UNITED STATES OF AMERICA

CENTERS FOR DISEASE CONTROL AND PREVENTION

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NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

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OFFICE OF COMPENSATION ANALYSIS AND SUPPORT

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BLOCKSON CHEMICAL SPECIAL EXPOSURE COHORT PETITION WORK GROUP

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FRIDAY,
DECEMBER 12, 2008

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The work group convened via teleconference at 9:00 a.m. Eastern Standard Time, Wanda I. Munn, Chair, presiding.

MEMBERS PRESENT:

WANDA I. MUNN, Chair
BRADLEY P. CLAWSON
JAMES M. MELIUS
GENEVIEVE S. ROESSLER
MICHAEL H. GIBSON

ALSO PRESENT:

TED KATZ, Designated Federal Official
LARRY ELLIOTT, ORAU
JIM NETON, OCAS
TOM TOMES, OCAS
JOHN MAURO, SC&A
BOB ANIGSTEIN, SC&A
STEVE OSTROW, SC&A
CHUCK PHILLIPS, SC&A
LIZ HOMOKI-TITUS, HHS
JEFF COATES, DOL
EMILY HOWELL, HHS

P-R-O-C-E-E-D-I-N-G-S

9:01 a.m.

MR. KATZ: Let's just start with a roll call.

We have Charles Morrison to be the court reporter. That's great.

This is Ted Katz. I am the Acting DFO for the Advisory Board on Radiation for Good Health, and this is the Blockson Chemical Special Exposure Cohort Petition Work Group, chaired by Wanda Munn, and let's begin with roll call beginning with Madam Chair.

CHAIR MUNN: Wanda Munn, Chair of the Blockson Work Group.

MR. KATZ: And, please address conflict since this a site-specific work group.

CHAIR MUNN: No conflicts.

MEMBER CLAWSON: Brad Clawson, Member of the Advisory Board of the Blockson Work Group. No conflict.

MEMBER MELIUS: Jim Melius,

Advisory Board Work Group. No conflict.

MEMBER ROESSLER: Gen Roessler, Advisory Board Work Group.

MEMBER GIBSON: Mike Gibson, Advisory Board Work Group. No conflicts.

MEMBER ROESSLER: Okay, sorry, I'm forgetting alphabetical order here. Gen Roessler, Advisory Group, Member of the Work Group. No conflicts.

MR. KATZ: Okay, and I think, Brad, you already spoke, right?

MEMBER CLAWSON: Yes, I did.

MR. KATZ: Okay, great.

And now, let's go with the NIOSH ORAU team.

MR. ELLIOTT: Larry Elliott, Director of the Office of Compensation Analysis and Support. No conflicts.

DR. NETON: Jim Neton, OCAS. No conflicts.

MR. TOMES: Tom Tomes with OCAS. No conflicts.

MR. KATZ: Okay then, and SC&A?

DR. MAURO: Yes, John Mauro. No conflict. SC&A.

DR. ANIGSTEIN: Bob Anigstein, SC&A. No conflicts.

MR. KATZ: Welcome, Bob.

DR. ANIGSTEIN: Thank you.

MR. OSTROW: Steve Ostrow, SC&A. No conflict.

MR. KATZ: Welcome, Steve.

MR. OSTROW: Good morning.

MR. PHILLIPS: Chuck Phillips, SC&A. No conflict.

MR. KATZ: Chuck -- welcome, Chuck.

MR. PHILLIPS: Thank you.

MR. KATZ: Okay then, let's go to other Federal officials on the phone.

MS. HOMOKI-TITUS: Liz Homoki-Titus with HHS.

MR. COATES: Jeff Coates, Department of Labor.

MR. KATZ: Welcome, Jeff.

MR. COATES: Good morning.

MS. HOWELL: Emily Howell, HHS. No conflict.

MR. KATZ: Welcome, Emily.

Okay then, and now representatives of congressional offices and members of the public, if any of you would like to identify yourselves on the phone that would be great.

Okay then, just to remind everyone who is not speaking to mute your phone when you are not, *6 if you don't have a mute button, and please do not put the call on hold, hang up and call back in if you need to.

Thanks. It's all yours, Wanda.

CHAIR MUNN: Thank you, Ted.

This morning, as my notes tell me, we have, primarily, one issue that we need to address.

Jim, if I am misstating this, Jim Melius, if I'm misstating this please be sure to call it to my attention.

We have gone through each of the

items that have been brought to us as a concern with respect to calculation of doses, and being able to bound them with the Blockson size.

At this juncture, the outstanding issue, as my records show, has to do still with one item relative to radon, that item having focused, primarily, on the air exchange capability within the building where we have the most concern about potential exposure for workers.

Am I stating that reasonably, or do we have other outstanding issues that we need to address directly?

DR. MAURO: Wanda, this is John. There's one other area which I would say is a minor difference of, I guess, in terms of -- there are really two parameters in the distribution, one was the air exchange rate, and the other was the radon partitioning from the digester, where we have a minor difference in our distributions. So, I would say,

certainly though, the air exchange rate is the one area where there is somewhat of a difference of opinion, but there's also this issue of the partition factor.

CHAIR MUNN: Dr. Melius, is there any other item, other than these two, that you feel need to be on the table this morning?

MEMBER MELIUS: Well, I don't know about the table this morning, but I think the overall issue is broader, and that's the ability to reconstruct radon doses. And so, I think it's more than an issue of whether specific technical issues related to air exchange, whatever, those are part of it, but it's the overall issue of whether that part of the dose can be reconstructed.

CHAIR MUNN: My question then is whether there are any portions of that issue that you feel have not been addressed, or whether you simply feel that what we have done has not been adequate in your view.

MEMBER MELIUS: Well, I'm waiting

to see whether it's adequate or not. NIOSH and SC&A have been going back and forth, and I don't still see that being synthesized in a way that, you know, to see whether it meets the criteria for dose reconstruction.

CHAIR MUNN: Right, I just wanted to be very certain that we were not missing some specific agenda item that I should have in front of me, because this is one on which we have focused, and which you've broadened here in this exchange, is, according to my notes, where we are, and the only issue really in front of us right now.

So, that being said, I am at a loss to point to either one of our recent communications or the other in order to kick this discussion off.

John, do you, or Jim, want to begin our discussion here? Have you discussed this at all, because I have not given it much thought. We need to try to focus on what the most recent exchanges have covered, and

identify where there are discrepancies that we might be able to close in on today.

DR. MAURO: This is John. I would be happy to start, and I'll be relatively brief.

I believe, but I would like to start with, in effect, both SC&A and NIOSH have been looking at the use of a model to place a plausible upper bound on the dose in the radon exposures experienced by Blockson workers in Building 40, as opposed to measure dose -- since there is no measurements for that time period of radon levels in the building.

Now, I think that's where Jim -- Jim, if I may, I think that you did -- you raised a question, I do think that probably needs to be -- it sounds to me that SC&A has come to the conclusion that using a model, such as the one that we've developed, is one way to estimate doses. So, we have accepted, and this is really an interpretation of

regulations, and so, it sort of transcends the science, it moves more into a regulatory issue, which I guess we have been operating under a premise that it is within the realm of the regulations that one way to come at a problem like this is to develop a model.

So, we are operating from that -- in that framework. I think that's important for everyone to understand, that, in effect, what we are, essentially, saying is, SC&A is saying, is that, well, I guess we did have a concern with the measurement values that were from Florida, that were used originally for the -- and don't want to reiterate those. And, we did have some concern with the measurement values for Building 40 that were collected, I believe, in around 1980.

And so we - SC&A - in this protracted process that we've been involved in, developed a model, and we've gotten to the point now where the model is is coming to the place that we are focusing in on. And, I

think it's important to keep that in mind, that now we are moving into a realm where the model is becoming a primary trust, as opposed to these other measurements.

Now, given that one accepts that, okay, let's take a look at the model. SC&A has come to a point where we believe this is a scientifically robust and technically sound model to characterize mathematically, to simulate exposures. And then, it becomes a matter of, okay, given that you believe you can use a model, and that this model is robust and appropriate, what parameters do you use for the model.

