CENTERS FOR DISEASE CONTROL AND PREVENTION

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

ADVISORY BOARD ON RADIATION AND WORKER HEALTH

TELECONFERENCE/ZOOM OF METALS AND CONTROLS WORK GROUP MEETING

THURSDAY, JULY 13, 2023

The meeting convened at 11:00 A.M.

EDT via video teleconference,

Josie Beach, Chair, presiding.

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Members Present:

Beach, M. Josie, Chair

Anderson, Henry, Member

Kotelchuck, David, Member

Martinez, Nicole, Member

Valerio, Loretta, Member

Registered Participants:

Roberts, Rashaun, DFO

Adams, Nancy, NIOSH contractor

Bailey, Nick, ORAU

Barton, Bob, SC&A

Calhoun, Grady, DCAS

Fitzgerald, Joe, SC&A

Gogliotti, Rose, SC&A

Habighurst, Ashton, HHS

Mangel, Amy, SC&A

McCloskey, Pat, ORAU

Nelson, Chuck, DCAS

Rutherford, LaVon, NIOSH

Sharfi, Mutty, ORAU

Taulbee, Tim, DCAS

Ulsh, Brant

Petitioners:

Elliott, Michael

Elliott, John

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PROCEEDINGS

(11:00 a.m.)

WELCOME AND ROLL CALL

DR. ROBERTS: Welcome, everybody. I have 11:00 o'clock Eastern. I'm Rashaun Roberts, the designated federal officer for the Advisory Board on Radiation and Worker Health, and this, of course, is a meeting of the Metals and Controls work group.

All of the materials for today's meeting are on the NIOSH website for the program. You can find those materials under the schedule of public meetings if you go to calendar year 2023 and click on the tab for July, you can find them there. If you're participating by telephone, you can go to the website to access all of the materials, and you can follow along with the presentations. The materials were provided to work group members and also to staff prior to this meeting.

The meeting is being conducted by telephone and by Zoom. On the website, there's a Zoom link which will enable you to hear and watch the presentations through Zoom. If you've chosen to receive audio through Zoom, you should be able to speak to the group and hear the presentations. If you're not speaking though, please be sure to select and stay on mute by muting the microphone on the lower left-hand corner of your screen. If you've dialed in, you'll only be able to speak and hear the presentations through the telephone line. Please make sure that your phone stays muted, of course, unless you need to speak. If you don't have a mute button, press star six to mute. If you need to take yourself off, press star six again. Also,

if you're only participating by telephone, we are unable to see you or your name, so please identify yourself before providing your comments or questions.

So first off, let's address conflict of interest. And I can go ahead and speak to that with respect to members of the Board who sit on this particular work group. They have all been determined not to have a conflict of interest, so they don't really need to address this during the roll call.

So, with that, let me move into the roll call starting with the work group members, and I will start with you, Josie.

CHAIR BEACH: Good morning. I' here.

DR. ROBERTS: Hi, Josie. Anderson?

MEMBER ANDERSON: Present.

DR. ROBERTS: Kotelchuck?

MEMBER KOTELCHUCK: Here.

DR. ROBERTS: Martinez?

MEMBER MARTINEZ: I'm here.

DR. ROBERTS: And Valerio?

MEMBER VALERIO: I'm here.

DR. ROBERTS: Okay. It looks like everybody's here. Let me go ahead and roll -- move into the roll for others. As you register your attendance, please be sure to acknowledge or make known any conflicts that might be relevant to this working group. And, of course, recuse yourself from making comments or engaging in discussion accordingly. So, let's start with NIOSH/ORAU.

MR. CALHOUN: This is Grady Calhoun. I have no conflicts for this

discussion.

DR. ROBERTS: Okay.

DR. TAULBEE: This is Tim Taulbee. I have no conflicts with Metals and Controls. I do have a conflict with Mound.

DR. ROBERTS: Okay.

MR. RUTHERFORD: This is LaVon Rutherford. I have no clon -- conflicts with Metals and Controls, only with Fernald.

DR. ROBERTS: Okay.

DR. ULSH: This is Brant Ulsh, and I have no conflicts with Metals and Controls.

MR. NELSON: This is Chuck Nelson. I have no conflicts with Metals and Controls.

MR. MCCLOSKEY: Oak Ridge Associated Universities, no conflicts with Metals and Controls.

MR. BAILEY: Nick Bailey, no conflicts with Metals and Controls, but I have a conflict with Mound Plant.

MR. SHARFI: Mutty Sharfi, I have no conflict Metals and Controls, but I do have a conflict with Mound.

DR. ROBERTS: Anyone else with DCAS/ORAU? Okay. Let's move on to SC&A.

MR. BARTON: Bob Barton, no conflicts.

MR. FITZGERALD: Joe Fitzgerald, no conflict.

MS. MANGEL: Amy Mangel, no conflict.

DR. ROBERTS: Anyone else on for SC&A? Okay. Let's move on to HHS and contractors.

MS. HABIGHURST: Ashton Habighurst, HHS, no conflict.

MS. ADAMS: Nancy Adams, NIOSH contractor, no conflict.

DR. ROBERTS: Anyone else from HHS or contractors? Is anyone on with the departments, DOL, DOE, other departments? Okay, hearing none, and are there any members of the public who would like to register their attendance now?

MR. MIKE ELLIOTT: Yes. This is Mike Elliot, one of the co-petitioners, and my colleague and co-petitioner, John Elliott -- no family relationship -- is on the call by phone. [identifying information redacted]. He would like to make a brief statement after I deliver my presentation.

DR. ROBERTS: Okay, thank you. Welcome.

MR. MIKE ELLIOTT: Thank you.

DR. ROBERTS: Anyone else? Any members of the public who would like to register attendance? Hearing none, thank you and welcome, again, to you all. Before we officially move into this meeting, just a reminder to keep things moving smoothly, please mute your phones unless, of course, you do need to speak. If you don't have a mute button, press star six to mute. If you do need to take yourself off mute, press star six again -- again, if you're using telephone. For those on Zoom, mute button is -- should be at the -- on the lower left-hand side of your screen. Please periodically check your phone and your computer to ensure that you're remaining on mute if you're not speaking. So, with that, let's get started, and I will turn the meeting over to the chair of the working group Josie Beach.

CHAIR BEACH: All right, thank you, Rashaun.

Just a couple of logistics. Can I have somebody run my slides for me today? I know SC&A has them. I -- I'm not comfortable doing that, and I don't know about Dave, if Dave's comfortable running his slides when it's his turn to speak.

MR. BARTON: Not a problem, Josie. I can take care of it.

CHAIR BEACH: Is that -- can you do that, Bob? Thank you, I appreciate it.

MEMBER KOTELCHUCK: Thank you. And I'll run my own, Josie.

CHAIR BEACH: You will, okay, good. I just have never done it, so I don't want to start it off today. And I think Mike had some to share as well. And Rashaun, that's not a problem if he shares his; is that correct?

DR. ROBERTS: No.

CHAIR BEACH: Okay. So, we are going to start with -- there is not an agenda up. I hope everybody has one. We are going to start with Brant, I believe, giving the compensation claims residual period presentation. And Brant, you're a new face to our work group. Welcome. Nice to have you back in the -- in the fold.

DR. ULSH: Thank you, Josie. I appreciate it.

CHAIR BEACH: Long time no see.

DR. ULSH: Yeah, it has been a while.

CHAIR BEACH: Yeah.

DR. ULSH: So, can everyone see me?

