And why not? Just tell me why?

Bill Maxwell: Because some of the mercury is coming out in the control devices. That is when we are getting 70 to 80 percent reduction, the rest of it is going out either in scrubber sludge or the various ashes. We did not measure those to get a material balance.

John Paul: I think once again, back to one of the earlier presentations, based on the coal data, I believe the figure is something around 75 tons of mercury. Based on the stack test methods and various estimates there, we have about 48 tons of mercury going out the stack and there are different measurement methods for measuring mercury in the coal and for measuring mercury in the stack gases. So, 75 tons potential, 48 tons, actual emissions.

Tom Natan: Thanks, I have a question again about the control sequencing. Well, actually it's two questions. I can see how you would measure around the last control device and so you now have an inventory of control devices and because you have got before and after, you have removal rate. But what I'm not so certain of, is because it is the last control device it would seem that there's already been some mercury removed, so you know that when the mercury level is lower then that's the removal rate, but do you know that that's still the removal rate if it is the first control device in a series. So, in other words, if one plant has A-B-C as the order and another plant has B-A-C, is B as effective at removing by percent when it's the first control device as it is when it is the second or third? I get – do you actually have enough data to say that with any certainty?

Bill Maxwell: Probably not enough data to say with 100 percent certainty but there is only a limited number of permutations and combinations that you can have. The scrubber will not likely be the first control device. You are going to have either a fabric filter or an electrostatic precipitator. The scrubber will likely be the last control device, so there is not a lot of ways that you can arrange the control devices and still function. Yes, there is some indication that it might make a difference but we still feel that the data are good. Because that first control device is not taking out 95 percent or 100 percent to really give the last control device not very much to look at where you think the percentage might be questionable. The first control device is usually an ESP and it is usually only taking around 30

to 35 percent. So, there is still sufficient material for that second control device to see for that percentage to be reasonable.

Tom Natan: And, I'm curious why you didn't at least do a few overall material balances just to see. My experience with TRI emissions of all kinds is that the data vastly improve, even when they are monitored, when you try to account for all of the material. Do you have any plans to actually do some materials balance to make sure that you are accounted for all of the mercury?

Bill Maxwell: I don't believe that we have any plans. I know part of the DOE program that is underway, I believe that on at least some of those facilities they are doing material balances. Remember this program was set up in 1998, so it was three years ago, times were a little bit different. We did consider material balance, but felt that we were mixing and matching too many different control or test methods at that time, plus the levels that we were likely to find in some of the ash streams were pretty low or expected to be low. We felt that that would be introducing too much, too many more levels of variability and so we stuck with the coal and the stack gas.

Sam Wolfe: Bill, you'd shown a slide with the distribution of coefficients of variation fitting an expected theoretical curve and based on that you had said that you did not throw out any of the data with the high CV's because they fit the curve. And what I was wondering, fitting the curve suggests to me that the data as a whole, that fitting the curve seems to validate the data as a whole, but it still seems that there are data points with high CV's that may be potentially ought to be considered for getting thrown out even though they fit the curve.

Bill Maxwell: That may be. I mean we have looked at it. We have been very careful not to throw out any data, arbitrarily, capriciously, whatever adjectives that you want to throw on. We have done our analyses and presented it and then it's the second half of this meeting is for your discussion as to whether or not, whether you feel it is adequate.

Sam Wolfe: I'd hate to be making any strong recommendation based on what I can scrape together from college statistics but I'm just wondering if that's something that some judgement can be reserved about whether some of those data points really are outliers that shouldn't be factored into the mix.

John Paul: And I think it's important to put this all into perspective. We are doing questions and we are looking at this, but the bottom line is going to be do we have sufficient data and are the data good and so...

Martha Keating: Bill, on the non-mercury HAP data, has that been summarized in a data set or are they still just all the humongous test reports on the web?

Bill Maxwell: It has only been summarized to the extent that it was summarized in the Final Report to Congress and in the test reports that are in the docket.

Martha Keating: Do you have any plans to put into more user-friendly format?

Bill Maxwell: We can do whatever. The summaries are in the Report to Congress, which are in tabular form and that's fairly user friendly.

Martha Keating: That is not a boiler specific that is for the whole 52 or so tests, right?

Bill Maxwell: Right.

John Paul: Yeah, we can pull that out and maybe have a discussion of that at our next meeting.

Martha Keating: Okay, thanks.

Jim Pew: On the issue of where EPA has done the testing, I think I understand that EPA has tested control equipment, that is before and after a specific piece of equipment. My question is does EPA have data, the total emissions data for particular sources? Can it identify the actual performance of the sources say that have three pieces of control equipment in sequence so that they can say that – for instance, one of those individual sources is performing at a certain level?

Bill Maxwell: I think that we have that information only for one facility.

Jim Pew: Do you plan to get information so that you can tell how sources are actually performing?

Bill Maxwell: No.

Jim Pew: Are you familiar with the case law that says ?? have to reflect the source's actual performance?

Bill Maxwell: The current DOE program may be getting some of that information on the whole facility.

John Pew: But we hear the question, the question's pretty clear.

Felice Stadler: It is probably kind of related to Jim's question, do you – I guess I have a couple of different things. One is for the 86 tests, do you have a, just for those 86 tests, do you have a table that gives us not just the percent reduction, but some kind of emission rate or what the performance was at those 86 units, kind of from the best performers to the least performers, all 86, not this is what we got percent reduction for this boiler within this category? Just again, a table that lists all of them so that we get a clear sense as to what units are performing the best. I mean think this kind of ties to the – I came up with this question after all of this discussion about where we tested and what control device gets us what types of reductions and the MACT is supposed to be based on best performance and while it is very important to know what control devices get you to that performance, ultimately, what we need to

look at is who are the best performers and then we can back up and we can see, oh this boiler had this, this, and this installed. This one actually did something different at their boiler. There might be a whole host of factors that effect the performance at a boiler and I guess I would like to see us kind of take a step back and see what the best performers are and then get a better sense as to why they are getting to that level.