And we - SC&A - has come up with its model and its approach, and has its results, where we come out. There has been -- SC&A and NIOSH have had a technical discussion, and we are pretty close in terms of where we come out independently on what the parameters should be for the model. In fact, we had a technical conference call, and we

discussed the matter. There are minutes of those that have been distributed, and I believe they've been PA-cleared. There have been a couple of technical white papers that accompany that particular memo that was issued, I guess it was -- well, basically, it summarized the conference call on December 3rd.

I want to give you the SC&A's, I guess you would say, bottom line. We, I will actually read it.

CHAIR MUNN: John, I don't want to interrupt you, but I do want to make one thing certain.

DR. MAURO: Yes.

CHAIR MUNN: Do all of the members of the work group have those documents to which John has just referred, very specifically, the minutes from the technical call?

Everyone has that?

MEMBER ROESSLER: I have them.

MEMBER GIBSON: I have them, I have not had a chance to review them. I've been traveling all week.

MEMBER CLAWSON: I just got them, Wanda. I'm just reviewing -- going through them right now.

CHAIR MUNN: They are pretty short, you can pull them up, probably, and glance over them quickly.

MEMBER ROESSLER: Yes, they are brief.

CHAIR MUNN: They are brief. I would ask all of the board members if you have not absorbed these most recent exchanges, very specifically, the technical call minutes, which are, I think, illuminating in themselves. If you haven't had a chance to really absorb those, if you would pull them up and at least take a quick look at them while John continues, it would be helpful, I think, for all of us.

I'm sorry to interrupt, John. Go

ahead.

DR. MAURO: No, thank you, and I do think it's important that the minutes and the accompanying white papers that go with those minutes be, you know, before us, because that really captures where we are right now regarding this matter.

CHAIR MUNN: As well as the very recent e-mail exchanges between Tom and Bob.

DR. MAURO: Yes, there have been recent further discussions. I think -- and they do bear on this -- I would say that the discussions and the further analysis sheds further light on the matter, but SC&A still -- I mean, we still support -- let me give you the bottom line. I think it's easier this way. And then, we can back away from that.

SC&A, basically concluded, and I'll read the statement, it's the very last sentence in our memo, SC&A stated, give that you could select the appropriate parameter distributions, we believe you could place a

plausible upper bound on the radon exposures experienced by Blockson workers. So, we believe this is a tractable problem.

It becomes a matter of judgment, as to what the best distributions are for characterizing what the possible range of exposures might have been.

SC&A, the way I view it is, there are only -- there are two parameters that are important, and both SC&A and NIOSH have independently studied in depth these two parameters. One is the air exchange rate, the turnover rate in the building, that has a strong bearing on what the concentrations might be in the building, and the other is what's call the partition factor, that is -- and the way to think about that is that radon is going to emanate from the digester and become airborne, and the degree to which it bleeds this liquid acid solution and becomes airborne.

Bottom line is that we came up with

a distribution and NIOSH came up with a distribution for each of these parameters. In my opinion, they differ, but they only differ in a small manner which is, I consider, to be reasonable differences that independent investigators would come to. Quite frankly, I would go as far as to say, I'm surprised how much in agreement they are, given that we both reviewed the literature independently, and came to our own judgments regarding these distributions. And, the bottom line is this, our distribution for the air turnover rate ranges from about .25 air changes per hour up to one -- I'm sorry, up to about five air changes per hour.

NIOSH came up with their distribution, which their lower end, instead of .25, about .25, is one air change per hour. So, on the bottom end of the distribution our number is a bit more conservative, that is, we think that a good starting point, we believe it's possible that the real but unknown air

change per hour in the building could have been as low as .25. NIOSH's position is the air change over -- air change rate per hour could -- that the real but unknown value, and this is the average annual over the course of a year, is about one air change per hour. This difference does make a difference in the distribution, but it's not an unreasonable difference of opinion. So, there's the one place where we have a difference.

The other place we have a difference is the partitioning of the radon from the digester to become airborne. We believe that the actual partition, the amount of radon that leaves the digester and becomes airborne, could be close to zero, and there's a real number that's unknown. There's a real but unknown number, we believe that could lie anywhere between -- as low as close to zero to as high as .7, which means that 70 percent, it's possible that as much as 70 percent of the radon that's in the liquid form in the

digester, as it moves through the building, could, in theory, become airborne because of the -- you know, the open tanks, and it could actually partition.

So, there's a real but unknown number for what that partitioning was, and we believe fit lies someplace -- a value someplace close to zero, but, perhaps, as high as 70 percent.

NIOSH's number, interestingly enough, that they came to, is they believe the right range is someplace close to zero and as high as .5.

So, here are differences, they believe that, really, the upper bound of what the partitioning could be is only 50 percent of the radon might emanate, while SC&A believes, well, we think it might -- it could even be a little bit higher, and these are judgment calls based on our review of the literature.

Again, I believe that difference is

small, and I believe it's not an unreasonable difference, that we are two different groups of individuals looking at the same problem. So, we walk away saying, I think the concluding remark -- statement would be, SC&A believes that the approach used by -- the distribution selected by NIOSH are scientifically sound and claimant-favorable, except if we were to do the analysis we would probably use the slightly different distribution, which is a little bit more conservative, a little bit more claimant-favorable, so we come down in a somewhat different place in the end than NIOSH does, but I think both sets of values are reasonable.

CHAIR MUNN: Before we ask NIOSH to address these same issues, there's one other point which probably should be made at this juncture, based on your introductory comments, John.

I have a direct question for the

members of the board. John prefaced his comments by pointing out that a model has been developed from which all of the scientific approaches to determination of dose has been predicated.

My question to the board members is, do you have any problem with the development of a model of this type, as being an appropriate approach? Is the approach itself acceptable to us?

MEMBER GIBSON: Wanda, this is Mike.

CHAIR MUNN: Yes.

MEMBER GIBSON: I disagree with the approach. Basically, I think it's not consistent with the intent of the Act. I don't disagree with their scientific philosophy, but I just feel that this whole path we are marching down is not consistent with the intent of the legislation.

CHAIR MUNN: So, unless we can come to some other conclusion during this phone

call, you will not be accepting the approach that's taken here, regardless of what we decide with respect to these two concerns we've just discussed.

MEMBER GIBSON: Yes, Wanda, that's correct.

CHAIR MUNN: Jim?

MEMBER MELIUS: I would echo that, and I'm trying to keep an open mind on what's going on, but, certainly, the inability of NIOSH and SC&A to reach agreement on this, and I still don't -- I still don't know what NIOSH is proposing to do.

I mean, we've gotten this, to me, pretty odd situation where SC&A is proposing the methods and NIOSH is critiquing them. I thought it was supposed to be the reverse.

CHAIR MUNN: Well, it was the reverse as we started out, I think this is the point where, from my perspective, this is what we've developed to with respect to this very fine point.

But, before NIOSH has an opportunity to go forward with their response to John's comments, I wanted to get a feel for whether the people who are going to be having to make the decision on this were going to be accepting of whatever decision comes along in any case, with respect to the application of these data to a model that has been proposed and been operating on.

And, I guess I'm hearing from you and from Mike that you are still out on that, and you are waiting until you hear something from NIOSH on it.

MEMBER MELIUS: It's fair to say I am skeptical, and I don't have the opportunity -- I don't have the opportunity to review the notes from the technical conference call, I can't access them now, I can't do anything about the weather.

So, I'm trying to listen and be fair minded about this, but it's certainly a confusing situation, and all I've seen

proposed from NIOSH has been, you know, one outside critique of the SC&A model or some version of that, and I believe there's a note from NIOSH staff, but it's also dealing with a particularly technical point.

Now again, I can't look through my computer and see what else may have been sent, but that's all I've heard so far. So, I really would like to hear what NIOSH intends to do and what their interpretation is going forward.

CHAIR MUNN: Yes, I anticipate that to be the bulk of our call here. I just wanted to touch base. Again, I'm trying very hard to make sure that we are not missing an issue that's likely to be raised when we discuss it in full board.