CHAIR BEACH: Yep, we can see you.

DR. ULSH: All right. Let me find my presentation and pull it up.

MEMBER MARTINEZ: Brant, your camera is a little low. We don't see

your face.

DR. ULSH: Is this --

MEMBER MARTINEZ: Yeah, better. Thank you.

DR. ULSH: I was gonna say, that may be for the best, Nicole.

All right, let me see. Let me go here. And I'm trying to figure out how to share my screen. I had this before we started, but of course, you know how things go.

CHAIR BEACH: And, again, this is why I asked Bob to share mine.

DR. ULSH: Yeah, I know, I --

CHAIR BEACH: You just never know.

DR. ULSH: Okay, share screen. There's that. Okay. So, can you all see my PowerPoint presentation?

CHAIR BEACH: Yeah. Yep. And if you, maybe, could make it a little bigger?

MEMBER MARTINEZ: It's the presenter view that we see, Brant, so if you go to display settings and then switch. Yep. And then swap. Yeah. So, now you should -- yeah.

DR. ULSH: Excellent. Thank you, everyone. We'll get through this together. Okay.

COMPENSATION CLAIMS RESIDUAL PERIOD

DR. ULSH: So, you know, as you already know, my name is Brant Ulsh. I worked in this program from about 2003 up to, oh, gosh, about 2012 or so. So, I spent many years in the program. I understand, you know, the program pretty well, except for all of the developments that have

happened in the intervening 10 or 12 years that I've been gone. So, and -- and that includes, you know, a lot of water that went under the bridge on this SEC petition. So, there's a very high likelihood that I might misspeak at some point this morning. I ask your indulgence there. I'm sure that someone will jump in and correct me when I do.

So, I want to start off with the first presentation here. We were requested to provide information on the claims that are compensable, that is, have a probability of causation greater than 50 percent with employment in the residual period at Metals and Controls. So, I'm just going to give you some -- you know, in response to that request, I'm just going to give you an overview of those cases.

So, first of all, the intro just to bring us all up to speed, make sure we're all starting on the same page. As I mentioned that the last working group meeting in May, we were requested to give this presentation. And we provided the information to the working group in early June. And because of Privacy Act information that are contained in those claims, we presented that in a secure framework, secure environment. And if, you know, I don't know where this presentation is going to go, but if any of you have any questions at the end about specific cases, I would ask you to be very careful about Privacy Act information.

So, as you all know, probably, the Metals and Controls residual period is -- starts at the beginning of 1968 and it runs through the end of 1997. And, of course, we're having this discussion under the context of SEC petition number 236. So, let's talk about the case characteristics. There are currently 502 claims with Metals and Controls of employment. There are

currently 447 of those 502 that have employment during the residual period. Now, when we slice that a little bit finer, there are 308 claims that have employment only during the residual period. And then the rest have employment during both the residual and the operational period.

The length of employment ranges from three-and-a-half to 30 years. So first, I want to talk about the group of claims that have residual period employment only. And keep in mind, we're only talking about the claims that we have already completed and that had POCs greater than 50. So, the cancers involved in those claims were by and large skin cancers. So, those tend to be easy to complete rapidly. And, you know, our first priority is, of course, always to get the correct compensation decision. That's always priority number one, but priority number two, is to get claimants the answers they want as quickly as we can, making sure that we still fulfill priority number one, getting the correct answer.

So, the skin cancers that were involved here, all varieties of skin cancer, squamous cell carcinoma, basal cell carcinoma, and malignant melanoma. Of the 14 claims that had residual period only employment, 10 of those cases had skin cancer, three of the cases had thyroid cancer, and four had another kind of cancer. Now, for those of you who are paying very close attention, you will notice that that does not add up to 14. And that is because there are claims with multiple primary cancers. So, don't try to add them up and get 14.

Eleven of the claims had that situation, multiple primary cancers. Seven of them had multiple skin cancers only. And that's a very common occurrence; people tend not to get only one skin cancer, unfortunately.

There were also four claims with skin cancer plus a different kind.

In terms of how the dose reconstructions were completed, they -- we looked at external only in 13 of the 14 cases, and in one case, external plus internal. And the organ doses that we assigned ranged from 2 up to about 11 and a half rem.

So, there were 10 claims -- now, okay -- now, moving on to the claims that had employment both during the residual period and during the operational period, there were 10 of those. Again, they were dominated by various varieties of skin cancer, all of them. There was one thyroid cancer case and two cases with another kind of cancer. So, of these 10, that had -- they had multiple primary cancers, seven of them had multiple skin cancers, and three of them had skin plus a different kind. The reconstructed doses in this group, we, you know -- it was external only, which is pretty typical of a skin cancer case. And, again, the organ doses ranged from about 3 and a half to close to 12 rem.

So, those are -- that's kind of a high-level overview of the claims. In conclusion, there were 24 claims that had employment during the residual period that had probabilities of causation greater than 50. And I want to make sure that my next remark is not misinterpreted. These claims have all been completed. There is not going to be any revisiting of them. But I want to point out that 14 of these claims, of these 24, had only non-SEC cancers. Skin cancer is not on the SEC list. Six of them had both sec and non-SEC, and there were four that only had SEC cancers. So, again, we're having this discussion in the context of an SEC petition.

And should you decide to proceed with recommending an SEC class, I

want you to be aware of the consequences of that -- maybe even the unintended consequences of that. That will certainly help claimants -- well, it will probably help the claimants to have SEC cancers because, assuming they meet the other requirements of the class, they will receive compensation. But for the 14 that did not have SEC cancers, and keep in mind now, I'm talking about future claimants who look like these. These past claims have already been adjudicated, so no one should be worried that anyone's going to come back and take away their -- their compensation if -- if an SEC is designated. That's not what I'm saying. I'm looking forward now. Future claims that look like this, where they only have non-SEC cancers.

Depending on how -- you know, if a class is added, depending on how it is defined, that can have the unintended consequence of actually disadvantaging the claimants that don't make it into the class. And that's why, you know -- that's why we push so hard to do dose reconstruction. Because for all its warts, for all its challenges, it's the fairest way to do it, to handle these claims, because it has some relationship to the amount of radiation exposure that people actually received. An SEC designation is -- is pretty arbitrary. It's based on the kind of cancer that someone has. So, you know, we all want to do right by the claimants, and I -- I just want you to go in with your eyes wide open on this.

CHAIR BEACH: Thank -- Thanks, Brant. Appreciate that presentation. Can I ask one quick question, then I'll turn it over?

DR. ULSH: Of course.

CHAIR BEACH: Of these 24, how many of these were partial dose

reconstructions? I think when I was reviewing them, I thought they all were, but I just want to verify.

DR. ULSH: Yes, I think they all were because we only did external. So, let me go -- here's the second group, residual plus operational, 10 of 10. External only, so that means that the partial dose reconstruction. We did not do internal dose.

CHAIR BEACH: Okay. Thank you. Any other questions for Brant? All right. I guess, we are --

DR. ULSH: Dr. Anderson, you're on mute if you're trying to talk.

MEMBER HENRY ANDERSON: I was trying to take myself off. Yeah. When were these completed, because the main period of operations is already a SEC. So, non-SEC cancers, as far as your last comment about it might impact those with non-SEC cancers being reconstructed, you still do a dose reconstruction on -- on those cases.

DR. ULSH: If --

MEMBER HENRY ANDERSON: If it's a non-SEC cancer, --

DR. ULSH: Yeah.