Bill Maxwell: If that data is not already on there, we can put it on. We posted all of the test report data. Now whether or not it is sortable, I'm not sure what format, yeah, you can take the 86...

Felice Maxwell: My question is have you done that. Have you looked at what are best performers or are looking at something besides percent reduction? Have you looked at here's the emission rate. Boiler A has this emission rate and Boiler Z has this emission rate.

Bill Maxwell: We've started looking at that.

Felice Stadler: I think that would be really helpful. I know a lot of that is in the database on the web, but it is a very large database and it would be really helpful if – and I also think it is very important to have – to do those kinds of analyses when we're looking at floor calculations. That is what the floor calculations...

Bill Maxwell: But you are jumping ahead. Understand that if we go ahead and do that and you all decide that half of the data is no good, then we are a chicken and egg type of thing. We are trying to decide whether the data are adequate before we go too far down the path of trying to decide where to go with it. If we come up with a MACT floor, then you all are going to ask why are you here. Do you understand what I am saying?

Felice Stadler: Well, I am sure that you have already been doing some of these calculations.

Bill: We've started – you've probably started, I'm sure everybody has started looking at various aspects of it.

Felice Stadler: Can I then just ask a follow-up question, if the work group decides that the data are not good what additional plans are there to – or do you have additional plans to get additional data rather than saying, yeah, I started data, either good or bad, are there additional plans to get more data?

Bill Maxwell: I would I guess defer to John and Sally, but if they group thinks it is not adequate, I would hope the group would come up with ideas on how to make it adequate. It was pointed out that we do have more data on total systems, spray dryer/fabric filters, you can't test between them, so you get the whole system. Units that only have ESP's, that's basically the whole facility. It is really the only situations where you have some type of wet scrubber preceded by a dry that we don't have the whole system.

John Paul: We do have 86 stack tests. So, we do have an outlet emission rate for each one of those.

Bill Maxwell: That is correct.

John Paul: I would assume for each one of those also, that corresponding to the stack test, you would have the coal data.

Bill Maxwell: That is correct.

John Paul: So, you would have the mercury that's in coal for the stack test. You would have the outlet concentration for the stack test. You would have the operating parameters for the boilers during the stack test. And I guess that is a pretty important question to me, if you, at our agency, if you have 86 stack tests with that data, then we'd want to look at that data and do a lot of different things with data and make sure that the data is quality assured, but I would be pretty hard pressed to try to figure out why that is not adequate. That is a lot of data.

Praveen Amar: Thank you. Bill, I got a number of questions. First, the description that you had today. Do you have a report at this time, a written report describing, or are you planning to have one?

Bill Maxwell: We will ultimately have a report. We do not have one at this time. I mean it will be the support documentation for the standard.

Praveen Amar: Also, the Office of Research and Development EPA, they have – they are preparing a report on mercury control technology?

Bill Maxwell: I believe so.

Praveen Amar: So, is that the report that you are going to be doing or is that going to be a separate report?

Bill Maxwell: That is a separate report.

Praveen Amar: Other question that I have, you mentioned a number of times, the word categories, how you chose you boilers, categories based on this and not based on that. Is that the same meaning as subcategory in the Clean Air Act down the road?

Bill Maxwell: No

Praveen Amar: Not at all?

Bill Maxwell: No, not at all.

Praveen Amar: Will that become a basis though somehow, the control equipment, age?

Bill Maxwell: Not necessarily, potentially, you know, but no that is not how they were – that is not what they were intended to be. They were set up so that we could up with a national emission estimate in the most reasonable way that we thought.

Praveen Amar: Okay, so the details of the 80 tests, the volunteers, and the ones that you chose, do you have details like how many had cold-sided ESP's and hot-side ESP's and baghouses and so on? Would that become available to check for example, you got 1,100 boilers and you selected 80 and the question obviously becomes and I think you already have the conclusion here, based on what you think that the data in the coal and the data in stack, you think these data are sufficient to go forward with the MACT process?

Bill Maxwell: I think that we already have that either on the web or certainly available.

John Paul: We do have that. The controlled mercury emissions from coal-fired utility boilers, one of the...

Praveen: Jim Kilgroe's presentations...

John Paul: Yeah, I think that covers it pretty good.

Praveen Amar: And one other question and I want to be clear. There are two words, variability and uncertainty. I think you have used the word variability quite often, variability in coal of mercury and variability of mercury in stack gases and I am looking at all of these 28,000 large samples that you tested for coal and 80 boilers. Are you comfortable at this time based on what you have shown us, three tests for stacks, I guess, and then many, many tests for mercury in coal that you have captured the variability? Which is not the same thing as uncertainty, I want to be clear. See, uncertainty is the property of the beholder and the variability is the property of the system. If you are able to figure out variability then it is not uncertain, it's simply variable. Am I making myself reasonable?

Bill Maxwell: Yeah, you are talking to a non-statistician.

Praveen Amar: I am too, an non-statistician.

Bill Maxwell: I think we are comfortable that the data are good. The coal data certainly and we have no reason at this time to not believe that the stack test data aren't good.