Gen, did you have a comment?

MEMBER ROESSLER: Yes, I would like to make a comment. With regard to the procedure that we are following on this particular issue, I think we are doing it

exactly right.

After all, this is why we have our independent contractor, and all of us know that they do a very critical and detailed evaluation of everything.

We just heard John say that SC&A has approved the model approach. I certainly feel it's a scientifically valid way to do this, and I think that it fits with the rules.

I think, too, that we have the fact that SC&A came up with an approach, and I assume, and we'll hear from NIOSH, that they have agreed upon the approach. I think we have to talk about the details, but overall I think we are in close agreement, and I think we have reached a solution.

DR. MAURO: Wanda, would you -- Jim brought up a very important point that I think we need to put out on the table, and that is, we are in an unusual circumstance, in that, in effect, all of a sudden we are talking about a model that SC&A developed, sort of the kind of

thing that normally would have been done by NIOSH, and, of course, SC&A would have critiqued it. And, we backed into this -- and this is a first.

The reason the model was developed originally was, we were exploring ways of determining whether we felt that the approach that originally was developed by NIOSH, to represent the air concentrations of radon, namely, using the surrogate data from Florida, and they came up with 2.33 picocuries per liter, and we were asked to look into that.

And, it's important to point out that the modeling approach, in a funny sort of way, was the tool that we decided to use to determine if the 2.33 number that was being proposed seemed to be reasonable.

So, we ended up doing some modeling, as a way to check NIOSH's approach.

What happened in time was, the model took a life of its own and became the primary focus, and then all of a sudden the

model developed by SC&A is -- we are talking about it now as if it's the approach that's going to be used to reconstruct exposure.

So, Jim, you are correct, there is something unusual about this, but it did happen in a way that was a natural outcome of the process that we normally follow.

DR. ANIGSTEIN: John, can I -- this is Bob Anigstein -- I would like to clarify -- substantiate what you were just saying, and that is, at the St. Louis board meeting, it was either during the board meeting -- the full board meeting, or, I think it was during the full board meeting, we had proposed this very rudimentary, preliminary model sort of like, you know, our version zero, or maybe the version -1, and we were specifically asked by the board, by one board member, who was critical of that and said, I want to see some equations, I want to see some more documentation, basically, wanted to see a more detailed model.

And, that was, to my understanding, our point of departure and our marching orders for developing a more detailed technical model than we had started off with.

CHAIR MUNN: Thank you.

Before we continue this discussion any further, I would really like to have NIOSH have an opportunity to respond to where we are. I think we have a feel of where the concerns lie among board members, and we haven't had an opportunity for the agency to speak at all.

Jim or Tom, do you want to respond to John and Bob's comments here?

DR. NETON: Yes, Wanda, this is Jim.

A lot has been discussed, and I would like to say a few things, I guess.

I'd like to start off by first talking about the model itself, and how we believe that it's consistent with the dose reconstruction regulation.

This is really, we haven't used the term, but it's what I would call a source term model. In other words, we know a lot about the material that was processed, the amount that was moved through, the processing equipment, all that sort of thing, the building sizes, and we've used that, or SC&A has initially used that, although I would say in the very early development of the model Tom Tomes and SC&A were sort of jointly involved before this became a Monte Carlo model and, sort of, spec-ing out how this might be done.

But, it's consistent with the regulations when we talk about using a source term model, that's part of our hierarchical approach to reconstructing doses. So, I believe it is very consistent with the regulations.

With regard to what John and Bob Anigstein were saying, I'm in complete agreement with their characterization of the situation. This model has sort of taken a

life of its own.

If you remember, NIOSH originally put forth, I think it was something like 2.3 picocuries per liter as a bounding value. That value was scrutinized quite heavily after we put it out, and in looking at that we recognized -- NIOSH recognized that there is more uncertainty about that value than we really thought, and the model, I thought, was a good way to get about that uncertainty. And, in fact, when the material is modeled, as we saw -- when the parameters are used, that is, the air exchange rate of one per hour, and the 50 percent release fraction for the radon, in fact, the 50th percentile comes out not too far off from what we had originally proposed. I think it's somewhere in the vicinity of 3 picocuries per liter, the median best value estimate, versus the 2.33, which we believe tended to confirm our original analysis -- our original value.

But, there is uncertainly about

that value, and we felt that the use of the Monte Carlo approach, to put uncertainty bounds around that distribution, made some sense, and, certainly, you know, took full advantage of the information that was developed during our research.

And, we discussed this at the last technical call, and I believe it's captured in the minutes of the working group -- of the technical call, that NIOSH is proposing that we use this model in tact, as it's been developed, for reconstructing radon doses at Blockson Chemical.

The only difference that we talked about would be, NIOSH still believes that the lower bound air exchange rate, based on our research and consulting a subject matter expert, would be more appropriately one air change per hour versus, I think, .24 or .25, something of that nature, proposed by SC&A.

We are not necessarily going to quibble about the release fraction of between

50 and 70 percent. Frankly, that makes not a lot of difference at the end of the day, and, you know, we would be -- we are okay with, you know, we'll get it down to one issue, and I'm okay with saying 70 percent. I mean, I'm not going to quibble about the difference between 50 and 70.

So, really, it comes down to NIOSH's position that the air exchange rate lower bound should be one, and that drives the upper 95th percentile with distribution.

If we adopted an air exchange rate -- I mean, a release fraction of 70 percent, the 50th percentile, the best estimate for our model, or our model using one air exchange rate per hour, would be 4.56 picocuries per liter, and I believe SC&A's current 50th percentile is 5.97, very little difference in the median values, and at the end of the day the difference is at the tail of the distribution 95th percentile, where they would be a factor of two higher than NIOSH.

And, that's where we are right now.

CHAIR MUNN: Thank you, Jim.

Dr. Melius, does that give you any better feeling with respect to accepting the model and where we need to focus our attention appears to be on the air exchange?

MEMBER MELIUS: The answer is no. I mean, it's helpful to know what -- where NIOSH is coming from, extremely helpful.

CHAIR MUNN: But, you have concerns with respect to the model still.

MEMBER MELIUS: I would need to review the technical call.

CHAIR MUNN: Oh, I see.

And, Mike, your thought with respect to accepting the model?

MEMBER GIBSON: You know, again, I don't agree with all -- I don't disagree with all the scientific effort that's put into this, I just still think this is a little far reaching for the intent of the program.

CHAIR MUNN: So, you still have

issues with using the model as well.

MEMBER GIBSON: Yes, Wanda, I do.

CHAIR MUNN: Gen? Gen, are you still with us?

Brad, do you have thoughts?

MEMBER ROESSLER: Wanda, can you hear me?

CHAIR MUNN: Oh, now I can. I couldn't hear you before, Gen.

MEMBER ROESSLER: Yes, I pushed the wrong button.

I'm here, so whenever you are ready I can respond.

CHAIR MUNN: Oh, yes, would you please.

MEMBER ROESSLER: Well, as I hear all of this, and I appreciate John Mauro's review of where we are at, I think that was very succinct and right to the point, and I appreciate Jim Neton's response, too.

My conclusion is that we do not have a technical or scientific disagreement,

that we -- and, I would agree with NIOSH's approach, and I think what John is saying is that we can do dose reconstruction.

I think our disagreement now is, really, maybe the word is philosophical, and it has to do with whether it's valid to use the source term approach to calculating doses.

This is -- and I think the science around it is very solid, when we use the distributions we allow for ample uncertainty. It seems like for those of us who are in health physics, this is something that we accept, that we do, that it is a very good approach to dose reconstruction. I'm not sure that we can go any further on this.

I'm sort of concerned that people feel they still need to read the minutes and so on. I'm not sure, in my mind, that that's going to help. I think that the disagreement here is more of a philosophical one.

CHAIR MUNN: Thank you.

Brad, do you have some comments?

MEMBER CLAWSON: Yes, I'm trying to figure out how to turn on my mic.

CHAIR MUNN: Go ahead.