MEMBER HENRY ANDERSON: -- you attack or you have a method, and since the operational period is an SEC, because you couldn't do internal exposure reconstruction.

DR. ULSH: You are correct, Dr. Andersen, that if a class is ultimately established, we will still try to reconstruct the doses that we're allowed to. It really depends on how the class is defined. In turn -- but you asked directly when these cases were completed, I don't know that off the top of my head. Do any of the ORAU team members know when we completed

these cases?

Yeah, it sounds like we don't know off the top of our head, Henry. So, if you want that answer, we'll have to get back to you.

MEMBER HENRY ANDERSON: Oh, I just curious as to correct some of them are versus when it was done, and how did you do the dose reconstructions? What doses did you use for that?

DR. ULSH: Well, that would --

MEMBER HENRY ANDERSON: Did these have individual doses or, you know, what methodology did you use on the dose reconstructions?

DR. ULSH: Well, as I said in response to Josie's question, most of these were partial dose reconstructions, they only did external. So, for the folks on my team who are on the call, did we have external dosimetry results that we used, or was it some other method? Does anyone know?

MR. BAILEY: Yeah. Hi, Brant, it's Nick Bailey. They were primarily the residual external dose rates that we have listed in -- in our methodology, but no, we didn't -- we didn't have dosimetry results for, I don't think, any of those claims.

DR. ULSH: Henry, does that answer your question?

MEMBER HENRY ANDERSON: Yeah. I was just curious.

DR. ULSH: Okay. All right. Well, I think I have shopped -- stopped sharing my screen. I hope I have.

CHAIR BEACH: Okay.

MEMBER HENRY ANDERSON: One -- one last question. (Indiscernible) look -- looking through the work histories, the brief histories were provided confidential data we got, could you tell me how many of these

would meet the current SEC class definition that we're reviewing now?

DR. ULSH: Well, no, I can't because the definition hasn't -- well, first of all, no class has been proposed and approved yet, so I can't really --

MEMBER HENRY ANDERSON: Well, you -- you -- you proposed -- you -- when you certified it for review, you identified what class definition would be which -- which was maintenance workers.

DR. ULSH: Right.

MEMBER HENRY ANDERSON: And they had a long list of job titles that go with that. So, --

DR. ULSH: I --

MEMBER HENRY ANDERSON: -- the question is for those that were compensated here, would any of them from the residual period have met the case?

DR. ULSH: Okay, this is --

MEMBER HENRY ANDERSON: -- class definition or would these all be non-SEC or non-SEC under review.

DR. ULSH: Okay.

DR. TAULBEE: This is Tim. Dr. Anderson, we don't really have a definition from that -- that's come from the workgroup as to what you're proposing for us to be able to answer that. And the reason for that is, is we divide the dose reconstruction really into external and internal dose reconstruction. So, it depends upon what parts it is that you're having difficulty with during this residual period that you might recommend a class. If you -- if -- for example, let's say that it's the source-term issue, then that affects both external and internal dose. If it's something else, then it may

only affect internal dose. Looking at the individual claims, you know, that -- these are already done. So, we're talking about what would be happening from a future type of standpoint. But we don't know exactly what -- what this workgroup is concerned with from the internal, the external side --

MEMBER HENRY ANDERSON: But you --

DR. TAULBEE: -- to answer your question.

MEMBER HENRY ANDERSON: You certified a class for review.

DR. TAULBEE: Yes, but the class is open and only based occupation, that we -- we -- we're reviewing it for all workers at the site.

MEMBER HENRY ANDERSON: But -- but in -- but in the class that you certified, it was a big, long list of maintenance workers. You didn't say, though, at least as I look at it, you didn't say you certified the whole workforce.

DR. TAULBEE: Let --

MEMBER HENRY ANDERSON: I could be wrong there. It's been a -- I -- I tried to go back over and --

DR. TAULBEE: There is the petitioner defined class and then the class that we evaluate. And that evaluation class, I believe, is all workers. I see LaVon on here. Can you clarify --

MR. RUTHERFORD: I --

CHAIR BEACH: I read it. Tim, I read it yesterday. It's word for word in the ER, the petitioner class and NIOSH's class, it's all maintenance, but it goes into the detail of who -- which maintenance classes. So, as far as I can tell --

DR. TAULBEE: Okay. I see -- I see now what you're asking, and that

I don't know if it from that definition, how many of these are part of that. Does anybody from the ORAU team know?

MR. RUTHERFORD: Yeah, I want to make a comment on that too, Tim. You know, recognize that if the class is defined as listed by the petitioner, then it will be up to the Department of Labor to determine who meets that class. It won't be NIOSH determining who meets the class definition. You know, when we looked at it previously, early on, we weren't sure that we could identify those specific individuals based on that. And we weren't sure. So, that's why, as Tim mentioned, we identify -- we looked at everyone, you know. And also, remember early on that petitioners and others talked about different people doing different jobs. So, you know, I don't know how -- how you're going to define the class. But all of those things have to be taken into consideration. Ultimately, of classes recommended by the work group, again, it's going to have to go to the Department of Labor to -- to determine if they can identify this specific and this -- you know, the specific individuals identified in the class.

MEMBER HENRY ANDERSON: Yeah, I'm just -- I mean, for me, it -- it seemed to be you certified the class that was proposed. You didn't say it -- after you did the review for certification that -- that you couldn't -- you didn't feel you could do it that way. So, for our committee, what we're reviewing is the class that you certified.

MR. RUTHERFORD: I want to --

MEMBER HENRY ANDERSON: -- everybody.

MR. RUTHERFORD: Pat McCloskey, are you online?

MR. MCCLOSKEY: Yes, LaVon, I'm here.

MR. RUTHERFORD: Correct me if I'm wrong, but in saying typically, and this is what we do, typically, if we define that dose reconstruction is feasible, we leave the class definition that was identified by the petitioner. The only time we change the class definition in our evaluation is if we determine there is an infeasibility, and that infeasibility ultimately defines our class. It will spread. And so, if we determined an infeasibility, we would say okay, is this infeasibility specifically focused to these -- these workers or could it be everyone. And at that point, if it's everyone, we change our class definition to all employees.

DR. TAULBEE: That's the way I -- that's right, LaVon. That's the way we did it.

MEMBER HENRY ANDERSON: -- and some of the others, the petitioner proposed, and then you count the number of years down at the end.

MR. RUTHERFORD: Yeah, and there are times --

MEMBER HENRY ANDERSON: In your -- in your certified class. So, that's why I'm just concerned. Our -- I mean, most of our discussion here has all bent over maintenance workers, and not the other workers, so.

MR. RUTHERFORD: I understand that. As for time periods, the reason why we would adjust a petition solely -- or at the early phases because of time periods is a petitioner will provide us a basis for qualifying a petition. That basis, if we -- for example, if they say there's no monitoring data for this -- this group of workers from this period to this period, and we have monitoring data already that at some portion, we will adjust the qualification to that date. So, we'll adjust it then. Ultimately, if we complete our

evaluation and we determine there's an infeasibility, the infeasibility drives whatever the time period. So, if the work group identifies an infeasibility or determines that a SEC needs to be added, the work group has to identify the time period for that SEC. So, that's -- that's why you would see in -- in some of the petitions where the qualification date is different than what the petitioner has proposed.

MEMBER HENRY ANDERSON: Okay. Well, so -- so, what you're saying if -- if we adopt the class definition that's been proposed and which you certified per review, that might not be possible.