Praveen Amar: Then one quick question, I'm looking that you have 28,000 samples of bituminous coals and about 8,000 samples of subbituminous coals. Now, in this country you are burning more or less 50/50 percent of each of them. So, I am wondering why so many more samples of bituminous versus

subbituminous?

Bill Maxwell: To some extent I believe that's... We required every sixth shipment, many of the – well, many, a good number of -- plants received their bituminous coal by truck and so we said whatever you receive in a 24 hour day is a shipment, so there's a lot of truck samples in there. It's not directly related to tonnage. It's loosely related, but I think that is why you get more bituminous samples because there's lot of truck shipments.

Praveen Amar: Thank you.

John Paul: I don't think it's 50 percent either. It's 52 percent bituminous and then it is some other percent and then there is lignite also.

Bill Maxwell: About 40 percent and then 8 percent lignite.

John Paul: Right, so it's not quite.

Mike Rossler: Okay, the question I've got is the graph that you put up on the board talked about the quality of the data with regards to the coefficient of variation which if I understand that, that's kind of a measure of how close and how tight the three sample runs were on that particular stack test. The question I've got is how would that relate to those tests being representative of the overall operation of the station? Very often, when we conducted these tests they were at a steady load, at a one fixed load, but that's not necessarily how the station would normally operate on a day-to-day basis. Do you have any further information about that?

Bill Maxwell: Not specifically. That is another issue -- the long term performance and we have work underway on continuous emission monitors to try and see whether or not they can be perfected and then to get long-term data. But you're right, these tests are like all other stack tests, they're a snapshot in time.

Pat Raher: Bill, it's going back to what Mike was just asking a little bit when you say a snapshot in time. You have a lot of coal data and you can see through all kinds of mixed shipments and everything, the variability as Praveen was talking about in the coal data. Now you come over and you do three tests at each one of these units. Have you looked at whether or not those tests are falling on the average of the chlorine, mercury, all the other parameters or whether or not they actually were – you have a representative sample of the number of times the worst combination of those happen to hit a boiler or the best combination of those happen to hit a boiler and what impact, if any, that has on the control equipment?

Bill Maxwell: Are you asking whether or not a specific plant was tested and they were using the highest mercury content coal or the lowest, or whether their coal...is that...?

Pat Raher: Well, you have all of the coal samples and one of your slides talks about the variability both in testing and in the coal, the characteristics of the coal, the speciation of the coal. Now, I see this curve and I thought what that curve was telling me until Mike and others were talking about it is that you sort of caught all of the various combinations. I'm not sure that's the case now, and I am wondering, your coal data is probably going to show that a certain mixture of coal that any one or a large number of facilities could receive in one day, or burn in one day, let's put it that way, could have a very bad combination or a very high combination of chlorine or mercury or combination of the two, or whatever, but that may not be the coal you tested on the three days where you got your snapshot, and so, I guess the question I'm trying to get across is, when you took those snapshots, are you able to go back and look at the coal that was burned to say "we actually tested and we know what this control equipment will do if you get a bad batch" because I don't think these guys have a lot of control over this mixture that's coming in with trucks and trains and everything else.

Bill Maxwell: Okay, we do have the data. I think we have looked at it to some extent. Not going to see whether it is the worst. We don't see that there is a great of variability, particularly not what you are used to with sulfur content for example. That the mercury doesn't vary that much. Yes, there are high coals and low coals but they don't tend to come into the same plant at the same time.

Jim Kilgroe: Yeah, one of the problems that we have is that there is not enough, I guess, data on the emission testing to try to – in a lot of cases what we did is we broke the emission tests up into groups, which we called coal combustion flue gas or control groups and my feeling was that those groups basically represented independent populations because they had something about the tests that was different from another plant which would say, okay, it is not really the same population. So when we did that, there is a lot of the plants, essentially that represent, there was only three tests for a basically a given group and one thing you can't go back and really take three tests and compare that with what's going on before. I think the other factor is that it's impossible to tell from day to day when they were doing some testing down at Gaston, they found that they had continuous emissions monitors on it and the emissions would change from day to day. The inlet loading would change from day-to-day because they were getting the coal from a different source. There is just no way, I think, in most instances of going back and tracking the data we have for the individual plants versus what happened over a year's period of time and trying to place that particular test in the context of the larger coal for the whole year. Now, I'm not sure why you feel that that is important. I think what is important is to establish the variability of the data from a given plant. What we need to do is what we have called plant-to-plant variability. We need to establish variability within the plant and then once we do that, we will have a better instance of an idea of how the emissions are varying over a period of time.

Pat Raher: I guess, Jim, the reason I asked the question is with all of data, I'm assuming that you actually can look at – I'm assuming that you looked what was being burned that day and have a feeling as to what that, how that compares to what was burned the rest of the year at that facility or month, or whatever, because you have so much coal data. But more importantly, you said exactly what I am concerned about. You said, when we look at the data, we see a variable in terms of what the loadings

were on the inlet from day to day. Now, if we have a bunch of data that was generated that happened to be -- and I'm not saying it is, I'm just saying we need to test this data -- happens to be at the all the best, i.e., the lowest loadings at the inlet, I'm not so sure that that tells us what this technology will do. I don't know that we can really use it to set the floor to see that best 12 percent. It seems to me that if we know, if the Agency knows that there is tremendous variability, that you have got to account for that saying we see this technology. We can look at a technology-based standard based on what it will do, or combinations of technology will do with high inlet loadings because you can't rule out the fact and you can't mandate that you have to have a low inlet loading based on your coal. Now, I may be missing it, but that was the reason for the question and as to whether or not the data set allows you to do that kind of analysis. I would hope it does.