MEMBER CLAWSON: You know, I'm kind of right there with Gen and stuff like that. I don't think this is really what the intent of the law was and stuff, and I think, you know, I'm not disagreeing with NIOSH or SC&A on how they perform this or anything else like that. I think, you know, on both sides we are splitting hairs on things of the stance of what was the true intent of it and so forth.

And, like anything, like Gen said, it could be philosophical, but I just -- I don't think that we are meeting what the intent of the law was myself, but that's my personal opinion.

CHAIR MUNN: Do you have the feeling there's anything we can do that would meet that intent? I'm not sure what you perceive the intent to be.

MEMBER CLAWSON: Well, you know,

it's like -- it's interesting, and I like to listen to the scientific end of it, but, you know, there's a difference between the scientific approach and the true approach.

All of us that have worked in these industries know that there's a lot of things that went on that were not nor can be captured. And, you know, we can throw a lot of numbers at it and so forth like that, but what's really there.

And, I think the intent of the law was to be able to make sure that, you know, and we've heard this from many standpoints, of do we, in dose reconstruction be claimant-friendly, everything else like this, but in some of this I don't think we are going to be able to capture everything that really, truly was there, or how it was done, or any abnormal conditions that arose. I just -- we've gone to great lengths on this, and I realize that, but I still just don't think that it's quite what it was intended to be. But, that's just

my opinion.

CHAIR MUNN: Well --

MEMBER CLAWSON: We've all got them on both sides, too.

CHAIR MUNN: -- I guess I have to add something to that.

It would behoove us all to remember that when we talk about intent, especially, we need to recognize the fact that we are looking at a facility here which bears little or no resemblance to what we can, I think, justifiably assume most of the individuals who created this statute had no concept of at the time that this law was constructed.

It's highly unlikely that when you talk about nuclear facilities, the 535 men and women who make law, that any one of them would assume that a phosphate plant had anything to do with what they are thinking in terms of nuclear facilities.

So, caution in terms of interpreting the meaning of laws is, I think,

the watchword for any group like ours.

I'm not disagreeing with what you say at all, Brad, it's just that it's, I think, incumbent upon all of us to remember that facilities like Blockson are no where near what most individuals would think of in terms of radiological facilities, that you wouldn't think of this as being a nuclear facility at all, and that at periods of time during which it handles materials which fall under the purview of the Act was a relatively short one, the number of people involved is a relatively small one, and the circumstances are those which will occur again in our deliberations in various sites.

The real concern appears to be assurance that we are doing a scientifically feasible and scientifically reasonable job at being able to determine whether or not we can make dose reconstructions that are fair and equitable.

The comment that Gen had to make

with respect to the bearing that philosophy has on what we are doing here is certainly well taken.

I want to make sure that we have an opportunity to have the issues that we came to this particular phone call with addressed in such a way that everyone feels that they have been properly addressed. So, that brings us back to the issues of air exchange and radon partitioning.

I believe I've heard that NIOSH agrees it is -- that the 70 percent partitioning factor that could be airborne is not a major issue in their minds, or nor would it affect the final results of dose reconstructions in a truly significant way, but that the issue of air exchange still has a difference that needs to be addressed.

Am I stating that properly, Jim and John.

DR. NETON: Yes, Wanda, I think it would make a slight difference in the 50 to 70

percent value, it wouldn't make no difference, I think. So, but, yes.

CHAIR MUNN: I understand.

DR. NETON: But, yes, we are in agreement with what you are saying.

CHAIR MUNN: John?

DR. MAURO: Yes, I agree that's the difference. I do believe, though, that the real heart of the matter is the points, I believe, that Brad, and Mike, and Jim raised, and that Jim Neton raised, and that Jim Neton responded to, that has to do with the very idea that using a source term model in a situation like this is a reasonable and appropriate approach to coming at the problem of dose reconstruction.

DR. NETON: John, to that end, I'm reluctant to do this, but I would like to just read the section of the regulation that deals with this, because I think it's very relevant at this point. So --

CHAIR MUNN: Please do.

DR. NETON: I'll read the little section of the paragraph, it's Section 82.2(C) of the dose reconstruction regulation, and this part of the hierarchical approach. It says: If neither worker nor workplace monitoring data are available, the dose reconstruction may rely substantially on process description information to analytically develop an exposure model. For internal exposures, this model includes such factors as the quantity and composition of the radioactive substance (the source term), the chemical form, particle size distribution, the level of containment, and the likelihood of dispersion.

And, I would suggest that that's exactly what we've done here, and so I'm a little concerned about people -- folk's impression that, you know, this is not in keeping with the regulation, or I guess I heard what the intent of the law, but the regulation is certainly written to implement

the law.

MEMBER GIBSON: The law states, Jim, that it has to be dose reconstruction with sufficient accuracy.

DR. NETON: I understand that, but I mean, the source term model is provided for within our regulations, so I guess my opinion would be that we could argue or discuss the various points of the source term model being sufficiently accurate, but I think using a model would be allowed under the regulation.

And, I think I heard that the modeling approach was -- people had some discomfort with in general.

MEMBER GIBSON: I think the discomfort is, is whether it lends itself, or can be done with sufficient accuracy.

DR. NETON: Right, which I think speaks to the values of the parameters in the model more likely than anything else. I mean, that's --

MEMBER GIBSON: And, the amount of

available information. In this particular situation, we've taken several terms here, and I believe today was the first -- you know, I was on the tech call, so I believe you said on the technical the first time I heard NIOSH say that they were going to approach it in this particular way, in this particular perform.

So, that's something new to me.

DR. NETON: Okay, and that's summarized in the minutes of the technical call, too.

MEMBER GIBSON: I haven't had a chance to read those yet.

DR. NETON: I understand.

MEMBER GIBSON: I still need to do that, and so, that's something new now, and take that into account, and I need to read the minutes of that and see what was discussed then. I don't think it helps to have everybody repeat that.

CHAIR MUNN: All right. So, if I am interpreting what I think I'm hearing

correctly, can we move ahead to focusing solely on the air exchange rate? I think we've defined what concerns may exist among the board members.

Jim Neton has brought us back to a good starting point with respect to what basis exists for an evaluation of this type and a model of this type.

Am I correct in stating that that leaves us with the discussion of the air exchange to resolve, or am I missing something key? Please tell me if I am.

If not, let's see what we can do to address the air exchange issue, and Jim Neton or Tom Tomes, do you have something that you need to say in order -- especially, since not everyone on the call has had an opportunity to read the recent exchanges, would you care to address what those exchanges have contained in brevity?

DR. NETON: Yes, specifically, with regard to the air exchange rates, Wanda?

CHAIR MUNN: Yes.

DR. NETON: Yes, there's been some e-mails back and forth between Tom Tomes, I think, and Bob Anigstein to the board, and the working group has been copied on.

Those related to our sort of review of the most recent white paper, or I'm not sure what it's called now, but the paper that Bob Anigstein put out that sort of responded to Dr. Harley's analysis of the ventilation rate possible, lower bound of the ventilation rate.

There's a couple things we'd like to raise, and one was that we believe that the worker interviews actually did support our contention that there was ventilation within the building, and that was documented in the exchange that Tom Tomes put out yesterday.

The person who spoke about the ventilation was a maintenance person, who had worked at the plant starting in 1951, and had been actively involved in maintenance

activities, and was aware of the upgrade in the ventilation, which he spoke as an upgrade, not an addition to ventilation.

So we are pretty comfortable with that, the fact if one looks at pictures of Building 55 there appear to be ventilation structures on the surface of that, on the roof of that building, that's not Building 40, but it was a picture taken in 1955 which one would assume that the buildings were consistent, you know, were outfitted similarly.

Other issues that we can bring to bear, I think, to this discussion are, some of the analyses that were presented in the SC&A paper, not the analyses, but the references that were cited, we think are not exactly appropriate or representative of the ventilation rates of a chemical factory. A number of the structures that were cited in the papers, in the brief chance I had to review, appear to be office buildings and/or unventilated warehouses, which I don't think

really supports the lower bound rate for a chemical factory that has a significant heat source in it.