MR. RUTHERFORD: I'm saying -- yes. I'm saying that if the Department of Labor determines that they cannot specifically identify those worker classes, then -- then that -- that class definition will have to change and into something that they can administer. Typically -- and ultimately, if the work group comes back today and says we want to recommend a class, at that time, I would recommend that we get a letter to the Department of Labor and determine if they can implement that class.

Additionally, I want to point out that that infeasibility -- the infeasibility defined by the work group has to be infeasible for that time period identified. So, for example, if the work group determines that the source term is not -- you know, they don't feel it's adequate, the source term that we've identified is adequate, they've got to define a time period when that source term stops being inadequate, and we can do dose reconstruction. So, whether that's the whole period that petitioners identified, and -- and you got to have a basis for that. So, I just wanted to point that out.

CHAIR BEACH: Okay. Thank you. Getting a -- just a bit ahead of ourselves, I think here. Henry, anything else?

MEMBER HENRY ANDERSON: No, no, that's fine.

CHAIR BEACH: Any other comments from work group members? I think --

MEMBER MARTINEZ: I just have a quick question, Josie, if that's okay.

CHAIR BEACH: Sure. Of course, Nicole.

MEMBER MARTINEZ: I -- I was -- Brant, I was -- or Dr. Ulsh, sorry. I saw in your slides that, like, a -- you know, this was a certain percent of natural uranium, and I've seen that in a couple of the reports, too, looking back. I'm also new to this group. Is that just to give perspective for how -- of the activity concentration? Is that the reason for that inclusion?

DR. ULSH: Yes, Nicole, that in my next presentation. Well, --

MEMBER MARTINEZ: Oh, okay.

DR. ULSH: Well, Doc --

MEMBER MARTINEZ: Sorry.

DR. ULSH: -- Martinez. Nicole and I know each other very well, so. So, don't mind me, just calling her Nicole. Yes, that's just to give perspective.

MEMBER MARTINEZ: Okay. Perfect. Thanks.

CHAIR BEACH: All right. If we are ready to move on. Bob, if you're gonna go ahead and put up SC&A slides. Thank you, Bob.

Joe, you're ready. You're on?

MR. FITZGERALD: Yes. And Bob -- I think Bob's going to move the slides for me.

SC&A'S REVIEW OF NIOSH'S RESPONSE TO SC&A'S REVIEW

MR. FITZGERALD: Good morning. And welcome Brant or Dr. Ulsh, whatever you want to go by. We spent a considerable amount of time, it seems like eons ago, in places like Mound and Lawrence Livermore. So, welcome back.

DR. ULSH: Thank you.

MR. FITZGERALD: Can everybody -- can everybody hear me all right?

CHAIR BEACH: Yes, I sure can.

MR. FITZGERALD: Okay.

CHAIR BEACH: Hopefully everybody else can.

MR. FITZGERALD: Great. All right. We spent a lot of time on the details of -- of the SC&A supplemental review and NIOSH is response, so I'm going to stick the highlights. And if I go a little too fast for some of you, please stop me and I'll go back and, you know -- and fill it in a bit more. We all -- you know, there's certainly a lot of written material in terms of NIOSH and SC&A exchanges on these specific details, so there's a -- certainly that stands as a backdrop as well.

Next, Bob.

The -- and we covered this last time. So, you know, that -- that's just simply the chronology of the -- of this phase of the review. When the work group tasked SC&A with, sort of, doing this additional line of inquiry, a -- Bob asked me to join the SC&A team, primarily just to provide a fresh perspective, sort of a new look at the existing information. And that's -- that's pretty much my involvement over the last, I guess, it's been about 18

months. So, somewhat relatively new, but certainly now more grounded.

Next, Bob.

This is just simply a list of the findings and observations that came out of the supplemental review that was done about 18 months ago. And I would just -- you know, we -- we were talking about different attributes of a SEC definition. I think finding one, which gets to the back application of the '95 survey result, I'll get into a little bit more detail. That's where, I think, we raised the question of uncertain source terms that we feel need to be addressed and also some questions on the comparability of -- of site conditions and exposure pathways between, you know, the -- certainly between the time period in which NIOSH is proposing to draw it's bounding method, which is the pre D&D sampling that was done in '95, that era, the D&D era, as compared with the -- the M&C -- the residual period where the M&C maintenance workers were involved. So, that's certainly the -- the backdrop of finding one.

Finding two, we get more into the question of the resuspension factor that is employed by -- by NIOSH and the way it's proposing to use the Mound project as the basis for that dust-loading factor. So, that's -- that's pretty much the resuspension factor. And what I'm going to touch on later is these two elements, the -- the proposed source term information, as well as the resuspension information are essentially two out of the three key aspects of -- of the bounding method that's being proposed, the dose reconstruction method. So, certainly, these two elements are ones that we felt were of -- of some concern and question. And they're very much fundamental to the -- the bounding analysis that's presented.

The observations, I -- I think, were certainly questions that we wanted to raise. And I would just say on the -- and the -- Brant is going to get, certainly, into this in more detail. But observation one, we just wanted to -- to get clarification on how a blended D&D survey data would be used to come up with a bounding value. And in the end, there was a number of questions and issues, and I think the petitioner certainly is amplified on those -- the questions and issues, similar to ones we had raised. But in the end, I think we felt there was enough data. Unlike inside subsurface, we felt on the outside subsurface, there were more data that would -- could be used that was representative of the situation. So, I think in that case, we felt one could have a sufficiently accurate bounding analysis done with that data. So, that's kind of where we came -- observation one.

Observation two, without getting into all the details we went into last meeting, our -- the biggest concern, I think, we had was the -- the way the -- the way the -- I guess, NIOSH has -- had asserted that the M&C area monitoring -- this was done in the HFIR areas -- it -- it -- it assures -- and that's the word -- that's the verb that was used -- assures that 95th percentile soil contamination value is conservative. I think we would have been comfortable with indicative or suggests, but assures, I think, is a pretty hard assertion to make on what essentially is monitoring that was done in a different -- in a different area under different controls and was done in a regime that you would have to assume that the procedures and policies that were in place and the inspections that were done would have instilled a broader application of the surveying that is being appointed to. And I -- I just don't think one can provide any assurance from the programmatic

aspects of that to indicate that you -- you can demonstrate the conservatism of the 95th percentile in this -- in this context.

I -- I'm more comfortable -- and I don't want to get into -- I've seen Brant's slides. I'm more comfortable with the direction that's being suggested in, I think, some of Brant's next presentation. But certainly, from the -- the documentation that has preceded the meeting today, I think we were concerned about that -- that statement.

Okay. The next one, please.

We had a -- certainly a lot of exchanges on, you know, the -- the question of intrusiveness of the M&C maintenance work. And a lot of this is subjective, obviously, and a lot of it gets down to comparison between sites and, you know, relatively speaking is it intrusive or not. But from our standpoint, looking at the M&C maintenance activities, we felt they were, compared with other AWEs, more unique in terms of the level of intrusiveness. We're talking about the -- the construction excavations, the actual pipe cleaning, the pipe cutting, much of which was done on a relatively frequent basis, given the clogging that was happening in the drain pipes. The work environments where much of it was or could be considered confined space -- confined spaces because, again, a lot of working in pits and trenches and what have you. And also, just the uncertainty around some of the source terms that were involved in, again, talking about the contaminated pipe sediments during the residual period, the presence of scale, radioactive scale inside the pipe. The -- the frequent discharge of coagulants -- and we'll get into that specific issue -- but that was identified during the NIOSH review and workers attested to the fact that this was

being used in the -- in the wiring -- to lubricate the wiring operation. And that those discharges led to frequent clogging of the drains. May have been a major source of the clogging of the drains that necessitated all the unclogging and pipe cutting.