Sally Shaver: And I think that's a fair question Pat and we will look at the data to the extent we can and get back to you on that.

Bill Bumpers: It's really sort of a close follow-up and it goes back to I think Felice's question which is it seems to me that if you are going to follow the DC's circuits opinions, we are going to have to look at the ranking of the best performing emission rates and then start taking account of what causes those emission rates. I don't think, and I don't know, but I don't think there is going to be a lot of dispute as to whether the outlet gas measurements are going to be relatively accurate, and so we can start ranking them, which we have to do, and then figure out, and this gets to Pat's point, which is all right, what's responsible for the variability and what accounts for that performance and I guess to that end, I have a separate question that relates to it which is when we're looking at these best performers, you've done the speciation of the mercury and you know certain mercury species are relatively benign and others quite virulent, are we looking at the control efficiency for the speciated mercuries that we only have concerns about, or are we looking at total mercury?

Bill Maxwell: Primarily we are looking at total mercury, but we have also looked at the speciated fractions.

Bill Bumpers: Are we going to – I mean, recognizing that some of the mercury species are not really, maybe they are HAP and maybe they are not, I don't know. I guess right now they seem to be listed as a mercury but are we going to try to figure out which ones we care about?

Bill Maxwell: Right now, I believe that mercury and mercury compounds are listed as the HAP and so it is not broken out. When we say speciated, we are really only talking ionic form. We're not saying it is mercury chloride or mercuric oxide or anything else, it is just mercury plus two elemental and then particulate. That is far we can split it out.

John Shanahan: I'm going to torture you all with another question. Trying to get back to what I was getting to before and hopefully I will ask it a little more clearly. My understanding is that in talking to our technical folks is that when you test the mercury itself and then you test it using Ontario-Hydro at

the inlet you have instances where the Ontario-Hydro has a higher mercury content at the inlet than you actually have in the testing of the coal itself. Is that not accurate?

Bill Maxwell: There is somewhat of a problem with the Ontario-Hydro method at inlets, primary inlets, not the inlet to a scrubber, that is following an ESP because the sampling method itself starts behaving like a control device in either removing more or changing the speciation. I don't think we are making mercury, but at the low levels, you do get some anomalous results sometimes.

John Shanahan: And what do you do with those results when you get those anomalous results?

Bill Maxwell: Right now, one of the reasons that we are looking at total because we feel that total mercury numbers are valid, not necessarily the individual species at the inlet.

John Shanahan: So, you're not finding a discrepancy of total mercury at the inlet and through the testing of coal, you are only finding differences in the speciation mix? Is that what you are saying or did I just miss what you said?

Bill Maxwell: Well, I think we have had cases where it looks like there are mercury being formed, but we feel it is a result of the very low levels, sometimes near the detection limit.

John Shanahan: When you say mercury being formed, is there a theoretical model of how mercury would be formed as it goes through the plant or is it perhaps that there is something wrong with the methodology or the testing or that particular data?

Bill Maxwell: It is fundamental laws, you don't make elements as they move through the – so it's something in the sampling or the analyses or just the very low levels.

Jim Kilgroe: Yeah, but there is a sense that we believe that the Ontario-Hydro method is probably more accurate than coal data and so that in some cases where the coal, in the cases there is a lower level than of mercury than the outlet with the stack sampling, then we think it is probably because the inlet data is not very accurate. In other cases, we have seen tests before where you actually get higher outlets and inlets and that happens because if you get a say, perhaps a temperature change in the unit then you can get desorption of mercury off of the walls and get desorption of the mercury out of collected particulate matter so that the outlet is actually higher than the inlet and that's been noted for a number of different years on a number of different types of combustion systems. So the data is real.

Mike Rossler: I think that the point I wanted to go ahead and make and this is maybe a little bit of follow-on to John is that you're right, matter is neither created nor destroyed, but it can be accumulated and I think in some of the testing that we've seen that there has been a propensity that you might have some type of accumulation mechanism in an air heater where if you have it on load, it heats up and then you do see that desorption and then all of sudden magically what you are seeing during that particular

stack test shows that you have much higher mercury than what was in the coal but you are just seeing more of it in one given time and, also, it's a bit of a function that you have different coals, you have different chemistries, you have different speciations and that speciation changes as a function of other parameters in the coal which then would then cause different amounts of control in, say, an ESP or a wet scrubber and I guess that's kind of more of the thing that I was alluding too earlier, that you have to maybe take a little bit more of a holistic, longer-term view of what is actually going on in the unit.

Lee Zeugin: Let me basically follow-up with that question that I think follows from a number of earlier questioners. I certainly agree that the biggest problem that I see with the stack sampling data is it's only a snapshot. It doesn't begin to answer the question "what's the variability of mercury emissions at even a given plant, pick even the best plant, over the course of a year." It seems to me one way to get at it may well be looking at the coal data, see if there is something that we can do there. The other way to do it would certainly be to measure over a long period of time at a plant and see what that variability really is. But it also seems to me that one of the critical questions is "do we have enough data to predict the species of mercury that are being created in a given boiler burning a given type of coal" and so Bill, I guess the question I had for you is "do you believe that there is sufficient data in a stack sampling data to actually predict mercury speciation at a given plant burning a given coal," which seems to me a fairly fundamental question and then answering "what do the control devices remove and what's the likely outcome for that plant?"

Bill Maxwell: You wanted me to predict what is going to come out of the plant, huh?

Lee Zeugin: Predict the species that are being created, yes.