One has to remember that there were large, vast tanks of sulfuric acid that I think by workers' account went the entire length of the building. These were heated to 70-80 degrees Centigrade, and agitated, and generated, you know, definitely, some aerosol. There's hydrofluoric acid generated, some various other substances in the chemical processing, that would be unlikely that there would be no infiltration of -- or no -- very low air exchange as presented by SC&A and supported by Dr. Harley's opinion.

Finally, I'd just like to point out, and this is something new, but I went and looked at the Mallinckrodt Chemical Works site profile, which if we are all remembering, Mallinckrodt processed large qualities of Belgian Congo ore that, especially, in the early years contained 60 to 70 percent uranium

by weight. Now, that's a value 5,000 times more concentrated than the .014 percent uranium by weight that was processed at Mallinckrodt.

And if we look -- I looked at the site profile, and I don't expect anybody to pull this out, but if you want to refer to this, page 71 of the site profile has a table that reports an analysis done by ORAU in 1989, where they looked at 184 Plant 6 workers at Mallinckrodt, and Plant 6 was, essentially the refinery where the radium was processed, or the ore was processed, including the radium.

And based on all the radon surveys that they had collected between 1946 and 1957 the highest working-level month recorded on their analysis was .138 working-level months.

If you convert that, based on some equilibrium values, that comes out to about 55 picocuries per liter.

If you look on the table as well, there's an ore digester job category, which

is, presumably, an ore digester will be near the digestion tanks, of .042 working-level months in a month, which would convert to, by my calculations, 16.8 picocuries per liter.

That value is, roughly, half of the value that SC&A submits as a plausible upper bound for the radon concentrations at Blockson, and remember that this is 5,000 times more concentrated than -- or up to 5,000 times more concentrated than the Blockson rate.

So I believe that that supports -- that also supports the fact that the ventilation rates must have been higher than the lower bounds suggested by SC&A.

I think with that, that's about all I have to say right now.

CHAIR MUNN: Is there any other comment with respect to air exchange?

John? Bob? Steve? Chuck?

DR. ANIGSTEIN: Well, my response to what NIOSH has put forth, in both their

presentations now and the correspondence, is I just go back to the whole nature of the Monte Carlo uncertainty analysis, and that is, we do not maintain that the derived value of .243 air exchanges an hour is the most plausible, or the most likely, it's simply the rate that it is not plausible that it will be any less than that, and that is the whole purpose of the Monte Carlo analysis, because then at the upper end we have the very high of about 4.8, I think, so there is a very wide range, and it reflects the uncertainty.

And the fact that there was some testimony that there were fans, ventilation, remember, I think there's also a distinction between ventilation and forced ventilation. Obviously, there's air exchange, if there's no ventilation the air exchange would -- our lower bound would be zero.

The fact that the photograph of -- the Building 55 at Blockson, indicates there are some structures on the roof. According to

the records, to the TBD, Building 55 was built, specifically, for the AEC contract. As a matter of fact, there was correspondence where AEC is paying for the Building 55, and Blockson is submitting cost estimates for it.

Now, Building 40 had been in existence from the beginning, from the time the Blockson Plant was built, or at least it was in existence, presumably, as much as decades earlier than 55, and was in a different portion, maybe 1,000 feet away. So it's in a different location. Unfortunately, we know next to nothing about the building. As a matter of fact, until one of the workers was kind enough to send us, to fax to us a drawing of the plant, and then handwritten on it was identified where Building 40 was, we had no idea which of those buildings was, in fact, Building 40.

So I'm still saying that -- I'm not saying there could not have been forced ventilation. My point was, if we are not 100

percent certain that there was forced ventilation the prudent thing to assume as the end of the Monte Carlo analysis. That is the most likely value, is that it could have been none. And the warehouse on which this was derived did have roof vents, just no forced air. It specifically says there were mechanical -- there were vents in the roof that could be mechanically operated and mechanically opened. There were large doors, 12x25 feet, at either end of the building, which would allow for some natural ventilation if there's any air currents whatsoever.

So that was not a sealed building. As a matter of fact, there were air exchanges measured in that same building overnight when everything was sealed, and there were tiny fractions of the ones measured in the daytime.

CHAIR MUNN: Bob, I need to interject here. When you are describing the building, the workers, during our exchanges with them, made the point on more than one

occasion, I believe, I can't substantiate that immediately, but I believe I heard from more than one worker that this was an old drafty building, and that it was common for them to leave the doors open completely --

DR. ANIGSTEIN: Yes.

CHAIR MUNN: -- certainly during all but the coldest of the winter months.

DR. ANIGSTEIN: And that's consistent with the comparison with the warehouse, where they said the doors were normally open, 12x25 foot bays for trucks to move in and out. So that's consistent, and again, I was personally not in on those interviews, but I do have Tom Tomes' summaries of them, and one worker said it was ventilation, and according to Tom Tomes' interview notes one of them said there was no forced ventilation.

So again, when we are split like that, again, that's the Monte Carlo. You say at one limit you have worker A who says there

is ventilation, and at the other limit you have worker B who says there is no ventilation. So I think that the range is reasonable. Again, if we were -- if we had been somehow -- someone pointed a gun and said, you must give me your best estimate of -- then I would say no, the best estimate is higher than .243. But it's not -- the whole philosophy, excuse me if I'm being too lengthy, in my mind was to make sure that all possible, or at least plausible, scenarios are captured, not to decide, not to discriminate and say, worker A's recollection is better, and we believe him, and worker B doesn't know what he's talking about, putting it bluntly, say give them all equal credence and that's why you have one recollection at one end of the distribution and the other recollection going higher.

And then, the final point is, again, my .243 is a derived value, two measurements in this warehouse during

operation, whereas if they had measurements overnight it would be non-applicable because the warehouse was sealed. During the day, took two measurements, took the mean of those. Again, those varied, in the same warehouse, morning and afternoon, when there was low wind they had .05, when there was more wind they had .2. Nothing else changed.

So I took the mean of those, and then I scaled it, because I reasoned, well, the air exchange, obviously, is through the doors, windows, leaking walls and so forth, so I prorated the wall area of the warehouse to the wall area of the Building 40, assuming the heights were about the same, and then that's how I derived the .243, which is a number that we can state in front of the public, say this is how we got it, we can document it, this is the calculation. Anyone with a calculator, given the same information, could reproduce this number.

The value of one is a judgment

call, and one person could say, well, it seems like one, or another person could say it could be two. It's not -- it's not a firm number, that's my problem with that.

And for instance, well, I'm not going to repeat my analysis of Dr. Harley's report, because that's stated, it was based on small rooms, I don't know what the size of them was, and the smaller the room the lower the air flow in terms of, say, liters per second, but the higher the air exchange rate in terms of liters per second divided by the volume of cubic meters, or liters if you want to keep the same consistency.

So the small rooms would always have higher air exchange rates, in the large building this is. At first sight, it seems contradictory, because well, the big building has more windows, yes, but it has much more volume.

So that's the end of my big spiel.

DR. MAURO: I'd like to add

something that Jim had mentioned, and it's something that we hadn't discussed before, are these measurements that Jim pointed to, and I think that also goes toward the weight of the evidence, and how it affects the distribution.

So I do appreciate that Jim's information regarding Mallinckrodt measurements, and it does play at, you know, the distribution issue.

And I'm starting to think a little bit more in terms of what Jim Neton had said, the idea of assigning a Monte Carlo where there is some fairly large ranges of uncertainty in the parameters.

Jim Neton -- I'm sorry, Dr. Melius' question is probing, and it's very thoughtful. I hadn't thought in those terms, where there's a question of sufficient accuracy, in other words, I think we all agree that modeling, and Jim Neton very -- I'm glad he read that section, I think it really does -- it's very clear the approach that we are

taking, modeling, is very consistent, exactly follows what the regulations say.

But then, I have to say it was interesting that as Dr. Melius pointed out, well, okay, let's for a moment just say that we accept the idea that the regulations allow one to model. Then the next question is, okay, now when the model is such that you have a lot of uncertainty in the distributions, is one solution to that that's still considered to be within the intent of sufficient accuracy, the application of a Monte Carlo simulation. Interesting question.