And I would also add repurposed equipment. We haven't really had a lot of discussions about that. But one of the -- certainly one of the questions is the machinery or equipment that originated in the AWE era that -- that apparently was -- was repurposed and made use of in later periods. You know, M&C maintenance workers would have had to both move and

clean and maintain the equipment and certainly from past precedent, and I think Linde was an example. That's a source of -- of contamination exposure, because the footprint of the equipment by itself contains a lot of contamination that isn't claimed in the initial cleaning of the operating areas, and the equipment itself has -- certainly may have contamination within the equipment itself.

So, anyway, those -- those certainly taken together, we think that the -- the maintenance activities at M&C during the residual period certainly stands apart, in our view, from what we see at other AWEs. And granted, there may be some similar activities like welding and -- and plumbing changes, whatever, but the -- taken as a whole, I think, the maintenance activities were intrusive, more intrusive, at M&C, and certainly were more unique.

We looked at -- looked at the -- that level of activity and tried to compare it as -- as NIOSH did with other AWEs. And quite frankly, we felt the fit of what was happening at M&C compared more favorably with -- with

Linde. And -- and essentially because the renovation activities, which involve a lot -- a lot of, like, intrusive digging, replacements, and -- and -- and inserts construction-type activities, fit that temp -- template, that mode much better than sort of the building occupancy, the more passive occupancy of workers in a facility, which would perhaps fit the more traditional OTIB-70 and those guidelines. And I included in the supplemental review some illustrations from that NRC's new reg. that was governing D&D just to illustrate, I think, that comparison. And I think that -- you know, if a picture's worth 1000 words, just looking at the contrast between what NRC, for example, the nuclear industry, considers a building occupancy circumstance or environment versus a building renovation scenario. And it's pretty clear that M&C was closer to the renovation scenario than it is the -- or was the building occupancy one, which is certainly OTIB-70.

And I think the response that NIOSH gave us on this particular issue was essentially that the -- the comparison should be judged using the standard industrial hygiene factors or the nuclear industry factors or -- in terms of comparisons. And that was the reason we did look at NRC, the new reg., because I think we wanted to make sure that there was sort of a comparison point outside of just the AWEs that would shed some light on this question of intrusiveness.

So, anyway, that's -- that's kind of where we came out on this. And, you know, clearly, the dose levels at M&C are relatively low compared with -- with Linde and some of the other sites. But I want to just point out that we have as the work group, and I should say, the Board has addressed

similar levels of exposures and exposure pathways at sites such as Pantex, Blockson, and Sandia where, relatively speaking, you're talking about lower dose levels. So, we -- we did address this in -- in some of our reviews, and there's a precedent that with lower dose levels, certainly, one can tolerate less precision on the actual values that you arrive at. However, the question still comes down to sufficient accuracy of the dose reconstruction methods quite apart from the -- the dose levels themselves.

Okay. Next slide, please.

Okay. So, we had an issue. I don't want to spend too much time on this, because I think we did discuss this at length the last meeting. But this question of comparing the D&D workers replacing drainage pipes versus M&C maintenance workers cleaning out drain lines in terms of whether or not they were comparable, similar, whether the -- the level of intrusiveness was different, without spending too much more time on it, we felt the workers illuminated that as -- as -- to the extent possible that yeah, I mean, D&D workers were operating under a rad control regime, NRC requirements. And clearly, the -- the approach would have been to cut the pipe and replace it without doing too much in the way of -- of -- of, you know, accessing the interior sediments or being -- being, certainly, exposed to those because you would have protective equipment, you would have monitors, you would certainly be very careful about that. It's an entirely different regime.

And for M&C workers, it was a completely different environment. There was no knowledge of the contamination, there was no health physicists, there was no oversight, no procedures in terms of radiation protection. So, when they were doing the -- the plumbing work, which

essentially was the -- the cutting of the pipes, the unclogging and cleaning out of the pipes, the put the pipes back together, that was just using standard pipe fitting techniques without any attention to radiological controls or any -- any protective methods at all. So, what we're trying to do is not get into how -- to what extent is the exposure potential is same or different or whatever. But this -- to -- in our view, this goes to the availability and sufficiency of the information for the maintenance worker tasks and related exposures.

Because of the regime the D&D workers were operating under -- and this is NRC regulation and specific HP requirements -- the information available for that procedure, those D&D source terms and exposure potentials and the actual process, are well documented. There's a -- good records. There's details about how that was done and -- and certainly any -- any record of exposures.

There's none of that for the M&C workers. One can only extrapolate experience, and our -- our concern is that the extrapolation of this experience from the D&D era is unlikely to be similar enough to be -- to be relevant and to actually apply. So, that's -- that's the -- that's the bottom line, I think, in terms of looking at what was done in 1995 and trying to decide if one could apply that experience that, reg. -- that information back over the 27 years prior and whether that would, in fact, fit, and how do you know it fits, so.

Next slide, please.

Okay. So, just getting into some of the specific issues that we had questions on. This is not a new piece of information. It -- one of the --

certainly, the interviewees had told NIOSH and SC&A that they in fact used a mineral oil in building 10 for drawing wire. And it had -- clearly had the properties of a coagulant, mainly because as they were discharging the mineral oil to the drainage system in building 10, they found it would just be plugging up the drains.

And, you know, the -- the -- the question that we had on all this, because that was again a known issue, is that having a coagulant like this regularly released into the drainage system at M&C and knowing, based on actual experience, firsthand experience, by the workers, that it was plugging up the drains, the question is to what extent is the source term of the sediments within the drainage system affected by having this coagulant, the -- in the drains continuously released. And certainly, in the earlier or first half of the M&C -- or the residual period, you have -- you know, it's been established in other surveys, you have existing AWE uranium and thorium, which may be, in fact, mixed with, you know, a HFIR, a uranium. But again, we don't account for that separation.

But to what extent is the concentrations in that earlier period consolidated and concentrated by having this coagulant present in that drainage system; I don't have a specific answer. I think it's a question about, you know, the -- the comparison of the D&D concentrations of sediments that were identified in 1995 and whether that can be back extrapolated to a time period when these coagulants were being released regularly into the drainage system, where, in fact, uranium thorium sediments existed.

Can you, in fact, assume that the conditions were the same or not; I

think we felt that the conditions would likely be different given the fact that the coagulant would have the chemical and physical properties that consolidate and concentrate whatever was in the drainage system in terms of sediments. In any case, next one, Bob.

And the response that we -- we received from NIOSH on this was that our premise was inaccurate and that the release of the coagulant oil during the residual period -- this -- this is in terms of HFIR operations -- did not -- did not introduce higher concentrations of covered uranium and thorium from AWE operations to the subsurface. And additionally, that the wire operations during the residual period did not process radioactive materials. Therefore, most material rinsed into the drains was not radioactive except for residual contamination, remaining cracks and crevices.

Kind of wish we would have had a work group session on -- on these subjects. I think we could have clarified where we were coming from. But in this case, the -- of course, the coagulant oil, the -- the wire oil, was nonradioactive to begin with and was being released separately from any operational radioactive releases. It was just simply to lubricate that machinery. So, that was the only purpose for the -- the oil. And it was the -- you know, the presence of the oil in the regular discharge of that oil to the drainage system that we were concerned would have a collateral influence on the concentration and the source term of uranium and thorium already, as -- as NIOSH put it, in the cracks and crevices of the drain pipes. And that's where the -- that's where the concentration would happen. And it would, in fact, be as much the AWE as it would be the -- the uncovered material from HFIR.