Jim Kilgroe: Bill, could I jump on that one? Really that is the, I guess, what we are trying to do with the control technology program that EPA, Department of Energy, and EPRI are all running together. Right now, we can't predict what is going to be happening because we don't have enough long-term data. We are trying to develop models to try to characterize those factors that influence emission and speciation of mercury and we are trying to get out in the field. We've got a big push on with the CEM's right now and we're going to try to get out in the field and get additional data at a number of different plants so we can some sense of how much variability there is in the emissions. We've got some fairly good idea right now about what causes the speciation to change for a given plant. So, what we are doing is, we don't know now, but it is our intent to try to know by the time the Agency has to make a decision.

Bill Becker: I wanted to the follow-up on a point that Felice made earlier about the fact, the bottom line is we would like to know who are the best performers and then we can kind of work backwards and talk about the technologies and variability and everything else and I wasn't quite sure I heard a commitment from EPA that they would help this group better understand who the best performers and so I'd like to reaffirm her request for this information to be provided at the next meeting so that we can – those of us that don't have readily the data available or aren't in this business full-time looking at that

data, that EPA could help us out in arraying it so that we can then make better decisions with regard to the other issues we are talking about.

Sally Shaver: I think, Bill, we plan to do that in whatever format, back to Bill Maxwell's response earlier. The purpose of today and this first phase of the group is too look at the data and get input on that, are the data adequate, are they sufficient, and seek your comments on that before we move forward because that's basically the fundamental aspect of setting a floor and part of the analysis that goes into that, so, yes that will be provided at the appropriate point.

John Paul: And if I could just add to that. I've been making a list of things and I think that one of the things we will want to do at the end of this meeting is discuss maybe what the overall questions are that remain on the data after this discussion and then seek from the group suggestions on what we can do collectively, or EPA, to answer those questions and then discuss amongst us all and get feedback from EPA as to whether or not that would be sufficient. Obviously, the big thing we want to do is figure out what the questions are and what analysis can solve those questions and, of course, the key thing is to try to identify those questions early and if we can identify them at this meeting that would be great, but we also realize that people will want to go back and look at the data and have a second chance to come back and say, hey, here is a further question and I think that's maybe one of the things that we will try to do at our next meeting, also, but to the extent that we can identify the questions and agree on how we can answer those questions, we want to do that at his meeting.

Peter Jonker: I wanted to make a comment about some of the terminology that's being used. I've heard a lot of talk in references to accuracy and I just wanted to say that accuracy, in and of itself, may not mean a whole lot because you may be very accurate and you may be dead wrong about your numbers. What you need is not only accuracy, but you need precision and if we are talking about very low levels of anything, which we are with this particular pollutant as with many others, we need both accuracy and precision.

John Paul: I think Bill agrees.

Tom Natan: I just wanted to get back to the point of looking at the range performers. It seems that there isn't that much stack data here and I honestly don't know that we can evaluate how good those data are until we see it arrayed that way. That's going to point out to us I think more where the holes are in the data than a lot of the questions we have here. What is the result that comes from those data if it doesn't appear to cover the range of conditions that we'd be likely to find then we know it's not good enough, but I can't tell right now. I mean there has been a lot of questions and a lot of good questions but until we see the results like that I honestly don't know how much more we can do. I mean there are certainly other questions that have been asked that you could answer and see if they would make a difference in the end but I would like to second the other people who said we'd like to see the results and then we can perhaps determine whether the data are adequate or not.

?: Following up on that, a lot of the initial question with the data was really is it sufficient to move forward and I think we're hearing pretty clearly that there is a lot of uncertainties and we've been talking about it in qualitative fashion here but I think it would be helpful if we could try to see a presentation of the data cut in that way to start saying looking at some similar plants that have similar controls, here's some variation that we're seeing and here's some of the possible differences of why those differences may be there starting to at least qualitative say what are the uncertainties and maybe what appears to be with the current the greater uncertainties versus the lesser uncertainties in the kind of differences we're starting to see and the reason I'm saying that might be helpful is then if at the same time if we could also see maybe a clearer plan of we have heard a lot about other studies that have gotten underway with EPA and DOE and I don't know if yet we have really had a clear time line put together of exactly what studies are being done, so then we can see how those tests are being set up and are they set up at this time to actually get at some of those uncertainties. Can we six months from now expect to see a little bit more data coming in to what are being identified perhaps as some of the key variables right now or maybe those tests aren't even being designed to really get at them and it may well be. I just don't know if I have seen the data that kind of – or some road maps I guess that kind of take a look at the data that we have and what we're in line to get over the next six months or so.

Sally Shaver: We gave that presentation at the first meeting, and so if you want to go back and look at that and then if you've still got questions about that, if you could call Bill directly, okay?

?: But in tying it with ongoing research, I guess I haven't had a good sense of what is underway at this time and at that time, I don't think we've seen that presentation yet.

Sally Shaver: Well, that was a part of that presentation. So, if you go back and look at that, or we'll pull out for you and maybe you and Bill can talk.

Jim Kilgroe: The ongoing research is being done by ORD and I guess we are about ready to publish a report on the control technology and evaluation of the ICR data in that report. It is going to be available sometime in November or December and it will contain a whole chapter about the ICR data and it's probably at the present time about 500 pages in length. So there is a lot of information out there.

John Paul: Okay, maybe once that report is available we can let the work group know of its availability.

Felice Stadler: I was curious whether any of the companies are planning some more longer term testing because I think several of you have mentioned that it is important to take a longer term view and not just rely on these snapshots. Right now, all we have are the snapshots and I'm curious whether any companies right now are doing some ongoing tests? Whether it's CEM technology that's being tested or you're just doing Ontario-Hydro on a more regular basis and this is independent of the projects that DOE has planned because a lot of those are looking at new control technologies that are being installed, so I'm just curious on the monitoring, if there are any plans and, if so, if we can then pull those

into the 86 tests?