We have interpreted, and we are using it as if yes, that is consistent with the intent of the rule where we have applied a Monte Carlo simulation to deal with the very large uncertainty.

I don't -- and I think Wanda correctly points out, I don't know if anyone ever anticipated that one of the modeling approaches that might be adopted might be a

Monte Carlo simulation to deal with uncertainty, some of the parameters of which could be very -- distribution could be very wide, and is that compatible and consistent with the intent of sufficient accuracy.

I think that's -- I mean, it's an interesting question, and I think that we are here now confronted with that, and I think, Jim, the information you just gave us, regarding the measurements made, does have some bearing here, and it is -- I did listen, and I do take that very seriously, it does show that if you wanted to go to other sites where the -- you know, where you are concerned about airborne levels of radon, and if you were to say, well, let's just take a look at a uranium ore processing facility, and if you are seeing radon levels -- now, of course, there are a lot of differences in ventilation, there are a lot of differences -- but just again, it's another piece of information that I think is important to put on the table to

allow people to make informed judgments on, you know, where -- we are getting away from the air turnover rate question, but what you are really saying is, listen, we actually have some measured values from places where the potential for radon elevated levels were very much greater than they were at Blockson, in theory, because of the concentration of the uranium and the ore.

And even there, you are not seeing levels as high as the upper bound of our levels. So I guess I just want to point out that did strike me during this discussion, and I think it's important that we take that into consideration.

MEMBER ROESSLER: Wanda, may I make a comment?

CHAIR MUNN: Please do, Gen.

MEMBER ROESSLER: This is Gen.

To me, it seems where we are going on this is that we do have two concerns by some of the work group members. Their

concerns seem to center on the use of a source term to do dose reconstruction, that's number one. And the second one is then, is it being done with sufficient accuracy.

With regard to the use of the source term, I think Jim Neton's reading of the regulations to me, and I would hope to the others, says yes, this is acceptable. In fact, I think the exact wording was used there. I think SC&A agrees that this is an appropriate approach with regard to what the regulations say.

So in my view in looking at it right now, it seems like, perhaps, we've answered that concern.

The second one then is sufficient accuracy, and what we are talking about here is, that we've been discussing the whole time, does the parameters in the model, the Monte Carlo model, which again, to me, to use Monte Carlo seems to be the best scientific approach to deal with any uncertainty. It certainly is

very conservative with regard to these upper and lower bounds, so I think we are really focusing on these parameters, and what I'm hearing, you know, throughout our discussion is very good agreement between SC&A and NIOSH that we have the appropriate parameters, and Jim Neton even has come through in his last comments to support that.

So I'm not sure that any more detailed discussion of the exact parameters, or whether exactly what the ventilation was, is too productive. I think we need to hear from our working group members what they think about this approach with regard to sufficient accuracy.

Am I right on this, Jim, and Brad, and Mike?

CHAIR MUNN: I think you've done a good job of summarizing where it appears that we are.

My simplistic observation would be, what this really boils down to is the question

of are we or are we not able to do a decent dose reconstruction with the Blockson Chemical Company's workers? That's really the bottom line as I see it.

Do the other board members want to respond to Gen's question?

MEMBER MELIUS: First of all, I don't know what you mean by a decent dose reconstruction, but we can do that. I mean, I think a couple things. I mean, I think if, you know, Monte Carlo simulation was the Holy Grail either Congress would have put it in the Act or not, would have put it in the regulations, I think, and you know, it's not, you know, we can always pick an upper bound with a dart board, but I mean, I don't think that's, you know, the intent, nor appropriate under the law, nor under the regulations.

I think that in judging whether one can do a dose reconstruction with sufficient accuracy under a source term model, I think the issue comes down to how well can -- you

know, there are a number, a lot of potential parameters involved, but you know, how well can one, you know, assess the source term, how well can one assess and evaluate going back in time many years, based on often sketchy and minimal information, what the appropriate values for a number of the other, you know, factors that will affect how that source term leads to doses for the people working in the facility, and can that be done, you know, with sufficient accuracy in a way that is supportive of dose reconstruction?

And so I don't think, you know, the discussion of, you know, ventilation issues and so forth, is irrelevant, I think we need to see whether, you know, there's agreement, and given the problems with the sketchiness of the information going back in time, and some of the, apparently, disparate memories of the different workers there, or descriptions, which is all understandable, you know, it raises doubts in trying to figure out if we

are able to do it or not, and able to appropriately characterize all of the parameters that may affect that, and does that, you know, sufficiently cover the workforce that was exposed in that facility at that point in time?

CHAIR MUNN: Jim, your language is much more precise than mine, and my apologies for the use of the term decent. You've --

MEMBER MELIUS: We certainly wouldn't want an indecent one.

CHAIR MUNN: -- characterized it much more appropriately.

And the questions that are before us here really are ones relative to bounding, and whether in the absence of perfect information, which to the best of my knowledge we will never have in the vast majority of these sites that we approach, can we, with an adequate degree of accuracy, assess an upper bound?

Am I categorizing that correctly?

MEMBER MELIUS: Yes, I mean, there's more to it than that, but that's fine.

CHAIR MUNN: That's the bottom line, right?

So Mike, do you have anything to add to that?

MEMBER GIBSON: No, I think Jim summed it up real well.

CHAIR MUNN: Brad?

MEMBER CLAWSON: No, I don't.

CHAIR MUNN: All right, then, I see two problems here.

One, we want to make sure that Dr. Melius has had an opportunity to delve into the exchanges that occurred during and following the technical call, which was our charge to SC&A and to NIOSH, following our last work group meeting.

We are now in extremis with respect to time and the upcoming full board meeting.

I had hoped that we'd be able to get a little further along with this, but as

Dr. Melius points out, there is no dealing with Mother Nature, there's no way we can second guess that.

I am uncomfortable with saying that we've reached any conclusion here today. We have narrowed the issues, I believe, but we still have major concerns based on our inability to reference some of the material that we have just been discussing over this past week.

So I am open to suggestions with respect to where we go at this juncture. I have been looking -- I would very much like to make sure that all of us have had an opportunity to look at the material before the final question is placed before the board, but I see very little opportunity for us to do that between now and the time that we are scheduled, which is mid-morning on the second day of the board meeting itself. The only opportunity I would see is either after public comment on Tuesday, which is a dangerous time

for us to look at, since we have no way of identifying when that might occur, and we'll all be exhausted at that time anyway.

The only other opportunity that I would see is, perhaps, breakfast meeting the morning of Wednesday, December 17th, prior to the opening of that day of the board session.

Does anyone see that differently than I, or does anyone have any other suggestions?

MR. KATZ: Wanda?

CHAIR MUNN: Yes.

MR. KATZ: This is Ted Katz.

CHAIR MUNN: Yes.

MR. KATZ: I've been thinking about this throughout this dialogue. I mean, first of all, I just would like to applaud, you know, everyone, the board members, NIOSH, SC&A, everyone, I really think this has been a sort of extraordinary dialogue for its clarity and for the depth in which you went into the issues.

You know, and with that in mind, I'd just offer a suggestion for this work group to consider, which is, I mean, I think not only the materials that have been prepared, but really, the transcript of this dialogue I think is an important one, but I don't think you really want to -- or really, you would have the time during the board meeting to replicate this dialogue.

CHAIR MUNN: No.

MR. KATZ: And do it justice.

And so I'm thinking anyway, and I know the transcript can't be produced quickly enough to be provided and for people to absorb it before the board meeting, I mean, it won't even -- it can't even be produced in that time. So I mean, I guess I would just throw up for all of you to consider the idea that, let's get this transcript of this dialogue produced, you know, which, you know, takes 30 days or what have you, but we can maybe rush it so it could be a little faster than that,

and that also, obviously, would give time for Jim to absorb the other materials that have been provided, and maybe put together a package then that could be considered by the board, and presented in the February meeting, instead of trying to sort of rush this and deal with it in this upcoming meeting.