So, we think that certainly represents a substantial, uncertain, and unresolved question that revolves around on the source term of the sediments in the drainage pipe.

Okay, next slide, please.

Okay. This -- this is another item that was identified that, actually, in -- in the information that had been generated as part of the M&C review. It was confirmed that yeah, there was a survey that identified contaminated scale inside of a -- I believe it was a clay pipe, and that that surface contamination exceeded a million dpm per 100 centimeters squared. And this was part of a pipe that was being cut and removed, of course. And where the concern from our standpoint lies is that, you know, there was just a lot of pipe cutting and removing, repairing, and cleaning that was going on during the residual period. And this wasn't just sort of taking a pair of snippers. I mean, they were using power tools that included saws, drills, grinders, powered snakes, as well as cutting torches, I mean, the whole gamut, to, in fact, cut the pipe to clean it out and to rejoin the -- the piping.

And the concern that we have, of course, is that it's not simply the presence of scale that's incidental to the drainage system, but it's also the fact that if it's present at those levels, then any cutting could certainly aerosolize or produce particulates that would be available as an exposure pathway to workers doing the cutting.

And, in fact, this was a specific concern that was identified by DOE in its hazard assessment of Bridgeport -- Bridgeport Brass AWE. And they pointed out to the fact that, you know, one -- one had to be cautious because any intrusive work activities, such as pipe cutting and removing and

cutting through a steel pipe with a cutting torch would, in fact, release the -- the surface activity of those pipes and make that available for inhalation by workers that were involved with that. And we're doubly concerned about that exposure pathway, that's source term because, one, we don't really know, since this is only one sample -- I mean, this is -- there isn't a series of samples, It -- this just happened to have been identified on one pipe cutting. So, you have one data point, and it happens to be that million dpm. But it's unclear where else you would have, in fact, contaminated scale, whether it might have been higher, whether, in fact, it would have been implicated perhaps in some of the clogging that was being remedied by M&C maintenance workers.

There's a lot of uncertainty involved there. And it's also of a concern that if one is going to be doing the pipe cutting in a confined space, which is more than likely, given the circumstances, you're talking about a fairly substantial enhancement of those aerosols. And -- and with -- with torch cutting, you're talking about very fine aerosols. You're talking fumes. You're not actually even talking particulates anymore. So, you're talking about the -- certainly the concentration of -- of fine aerosols in a confined space where that work was being performed. And again, we really don't know there's uncertainty about how much scale, what the activity is scale might be, where it was, to what extent, you know, workers were exposed, and under what conditions those workers were exposed.

Okay, next one, please.

In terms of NIOSH's response, I think NIOSH felt that this was a -- an isolated hotspot and not a systemic condition. And -- and certainly they --

they did not believe there was any evidence that higher activity -- activity levels might have existed.

Our concern on that -- that position is that we don't think -- you know, we see this as an uncertainty, an unresolved issue, and we don't find any evidence of -- sort of, going the other way that contaminated scale would not have been present elsewhere in the piping system. I think looking at the way sediment blockages were happening and the fact that just by chance, one -- this one cut identified contaminated scale, certainly, one could -- one could see that that could be, in fact, elsewhere in the system and that it could involve both metal and clay pipes, because I think it was a question that NIOSH raised about well, this was a clay pipe. Well, we don't know; it could have certainly been present in metal pipes.

And that in terms of higher activity levels, we don't know. Certainly, that's one chance cutting identified a million counts per 100 square centimeters. We don't know if it would have been higher or if that was the highest. There's no information. There was only one sample. So, our concern, again, is that potentially elevated source term exposure potentials related to this particular issue remain uncertain and unresolved.

Okay. I want to talk about confined space effects. The one -- one issue in terms -- that, I think, sets M&C apart from other AWEs is that just by the nature of the configuration of the plant, you know, you had a lot of your utilities were below grade and normally inaccessible. There was a lot of -- in terms of unclogging and as well as just maintaining utilities, electrical and water, there was a considerable amount of low-grade work that involved the ditches, the trenches. And in interviewing the workers, I think that was

one of the clear indications that was received, that they spent a lot of time in trenches and ditches and -- and a lot of this work in terms of pipe replacements and the drilling and the cutting and the sawing and unclogging and the snaking was done in those environments.

And it's pretty clear that they would fit the definition by both NIOSH and OSHA of confined spaces. And these confined spaces, of course, have the implication of -- of leading to increased resuspension of particulates and concentration of aerosols. That's the whole, I think, industrial hygiene concern with confined spaces because you have a confined atmosphere that would concentrate whatever is released into those environments. And just to add to an earlier comment, I think the prevalence of the confined space work that apparently took place at M&C certainly differentiates it from other AWEs. I mean, it is certainly a notable difference.

So, when we looked at the -- the application of the Mound project data as the basis for the M&C dust-loading factor, in terms of the particulates, my concern, my expressed interest, was okay, to what extent -- since we're talking about essentially -- is applying surrogate information, to what extent is that information equivalent to -- the conditions behind that equivalent to what we're seeing at M&C. And in terms of the Mound data, it was done for a -- certainly a trench that was being dug, and there was air monitoring, but the air monitoring was done adjacent to the trench. It wasn't done in the trench. So, a lot of the air concentrations that would be the basis for the suggested dust-loading factor did not -- did not accommodate or address confined space effects.

And in our supplemental review, we did a brief literature survey,

where we were looking for, you know, what kind of resuspension factors have been identified for confined spaces by U.S. agencies as well international, and we did highlight a couple of those. And they -- actually, the values were relatively close. I think one was four times 10 to the minus fifth, and the other was 4.5 times 10 to the minus fifth. But compared with the OTIB-70 suggested value of, I think it was, one times 10 to the minus sixth, you're talking about, you know, a fairly substantial difference that ought to be reflected in terms of a resuspension or dust-loading factor, maybe up to a factor of 40. So, again, our concern was, in terms of using the Mound data as a surrogate basis for a dust-loading factor, we didn't think it was valid because of that difference and the fact that they reflect the combined spaces.

Next one, please.

In terms of NIOSH, its response -- and I'm -- I -- I kind of up -- updated this from the last work group meeting, because I think in -- in the earlier responses, I think NIOSH kind of made it clear that they didn't see this as new information. But in the presentation at the May meeting, there was a bit of a switch, and there's an acknowledgment that, yeah, this is new information. And there was some agreement that it should be addressed in terms of a potential change in resuspension. So, I think we -- we sort of have some agreement that that needs to be addressed as -- in terms of the dust-loading factor. I think there'll be some discussion about yeah, but this -- this is more of a TBD issue.

And, you know, I don't necessarily disagree that it is not a source term issue, it's more of a TBD issue only because, as I indicated earlier, we

suggested -- or didn't suggest -- we highlighted a couple of resuspension factors that are being used internationally as well as nationally that would be a better basis for confined spaces. So, you know, it is trackable. I think it's reached -- confined spaces is not a new phenomenon. It's something that's pretty well researched and documented. So, I -- I think it's important, because, again, the -- the bounding method being proposed for inside subsurface has essentially three elements to its basis, one is source term, the second is resuspension or dust-loading factor, and the third is occupancy time frame. And so, you know, certainly from the resuspension or dust-loading factor, one of the three, it's certainly, in -- in our view, inadequate and I think there's some agreement by NIOSH on this as well.