Lee Zeugin: I guess I've heard the desire of a number of people to rank the plants already. I think it's premature and the reason for that is that if you don't get at the issue of how does one convert a snapshot in time to a longer term performance, it's unclear to me how you even define what the best plan is. I can certainly go in and look at the 86 plants and say okay, this one had the lowest stack emissions but it doesn't necessarily answer the question whether that plant has the lowest stack emissions over the course of a year such that it would be the lowest standard and without that information, I don't see what the value is of ranking plants at this point.

Larry Monroe: I wanted to sort of give an industry view on the adequacy of the data, raise several points about the data itself. Bill, your talk, the last slide, you make a theoretical argument based on the distribution and then jump right to a sufficiency argument, I just wanted to say I don't see that. If I take almost anything in nature and take a sample of it, I'll get sort of a log-normal distribution. If I take a single plant and take repeated samples of its mercury, I would get a log-normal distribution, so that you would expect to get that sort of behavior anyway from as long as you take enough samples. The problem comes from the need for long-term performance of that. Jim Kilgroe of EPA mentioned the test at my plant where over seven days we saw the inlet mercury change over a factor of five. That's a sister unit to one of the ICR tests. We saw numbers equal to the ICR data. We saw some lower numbers. We saw some much higher numbers there. So, just over seven days we saw an extreme amount of variability at that plant. Does have varied coal supplies, you would kind of expect that. And so that variability that's driven by the coal chemistry will effect the performance. This is a chemical process. The performance of any given control technology depends on the chemistry of the mercury coming in. There's lots of factors. We don't understand all the factors that even influence that at this point. So, this time variability, the variable coal supply variability are two things that we're really worried about when we go to start trying to set a MACT floor. The other point, based on the set of MACT data is really the statistical looking at the whole population. You've got a small sample. It's less than ten percent of all the plants that sit out there. You're trying to make a judgment of the whole population. You need to sort of look at each population and how many are in there. The case in point is the bituminous coal plants with cold-side ESP's are statistically very much under-represented in the ICR data so that you're sort of biasing it towards some other control technologies when you go out there and look at the population, that's the biggest set of plants out there. And just to, Felice, we're interested in doing long-term tests and I'm attempting to buy one of these monitors right now. They're very research-type instruments at this point, require a lot of – almost a PhD sitting there owning and operating it and so I'm having trouble buying one. There's a lot of demand for them so there must be a lot of other people looking at the same thing.

Jim Kilgroe: There is probably only 12 monitors in the U.S. with speciating capability and there's a lot of demand for the monitors at different sites right now and we're trying to work out in the research program between ourselves and I guess we're working with OAQPS and utility industry trying to figure out where do you use the plants, the monitors and how to use them.

Praveen Amar: A few questions. I started the word "variability" so I got to say a few things. I think Pat, you had a point and then Sally said that maybe you look at the data with respect to variability. I remember, Bob, you had a data sometime at one meeting you showed where you had this statical distribution of mercury and coal for various kinds of coals. And also the ICR when it was done, that did measure mercury on that day besides measuring mercury for various coals also on that day. So, I think the question might be for those units where you have the mercury and the coal on that day as well as mercury for that power plant over a larger period of time to see where you fit in respect to 50^{th} percentile or 75^{th} or whatever. I think that could be useful information by itself, whether that test on that day was representative of the coal in general. Number two, I think that the point is not that mercury in coal is variable, so it is. I think the question becomes what that means respect to the control technology down the road and how that will be effected. We've been used to the idea of variability respect to NO_x in fuel oil. It's all over the place, but you still got a control equipment with a certain performance standards. I think the thing to look, not withstanding the questions which might be raised, municipal waste combustors. We are controlling mercury today from municipal waste combustors with variability of mercury and the municipal waste, which is all over the place. We have a performance standard at this time, 28 micrograms per meter cubed, which is being met by many municipal waste combustors today with carbon injection and baghouses. In fact, lot lower values, two, or three, or four micrograms per meter cubed at least in places in Massachusetts. Not withstanding the point that power plants are different than municipal waste combustors, they got a high floor rates and low mercury concentrations, but still the point is that we have established a set number on the other end knowing things are variable on this end. So, just because it's variable, mercury that is in coal or mercury in the stack gases, does not mean you can't get on the other end a well definite number. I mean, we have done that with municipal combustors and again I said that there are differences, but I think one should look at the real world experience now and how we got there knowing things were variable.

Martha Keating: Thanks. I have a similar comment as to what Praveen just said about the variability over time and that these are short-term tests. One of the striking things about the ICR data was when everything was said and done and the emission factors are recalculated and so on, we came out with 48 tons per year and compared that to the number that was generated in 1996, which was 52 tons per year, it turned out that these emission factors aren't that bad. In 1996, there were 52 tests. Here we have 86 more and still we're seeing very similar numbers and if you look at a plant-by-plant basis, between 86 and 1999 the numbers again are very similar for most of these plants, so I think I'm agreeing with what Praveen said, when you look at variability over a longer time, say an annual average, you know, what does it matter that week one it's one thing and week two it's another thing when you look at all 52 weeks. It goes up and down and may smooth themselves out.