I mean, I think at this upcoming meeting, certainly, I mean, there's plenty to say in just giving a status update on where we are, but again, I think this dialogue has been extraordinary, and it's very useful thinking on a lot of levels, and I think it would be great for the board to -- all the board members to have the opportunity to read that dialogue and to think about these issues prior.

But then, you know, that's just a suggestion.

DR. MAURO: This is John, just one thing I'd like to mention, that I'd like to clarify something I said earlier, as we were

discussing. I mentioned earlier that one of the overarching issues related to sufficient accuracy had to do with the fact that, not so much the modeling, but the distributions.

I want to -- I think I was wrong about that. The idea that there are distributions, in a lot of the parameters that we use when we do our, ultimately, the probability of causation at the end of the process, we don't, but the process does, that's done all the time.

Distributions are assigned, Monte Carlo methods are applied, it is the fundamental basis upon which all judgments are made regarding compensation on this program.

So I would like to retract something I said earlier, that we have before us something new. We don't.

The very fact that SC&A and also NIOSH has used Monte Carlo to simulate the airborne activity, and in that simulation there are a number of parameters which have

fairly wide uncertain distributions, this is not something new to the process, this is -- in fact, it's quite routine to the process.

So I'd like to just make it clear that I don't think there's anything about the use of a Monte Carlo simulation, even ones with relatively large uncertainties in their distributions, is unusual for this program. I said that earlier, and I think I was wrong. I think it's very common that this kind of thing is done.

MEMBER NETON: John, this is Jim. Thanks for clarifying that. I was going to say something as well, that's the fundamental basis, of course, as everyone recognizes, of the Interactive RadioEpidemiological Program that we use, the NIOSH IREP, which includes distributions for, not only all of the risk models, but also allows for distributions to be applied to the dose reconstruction.

DR. MAURO: Right, and one other last point that I'd like to get on the record,

because I think it's important, Jim has cited certain numbers related to Mallinckrodt of maximum or concentrations of radon observed in that setting, and I think it's important that that become part of the record and be taken into as part of the weight of evidence of where you'd like to -- if, in fact, we go -- whatever route we go down, those numbers are important in terms of, I guess, affecting the landscape of the problem and where the boundaries are.

So Jim, perhaps, you could even put out an e-mail just to say, to cite those numbers. I didn't write them down, but I think they are important numbers.

DR. NETON: Yes, this is Jim, I just want to clarify, those were not maximum values measured in the plant, those were established time-weighted average values for the workers in those job categories.

DR. MAURO: Which is exactly the kind of numbers we want.

DR. NETON: Yes, and I certainly would be willing to put out an e-mail outlining what I just discussed to the working group.

CHAIR MUNN: That would be helpful.

With regard to Ted's suggestion, that's very tempting, and it's very reasonable, but I want every person on this call to recognize the fallout of such a decision. We all are aware of the fact, we've been at this for almost three years now, and we have a significant amount of information, we have discussed very fine details of what we are doing with respect to Blockson, and understandably the claimants will not be happy with the idea that we are suggesting another two months of deliberation on their account.

That being said, I see a great deal of merit in Ted's suggestion. We certainly do not want to short cut the opportunity for all of the decision makers to have an opportunity to digest the information.

It would be very helpful if we could bring a stronger consensus of thinking to the board as a whole than we have been able to do in the past, but whether we can or cannot do that I'm open to suggestion and reaction with respect to Ted's suggestion.

MEMBER ROESSLER: Wanda?

CHAIR MUNN: Yes.

MEMBER ROESSLER: Okay, I guess I'm off mute. This is Gen -- I very much support Ted's suggestion, even though I hate delaying this any further. I think there are two reasons to do that.

First of all, I really think Jim should have a chance, Jim and Brad and Mike, have a chance to look over all of the documents in detail, so they can, you know, see some of the points that we've been discussing.

And I think even more important, to me this issue is broader than just Blockson. We are looking at some fundamental concepts

here when we talk about sufficient accuracy, and source term, Monte Carlo, these things apply, really, to the whole program. And I think it's the responsible thing for us to do, to get all of the board involved in some of that discussion in some way, and I think that by giving this a little bit of time we can come up with a way that would achieve getting more input on this, what I think is a rather broader issue.

CHAIR MUNN: Thank you, Gen.

Dr. Melius?

MEMBER MELIUS: I have no further comment. I mean, I just -- I don't think we are going to be ready at the board meeting to deal with this.

CHAIR MUNN: So I'm taking that as agreement with Ted's suggestion.

MEMBER MELIUS: And I would also agree with Gen's point, I mean, I think this has a number of other implications.

CHAIR MUNN: Well, there's no

question.

MEMBER MELIUS: I think -- I'm not disturbed by having to delay it two months because of those other implications.

CHAIR MUNN: Mike?

MEMBER GIBSON: I agree. It's more broad than just Blockson, this is programmatic-wide.

CHAIR MUNN: And do you feel okay with delaying our activities by another two months?

MEMBER GIBSON: I believe we owe it to the claimants of Blockson, in my opinion.

CHAIR MUNN: All right.

Alternate Brad?

MEMBER CLAWSON: Yes, I agree with what's been covered, and I think Gen covered it very well.

I think -- and we need to get, like she said, the other board members in this, because this is going to affect many other site profiles or whatever that we are getting

into.

CHAIR MUNN: We've tried very hard to get material available so that all of the board members can see where we've gone and the machinations through which we've all taken ourselves during the time we've been looking at this site, and the issues before us.

I'm certainly in agreement with Ted, that it appears to be the logical thing to do. I just do not want to find ourselves in a situation where in full board meeting we are unwilling to say we still have to do this one additional step. We keep saying we have one more step. We've been saying that for over six months.

But it is incumbent upon us to be absolutely as thorough as possible. As has already been pointed out, this is not simply an issue of what transpired at Blockson. Our decision here is going to overlap into a variety of other similar kinds of facilities throughout the program. So it's key.

Unless I hear any objection right now, I'm going to indicate that we will, in fact, provide only a status report at the board meeting this time, and that we will pursue the minutes -- excuse me, the transcript that is being generated here.

Do we have any concept of when we might be able to see these specific transcript notes, whether they have been --

MR. KATZ: Wanda?

CHAIR MUNN: Yes.

MR. KATZ: I'll take care of that, you know, once the meeting is adjourned, with Charles, I'll talk with Charles and with the folks at his company, but I mean, I'll be aiming to get a transcript, and I want it to be PA-cleared because it's an important one, and that doesn't take any real time. There's been no PA information in all this discussion, I don't think. So we'll take a look.

But anyway, I mean, I'll aim to have that, you know, ready, early in January,

so that, you know, that there's plenty of time for everyone to read it, digest it, and think about the broader issues as many of you have discussed, as well as the particulars with respect to Blockson.

CHAIR MUNN: That's much appreciated, and I think adequate time prior to a meeting is absolutely crucial to assuring that every member of our group has an opportunity to absorb this material.

If it is -- if it's possible for us to do so, I think we need to try to establish a date when we will address this again before the February board meeting, and yes, I'm open to suggestion as to whether we can do this by telephone, or whether we need to try to incorporate it with some of the meetings that are already going to take place in January in Cincinnati.

My instinct is to lean toward a telephone meeting, but the question is whether that's amenable with, and meets the

conclusions that the rest of the board members have.

Is there any objection to scheduling a telephone meeting, in January?

MEMBER ROESSLER: Wanda, I think that would be a good approach, because there might be other board members with sufficient interest in this who would want to come into it. Of course, I guess we have to be concerned about having too many board members on the call.

CHAIR MUNN: Yes, we do, we have to make sure that we do not have a full quorum. But in the past we've been in the unfortunate circumstance of having to ask board members, who were not a member of the working group, to leave, because we had too many board members on line.

MR. KATZ: Wanda, can I just innocently raise a question about this? I'm just not clear, I mean, it seems like you've taken this dialogue, you know, pretty much to

the end as a working group, but do you really -- I mean, it's just unclear to me what the working group is going to resolve further versus, you know, a board-wide dialogue about both the broad issues in Blockson, but you know, I'm not interfering with this, I just -- again, I'm trying to imagine what that working group meeting is going to discuss in addition to what's already been discussed today, and it's hard for me to see that.