Okay, next one.

So, anyway, in terms of our two findings, finding one, inside subsurface -- what we're saying essentially is that the available information -- and we're talking source term information, exposure pathway information -- is questionable and may be insufficient to account for the exposure contribution to M&C maintenance workers during the residual period. And -- and certainly the -- the new information relative to confined spaces, the contaminated scale releases, and the overall effects of coagulants in the -- in the drains are all issues that we believe aren't yet resolved and represent uncertainties about the source terms and the exposures, potential exposures, that might be involved.

Second bullet, as we pointed out, the M&C maintenance activities during the residual period were not controlled for radiation exposures as were the later D&D activities from which the so-called bounding samples,

the 1995, pre-D&D samples were taken. And again, just to illustrate, the clean outs by M&C maintenance workers, we continue to believe was not the same as the D&D workers' pipe removal in terms of the number of aspects, proximity, intrusiveness, potential exposure. And I think that serves to illustrate the point I'm trying to make.

We already talked about the health and safety manual and the reliance on programmatic information to substantiate conservatism. We don't think that's necessarily a valid basis. And finally, the -- in -- in NIOSH's response to the supplemental review, they included the fact that in the final analysis, they were going to apply extreme conservatism to formulate their upper-bound concentrations in some of their bounding analyses, and that was to account for any intrusive activities, high exposure conditions, uncertain facility activities, or even unknown contamination sources. And just about every -- every uncertainty -- every uncertainty or unknown that, you know, one could think of the relative to a facility over time, and certainly, they were going to apply this approach to sort of maximize the -- the bounding value to ensure that any sort of -- any exposures source term would be enveloped by that value.

And, you know, we included some of the discussions and deliberations that took place with Linde back probably 12 or 13 years ago, because a lot of these same issues came up with that -- during that review. And there the question of plausibility came up when one is talking about maximizing a bounding value, because clearly, one can, by applying many, many different levels of conservatism come up with a number so large that one could postulate it would exceed any -- any uncertainty or unknown source term or

exposure pathway.

But you end up with the question of is that really a plausible means to compensate for lack of information for the time period that you're addressing, in this case, the residual period at M&C. And the conclusion back then was Linde was no, you know, applying conservatism to that extent, to simply come up with a number that was large enough to be seen as bounding could -- should not be considered plausible, because one needs to compare the time period where you're drawing the data to back apply to the time period in question. And in the end, the sufficient accuracy of that comparison is what drives the decision, certainly not trying to compensate for lack of information by maximizing whatever bounding value you're -- you're -- you're trying to arrive at. So, that's kind of our bottom line for the inside subsurface conclusion.

And finding two is really the -- the circuit data issue, the one where we, again, felt that the Mound surrogate data did not apply. So, again, I don't think there's as much disagreement on that at this point, because I think there's an acknowledgment that this is an issue that was not addressed and should be addressed.

Just as a bottom line, you know, I want to go back to and -- and Brant's going to touch on this -- and I think this is a good way to look at it -- if the three legs of the stool -- think of a stool is having three legs -- upon which the -- the NIOSH bounding method for inside subsurface, you know, those -- those three legs are one source term, two the resuspension or dust-loading factor, and three, worker occupancy and time. We -- we believe based on our supplemental review that at least two of those legs are want --

are found wanting because there remains uncertainties and issues surrounding the source term during the residual period, and certainly the -- the dust loading or resuspension factor that's being applied for the dose reconstruction methodology.

So, we don't believe that with at least two of the three legs of that stool being deficient that the bounding analysis or bounding methodology would, in fact, be -- would be valid. But that's certainly something that the work group would have to examine. It's -- it's a question of -- of adequacy and plausibility.

That's all I have. Is there any other questions? I -- we did cover this in a great amount of detail at the last work group meeting, so I didn't really want to go through all of the specific details of our supplemental review or NIOSH's response. I think those are the highlights.

CHAIR BEACH: Thanks, Joe. Work group members, anybody have any questions for Joe, or comments?

MEMBER KOTELCHUCK: No. Dave. No, but we -- I mean, we did discuss this at some length at the last meeting, and this was very helpful in summary. And I'll have some things to say later.

CHAIR BEACH: Great. I agree, Dave.

CHAIR BEACH: Andy, Nicole, Loretta, anything?

MEMBER MARTINEZ: Nothing currently. Thank you.

CHAIR BEACH: All right, hearing none, NIOSH, any comments on Joe's presentation or responses at this point?

MR. RUTHERFORD: Yeah, this is -- I just want to clarify a few things. First, there was a discussion by Joe that there was one surface

contamination sample and indicated, you know, a million -- I can't remember his exact words on that. I want to point out that there were more surface contamination samples. And Pat McCloskey can correct me if I'm wrong, but I believe they actually make a point in that paper where they -- where they call out the 1 million dpm per 100-centimeter square. They call out that we typically see a range of marginal up to 3000 dpm per 100 centimeters squared. And then they point out with the -- the one sample that was a brought -- poss -- or that was up -- I believe it's -- the words they use were as high as a million dpm per 100 centimeters squared. So, to say there was one sample is wrong.

MR. FITZGERALD: Okay. Just -- just to respond. This is strictly scale, not sediment.

MR. RUTHERFORD: Okay. Correct me if I'm wrong.

MR. MCCLOSKEY: No, no, that's right. We're talking about the -- the -- the surface surveys of pipe scale. Not the sediment, not the picocuries per gram values, --

MR. RUTHERFORD: Okay.

MR. MCCLOSKEY: -- but the (indiscernible) per minute and dpm for centimeter square surface.

MR. RUTHERFORD: All right. Thank you. Thank you, Pat.

MR. FITZGERALD: So, in terms of -- in terms of surveys, the -- the -- as high as a million, but there were other actual samples.

MR. RUTHERFORD: Yeah, they list a range.

MR. FITZGERALD: Okay.

MR. RUTHERFORD: I also want to point out, you know -- and -- and, I

know, I've heard Joe's argument on the -- you know, the plausibility, the sufficient (indiscernible) and -- and -- and, you know, that the application to this to a low dose. Let's -- let's all remember here, we all talked about this before, that residual periods are typically -- are going to be periods when we have very little information. So, there's an uncertainty everywhere.

And in our position, we also believe that the type of activities that occurred at Metals and Controls were similar to other sites. And as I mentioned at the last work group meeting, we would provide an updated table comparable to Joe's as well as an additional response to Joe's or to SC&A's response to our response. And -- and I want to point out that we're talking 100 millirem is our sample that we used extreme conservatism as -- as it's been called out many times. Recognize at -- at the -- that -- that this is a value that is 1/4 of what a person gets just due to background radiation. So, when you talk about extreme conservative -- or when you talk about the -- you know, the uncertainties and such, sure, there are uncertainties, but when we're at this level of a dose potential, I -- I think, you know, you're allowing much more uncertainties.

Those are the two key points I wanted to talk about. And I -- and I think other things will be discussed in Brant's presentation, but I did want to get out the -- the issue with the surface contamination.

MEMBER KOTELCHUCK: Josie?

CHAIR BEACH: Yeah.