Bill Becker: I just wanted to push back a bit on Lee's comment about arraying the best performing facilities. I think it's really important that -- the law is clear and I guess our mission, I think is clear, is that we're trying to help EPA identify at least the mercury MACT and it is based upon the average of the top twelve percent performing facilities. I'd like to know just for informational purposes what the average of the top twelve percent performing facilities are and then from that, it would helpful and here

is where I agree with you, it would be helpful then to look at those plants and determine whether or not they are a fair representative of sources or whether their data should be thrown out, but what I hear you suggesting is we kind of wait and wait to see what's – we throw out things first and then see what is left and end up with a far lessor population. I think the bottom line is how well the facilities are performing and then look at the data after we have that arrayed. I think that would be helpful to regulators in not just State and local regulators, but I would think Federal regulators in making the best decision.

Jim Kilgroe: Yeah, I think it's important to ask the question whether or not the facility is representative because some of the – I know that at least one of the facilities had two ESP's in series and they got very high capture because I think of the high residence time and they were burning an unusual coal and they had an unusually high carbon content. So, for some cases even though it may be a best performing facility, it may be non-representative and then we have to really look closely at what we do with that facility.

Jim Pew: Excuse me. Why wouldn't that be a representative facility?
Jim Kilgroe: Because number one it's burning South American coal; number two it's got 25 percent carbon in the fly ash; and, then, three it's got ESP's in series. There was an old set of ESP's and then they retrofit and put another set of ESP's out there, so you are going through two ESP's. So, for all of those three reasons, it is not representative.

Jim Pew: Actually, I was particularly curious about the last one because my understanding is that the very purpose of this to determine the best sources. So, if you have some sources that are using two ESP's, those may be the best sources. They are doing the most to control their emissions.

Martha Keating: And another thing is you didn't measure carbon at all of the facilities so how do you know that only one plant has 25 carbon?

Larry Monroe: I just want to make a couple of comments to what Praveen said about municipal waste incinerators. They have limits there. The limits are higher than the majority of the coal population there, so in a lot of coal plants uncontrolled just with ESP's are emitting what the best performing plants in Massachusetts under control. What you run into here is the law of diminishing returns. To try to get that next little bit to try to sort through and find that molecule of mercury is much much harder in a coal plant because the levels are so low as compared to those. So, if I have lots of variation, but the numbers are very high, it doesn't matter because that's easier to do than variations where I have very little that I'm trying to control. I'm trying to chase very few molecules and trying to capture those. And then I had a second comment about the trying to use annual emissions estimates to try to then back in and say that the data we have at hand is adequate to do this, but the real problem is we have these snapshots and that's the data we have, generally done over two days, sometimes three days, and being in the power industry, EPA scares us, so if you look at those plants, you will find that they had lots of management attention. They were sort on their best behavior when that sort of testing was going so at least, I have an opinion that those numbers are biased somewhat and don't represent day in and day

out operation.

Praveen Amar: That's why I used the word notwithstanding and I'm not even a lawyer. There are differences in municipal waste combustors, Larry, to power plants but if you look at normalized variability and all I was saying was maybe there is something to learn based on real experience out there, notwithstanding the differences and very large concentrations in municipal waste combustors and not so high in power plants and the flow rates, I still think there may be something to learn based on the questions we are raising here, that is how to handle this variability. At least with municipal waste combustors variability here still leads to a definite answer on the other end. With power plants it may not, or it may, or maybe in a modified form, but I think it's something we should learn from because there is lot of data, not just in Massachusetts but in other States, too.

Larry Monroe: I would agree. I think we're very interested in getting more data on the variability to see how – what the performance is over long-term and that is one of our main, from an industry point of view, the main problem in using just the ICR data trying to set these floors.

John Paul: Okay, we have time for one or two questions from those that are on the phone. Okay, hearing none, the question before us is the adequacy of the data and we've heard a couple concerns and let's talk just for a minute about what the group really feels needs to be done with the data to shore it up. I've got four things listed. Let's see if we've got anything to add to this. The first one is sorting of the data. Ranking of the best performers by emission rate. Second thing I have is looking at the coal variability and trying to determine whether or not that effects performance, such that really does that have any kind of an influence on this ranking of best performers. Also with that question is what are different ways that we can look at that ranking of best performers which we agree is from stack tests that would indicate whether or not long-term performance would be any different than that ranking from the stack tests. I also have a question as to whether or not we could get some data presented with regard to the oil-fired boilers and I think we have a question as to the adequacy of the data on HAP other than mercury.

Sally Shaver: There is another issue on sequencing, to look into sequencing and...

Jim Pew: Did you want any comments on other issues at this point?

John Paul: First of all let me get some feedback on those I just listed, plus sequencing.

Lee Zeugin: I guess I'd ask the question of speciation and the prediction of speciation because it seems to that's at the core of most of these issues.

John Paul: Is your question aimed at, okay, these stack test data show something, can the speciation change that would influence that? Is that your question there?

Lee Zeugin: That's right. When you look at the coal data, you can look at the coal data to simply say, how much does mercury change for a given plant over the course of a year and that would give you some information, but we've also learned that speciation is dependent on other constituents of the coal, such as chloride content, and it may well be that the speciation that occurs at a given plant over the course of a year varies significantly. If it does, that has a tremendous effect on removal rates and what's being emitted from the stack and without being able to understand that, I don't think you can get at the issue of long-term variability short of going out and measuring it at all these plants over an extended period of time.

John Paul: Okay, so that's really a subset on variability and whether or not the long-term – one of the reasons why long-term performance could be different than the stack test snapshots that we have.

Bill: Okay, any other additions to this list?

Jim Pew: If I understand you right, you've told us that the vast majority of emissions data is based on the performance of one technology even if there might be a series of pieces of technology on the plant and so, and if I also understand you right that means that we don't really know what the actual emissions performance is of the plants with several pieces of technology out there. There is only – I think you said there's only one test that reflects that.