CHAIR MUNN: Well, it is difficult, and I don't think that it's going to be any different than this dialogue. The only issue that I see is that not all of us have had an opportunity to absorb the cross-cutting information that has been exchanged just in the past two, three weeks, and we want to make sure that all of -- certainly, all of the members of the working group can say that they've had an opportunity to do that.

MEMBER ROESSLER: But that's only one of the issues, it seems like, I think Ted

is looking at the broader issue that we may not, as a work group, be able to address, the broader issues.

And I really don't have an answer for this, but perhaps, we need a little time to consult with our board Chair, or for NIOSH and the Chair to get together to see just exactly where we, as a board, need to go with this.

CHAIR MUNN: There is one other item also, other board members have expressed extreme interest in what we have done, and have a mistaken notion about how thoroughly we have addressed the issues that have been brought to us.

It is very beneficial for us to have as much information as possible, either posted or transmitted to them by e-mail, so that all of the board members can be privy to as much of the discussion as possible.

I think we've tried to follow that line since our meeting prior to our last board

meeting, at which time there was some concern expressed about other board members having access to what our deliberations have been. But most of those, I believe, are available to them now.

I'm not sure, I don't believe that's true of any of the most recent information. So one of the items is, in my view, making sure that all of the available information that is desired by other board members is accessible to them.

MR. KATZ: I'm just -- I think Jim was trying to get a word in, but just along that thought before he does, Dr. Melius, is what I was saying before about packaging together, I mean, the transcript of this meeting, and I would think you may want to sort of attach to that for the working group, or maybe, you know, the NIOSH OCAS folks can attach to that, some of the other supporting dialogue of these past couple weeks, materials, et cetera, that that would all be

packaged together, I think, because I think that all needs to be considered, you know, together by other board members who haven't been privy to this discussion.

CHAIR MUNN: I agree.

MEMBER MELIUS: Can I just make one comment? I would like to leave open the possibility of a work group meeting, simply because -- and I will read the -- I'll try to catch up on the reading before we get to Augusta next week, presumably, I'll be able to print off e-mails and attached documents.

And then, if I have technical issues that I would like to have answers to, that are sufficient to warrant, you know, a work group meeting, I'd like to leave that possibility open. I think we can decide that next week. We'll also know when the transcript will be ready, and that will give us a better idea in terms of scheduling.

MR. KATZ: That sounds good to me, Jim, and I will do my best to have, you know,

a pretty close estimated date of arrival, in terms of the transcript, for then, for that discussion, and we have, you know, board working time to do scheduling. So that makes a lot of sense.

CHAIR MUNN: Let me ask that we do some preliminary thinking in that regard. We have, at this juncture, if we think in terms of 30 days from now, I'm trying to choose a point between now and the Albuquerque meeting that would be essentially midway, so that we'd have an opportunity to have the documents that we are talking about put together, and also give more than adequate time from that time to the February meeting for us to agree on what is our next step forward past that January meeting.

It appears to me, looking at the calendar, that that point is somewhere around January 15th. Is that -- the last day of that week is January 16th, that would give us a full four weeks prior to the Albuquerque

meeting in which to absorb or deliberate further -- is that a good target date for us to consider aiming for? And is Friday a good day to do that?

MR. KATZ: That Friday, Wanda, happens not to be very good for me. I mean, I will change things if I have to.

CHAIR MUNN: Oh, well, it doesn't have to be a Friday.

MR. KATZ: But I mean, that week or the following week, I think either of those weeks gives, you know, a good deal of time for the rest of the board to then read materials and so on that this work group wants to provide them.

CHAIR MUNN: Do we have specific conflicts during that week from any of the board members?

MEMBER ROESSLER: Are you speaking of the week of the 19th?

CHAIR MUNN: Well, I was looking at the week of January 12th, but the week of

January 19th would do as well.

MR. KATZ: Yes, and just to note, the 19th is Martin Luther King Day.

CHAIR MUNN: Yes, that's a holiday for many people, so we'd want to stay away from that, and I would prefer to stay away from the day following that.

MR. KATZ: But I'm presuming that this would be a call, not a present meeting?

CHAIR MUNN: Yes, that's my assumption at this moment.

MEMBER MELIUS: I don't have a calendar, so I --

MR. KATZ: Okay, you don't have electricity.

MEMBER MELIUS: -- it's hard for me to --

MEMBER ROESSLER: I am open the week of the 19th, and I'm thinking the week before might be a little soon after the transcript comes out for people to have time to absorb them.

CHAIR MUNN: Okay.

MEMBER ROESSLER: But the week of the -- any time the week of the 19th works for me.

CHAIR MUNN: At this juncture, is there anyone who has a calendar -- I'm sorry about that, Jim -- you see, this is the reason why I still carry around a retrograde kind of calendar, it helps to be able to write it down from time to time.

Wednesday, the 21st, which would be -- the holiday would be on the 19th. This would be mid-week of that week.

MR. KATZ: Wanda, can I just suggest, I mean, we have the scheduling opportunity next week, if everybody just would look at these two weeks and figure out then, because again, Jim just said he can't even look at a calendar.

CHAIR MUNN: Yes.

MR. KATZ: If we'll just look at these over, you know, we can sort this out and

actually schedule it then during the board meeting, during the meeting scheduling time.

CHAIR MUNN: That will be fine with me.

Does anyone have anything else that would be instructive or would help us in any way with where we are going here?

MEMBER GIBSON: The 20th is bad for me because of the inauguration.

CHAIR MUNN: Oh, there's that, isn't there? Yes, that week would be bad for anyone who is going to be involved in the inauguration.

MEMBER GIBSON: The week may be okay for a phone call, but that day is, obviously, not good.

CHAIR MUNN: Oh, well, we wouldn't choose the 20th anyway. We'd start with the 21st.

All right, let's then follow Ted's suggestions. If we have nothing to add to this, we are going to -- we are going to

adjourn the call. Anyone who has any thoughts one way or the other that come to you after we have signed off, please let me know, and I'll rely upon NIOSH, SC&A, and Ted, to get together a package, as it were, of the materials that we need to have available, our references that we need to have available, for the board to take a look at.

MR. KATZ: Well, I mean, I'll leave that, if we are going to have a work group meeting, I mean, the work group can decide what materials it wants to put before the board. You have all the materials except for the transcript of today.

CHAIR MUNN: Yes.

MR. KATZ: So I would just suggest -- but if the work group is going to decide it's going to meet at the board meeting next week, that it's going to meet in January, then I would like to have the direction of the work group in terms of exactly what materials it wants, you know, put before all the board

members.

Certainly, we will do that, we will put that material together and get that to everybody.

CHAIR MUNN: Then should I request that all of us who have such concerns, if there are specific items that you want to make sure are included in that package, would you like me to be the point of information for that list, or would you prefer that it go directly to Ted?

MR. KATZ: That's fine, why don't they just send it to you and I, and we'll make certain that it gets done.

CHAIR MUNN: Very good. Is that amenable with all the board members?

MEMBER CLAWSON: Yes, this is Brad.

MR. KATZ: Yes, Brad?

MEMBER CLAWSON: Yes.

CHAIR MUNN: All right. Very good. Not hearing anything to the contrary, we'll

move forward as we have discussed.

Any additional information? Any additional concerns? Please let me know. One of the things I would like to hear from each of you is a very short, specific statement of what you feel to be any outstanding issue. If you have it, please give it to me, because I'd like that to be part and parcel of what I say to the board in full session, and what we want to address in as great a specificity as we can.

That being said, unless anyone else has additional comments or thoughts, we are adjourned.

MR. KATZ: Okay.

CHAIR MUNN: Thank you all.

MR. KATZ: I thank everyone for all of your great work.

CHAIR MUNN: Thank you, gentlemen and ladies. We'll talk to you later.

(Whereupon, the above-entitled matter was concluded at 10:43 a.m.)