John Paul: No, there's only one test that reflects an inlet/outlet over all of the control devices, but we had what, 86 tests that show the actual performance.

Jim Pew: Oh, and that includes all the devices?

Bill: Yes

Jim Pew: Thank you.

Lee Zeugin: I guess the one other question, and this goes to the sorting of the data or selecting the best performing plant, it seems to me you can do that using one of two techniques, you can either look at the performance in terms of stack concentrations and rank plants based on that or you have data on the inlet coal concentrations versus what's going out the stack such that you could calculate a percent removal for plants. I think you will find depending on which of those two methodologies that you pick you will end up with different plants in the "top twelve percent" or alternatively the best performing plant and so even if you want to go forward with sorting, it seems to me that you have to, at least at this point until we make some kind of decision or recommendation, look at both stack concentration and percent removal because they are going to give you different lists, probably.

John Paul: We can address that. So, alright, the question, then is to EPA, given these that we listed here, the question is, can we do this – by when can we do this, such that when should we meet next

because I would assume that we would want to do this before we meet again.

Felice Stadler: I was just curious whether the companies are planning to pull together some of the stack test data that they already have in their possession that might not be part of the 86 because what I think would be interesting is EPA does the ranking and it might be interesting to do the two rankings, but again, I'm concerned that if you look at percent removal, again, we are going to start focusing too quickly on the what the particular technology is doing and again what we're suppose to look at is what the best performers are doing and I don't – there might be some differences there, but it would be interesting to have the ranking and then to see the companies present some of their information and say you know what, we have a boiler that is actually performing better, although I don't know if we would see that or if it would be revealed but it would be again good to have that data compiled and presented so that our data set could hopefully grow from those 86 boilers.

John Paul: Yeah, I was thinking exactly the same. Obviously, there's going to be other data out there and probably what will precipitate, bring that data forward, will be what we've outlined here. Once we see this, then I would assume that people that have data that can either add to that or differentiate from that then we would see that.

Bill Becker: I have a process question. You were about ready to ask us what – ask EPA what do they want to do with this and this I guess is arraying the data and responding to all these information requests, but I have a process question for either you John, or Sally, and that is can you help me to understand what your vision of the next couple or three meetings is going to be? Do you have a date by which you expect to come up with a product and the product is going to be generally something and to find that something. I'd like to sort of know what you are thinking about the next couple of three meetings. That might help me understand whether we push you to have this in two weeks or in two months.

Sally Shaver: We have a schedule that is on the website. You should have that with you. I didn't bring my copy but thankfully John had his. It was put up sometime earlier in October. It lists out the meeting schedules. We were talking today about data adequacy. We will be, once we've had this discussion, look at the data a little bit more, we would be initiating subcategories and floor discussions and this calendar runs up to signature and promulgation of the rule, as you know we will be proposing in 2003. So obviously, input to the floor determinations will need to be made over the next year. Sometimes it usually takes us a while to write these things up and once we make the decisions and everything. So, that schedule is fairly detailed. I would suggest that you reference that. In terms of the next couple of meetings this may surprise you, but I don't have a list of everything we plan to present at every meeting laid out at this point because we are trying to respond to your comments and your questions and your issues and as you see there are then four or five things on the list today. I guess the main question that I would like to ask is our next working group meeting was basically scheduled for January and we were offering one in December to catch up. The other question is do you think the one in December is enough for a catch up since the one today was fairly short, or do you need, we are willing to do two

between now and the January meeting and address some of these issues that you talked about. I can't tell you at the moment and neither can Bill or Bob which of these things that we were talked about today we could have ready in two weeks. Some of them we feel like we could but certainly by the first of December we should be able to address a number of those at that time and move forward. So, I guess the question is do you want an extra meeting thrown in there right before Thanksgiving and then go ahead and continue to hold the one in December as well.

Felice Stadler: Is there a possibility to do a conference call and then a face-to-face in December as opposed to two face-to-faces? I don't know how many of you travel from out of town, but that might...

John Paul: It certainly would be valuable if EPA were to be able to produce some of these things that I think we agreed upon and get those distributed to us and I think at some point different groups may want to hold their own conference calls, too. States and locals I think will want to talk about the data as we get it and start to look at it. So, this would give you time. If EPA were to e-mail to the working group the different items as they are identified and maybe the first thing that EPA could do is to list a schedule for how and when they're going to respond to these six things that we have identified. Then if they ship them out as they identify them and then if we get together, let's say December 18th to discuss all that, how does that sound? There's no smiling faces on that?

John Paul: That is the other question, in RTP or in Washington?

John Paul: December would be here, so let's assume that. So EPA will give a list of the items that they are going to work on, a schedule for those, they'll ship them out as they complete them and we will set a meeting for probably December the 18th and Bill Becker will host the meeting. We'll hold it in the STAPPA/ALAPCO building because we agreed to host every other meeting, States and Locals did, so we can do that. In the Hall of States Building. Does that sound good? Do we have any problems with that?

Felice Stadler: Just to clarify, you said that we'll have the face-to-face December. If several groups want to have a call before then, that's possible, but we could also decide as a group if a full call would be appropriate and we have that option?

John Paul: Sure, sure.

?: Did I hear you suggest a meeting date for the December meeting?

John Paul: December the 18th was what I was suggesting, starting at 10 a.m. Okay?

Bill Becker: Thank you for putting together the schedule. That is exactly what I was looking for.

John Paul: Okay, any other closing comments? If not, we will stand adjourned. Thank you very much.