MEMBER KOTELCHUCK: In response to what LaVon just said, particularly about, we really -- you know, we have very little information on lots of -- and lots of residual periods. I -- I'm concerned, it's a member of

this working group, the M&C working group, I -- I accept that we have little information and that there were a number of decisions made where we had really, essentially one or two data points. However, I feel like, as a working group member for this working group, I can't relitigate those. They may have been absolutely appropriate. And they happen all to have occurred before it was a member of the Board. And I -- I might have thought differently. But, again, it's not my function as a working group member to go back and talk about that other than to say it has been done, and I acknowledge and accept that that has been done before and the Board approved, the entire Board. So, but I also feel it is of limited value to say we've done it before if we think the particulars of this -- of this site, M&C, don't appear to fit right. That's just my comment.

CHAIR BEACH: Thanks, Dave. You know, and I had a similar comment, we asked NIOSH to look at other sites and compare them, but in that comparison, none of these sites that we looked at were similar to Metals and Controls, not Chapman Valve, not Linde Tunnels, the Vitro Residual Tiles. M&C's residual period had conditions and source terms which changed over time with workers performing intrusive activities. None of those other sites had the intrusive activities that Metals and Controls had. And during that period that led to exposures whose source terms and pathways likely were different, especially different than the D&D era that a lot of that source term data is coming from. So, I happen to agree.

Anything else?

MR. RUTHERFORD: Yeah, I -- I -- I respectfully disagree. I -- I think that we pointed at -- pointed out in our paper that there were similarities.

And in addition, as I've already said, we -- we plan to provide a revised table one that shows you some of the activities that were occurring at these other sites, which are consistent with -- with what occurred at M&C. So, and I'll just leave it at that.

CHAIR BEACH: So, are you working on something that we have not seen?

MR. RUTHERFORD: As I pointed out at the last work group meeting, there are two things that we -- we plan to have completed prior to the August Board meeting, and that is an updated table one that that actually puts into more detail of what table -- when I say table one, SC&A put out a table one comparison to our table that we had previously put out as the table with -- or with sites that had been reviewed, a comparison of sites, AWE sites. And at that last work group meeting, I indicated that we would provide a -- an updated table with to that.

In addition, if you remember, we did not have time to respond to SC&A's second -- or SC&A's response to our response. It was put out a week or two prior to the work group meeting, so we had no time to respond to that. We're working on in response to that, that we in -- and I indicated that, and we would have -- we will have that to the -- to the work group prior to the August Board meeting.

CHAIR BEACH: Okay. And then we'll get back to that at the end of the meeting. Thanks, LaVon.

Any other comments work group members before we move on --

MEMBER MARTINEZ: Yeah, I do.

CHAIR BEACH: -- to Brant?

MEMBER MARTINEZ: Yeah, Josie, this is Nicole. So, --

CHAIR BEACH: Hi.

MEMBER MARTINEZ: Hi. LaVon, you mentioned that -- you mentioned -- I forget what it was -- in a report and then you said you're working on a new table. Is the aforementioned report, slash, paper, is that the January one that you're referring to?

MR. RUTHERFORD: Actually, Dr. Martinez, what I'm talking about is -- is we issued our January report, which responded to SC&A supplemental review.

MEMBER MARTINEZ: Yes.

MR. RUTHERFORD: Ultimately, after that, SC&A issued another response to our response. That response came out roughly two weeks prior to the April work group -- or the -- whatever, was it May work group meeting? -- May work group meeting. We had no time to respond to that. And I -- we plan to respond to that as well as, as I indicated in that last work group meeting, providing an updated table that provided more detail about the activities that occurred at these sites.

MEMBER MARTINEZ: Okay, thank you. I just wanted to make sure that I was -- as I mentioned, I'm new to this group, and there is a lot on the website -- I just wanted to make sure I was looking at the correct report. Thank you.

CHAIR BEACH: All right. Thanks, LaVon.

PETITIONER'S CONCERNS

CHAIR BEACH: Brant, are you ready for the next discussion, the

petitioners concerns?

DR. ULSH: No, but let's go.

CHAIR BEACH: Take -- take your time and get -- you're fine.

DR. ULSH: Okay, let's see. Let me share screen again.

MEMBER MARTINEZ: Actually, as he's doing that -- this is Nicole. May I ask one more question.

CHAIR BEACH: Yes, go ahead, Nicole. Please --

MEMBER MARTINEZ: And this is this is a little bit of a sidebar question, so I can save it if -- if that's more appropriate. But I had a question. It was about -- I think it was about the sediment and the 95th percentile. I was curious if NIOSH or SC&A, or whoever, if you assign a probability distribution to then do the 95th percentile and you do that whenever you have enough data to do so, and then otherwise, you do a conservative deterministic estimate of the factors involved in the dose reconstruction?

CHAIR BEACH: Is that a question for NIOSH, Nicole?

MEMBER MARTINEZ: Yeah, I think it is -- would be --

CHAIR BEACH: Yeah, I think so, too.

MEMBER MARTINEZ: -- for NIOSH, yeah.

MR. RUTHERFORD: Actually, I will let Pat describe how we did the -- come up with a 95th percentile.

MEMBER MARTINEZ: I don't want to derail the agenda. If it's better to talk about that later, that's fine.

MR. RUTHERFORD: I really don't think it will take that much.

MEMBER MARTINEZ: Oh, okay.

CHAIR BEACH: Yeah, and I'm fine with that.

MEMBER MARTINEZ: Okay, thank you, Josie.

CHAIR BEACH: Go ahead.

MR. MCCLOSKEY: So, we had -- in the drain characterization survey is what we're talking about, in the subsurface inside building 10 --

MEMBER MARTINEZ: Yes.

MR. MCCLOSKEY: -- model that we have, there were 20 subsurface mass-based samples taken. And we took those and we did a -- an evaluation by our statisticians to determine the 95th percentile from that, and it was -- I believe it was rank order assembly of that data, Mutty can correct me if I'm wrong, but -- and also, if you think about the way the -- the survey was taken by Metals and Controls of that subsurface, they -- it was more of a characterization where they -- they -- they looked at the past work in the building and they understood where all of the radioactive material work was done and where all the transfer routes were throughout the building, and they targeted that survey, you know, with knowledge of the work and with emission simulation (ph) surveys to know where the hot spots were. And they made sure they targeted it for the worst-case scenario. So, from those data points, we took our 95th percentile. Does that answer your question, Dr. Martinez?

MEMBER MARTINEZ: It does. I was mostly curious as to the -- maybe it's just my curiosity -- as to the -- the probability distribution, because it sounds like they did a distribution then did a cumulative probability distribution, then pick the 95th percent, but I can dig into that later. Thank you.

MR. MCCLOSKEY: Sure.

DR. ULSH: Okay. Is it time for me now, Josie?

CHAIR BEACH: Yes, go ahead. Thanks.

DR. ULSH: Okay. Is -- do I have the slides displayed correctly?

MEMBER MARTINEZ: Yes.

DR. ULSH: Okay.

CHAIR BEACH: Yes.

DR. ULSH: So, I'm going to cover some things that Joe covered and also that were covered here in the discussion after. And kind of like Nicole, you know, I'm -- I'm new to the Metals and Controls process, so like I said, if I misspeak on anything, there are plenty of people here that will put me back on the right path.

So, in this present -- I took this, this outline directly from the agenda, and the second bullet item, the -- the blended survey -- the subsurface outside and blended survey data gets a little bit confusing, but I think we can work our way through it. I'm first going to talk about the comparability of drain cleaning. That was an issue that the petitioner raised. And then I'm going to talk about the subsurface outside data briefly, but more I'm going to be talking about the inside data, because I think that's where a lot of the concern that remains applies.

All right. So, just to, again, put us all on the same page, the petitioner for SEC-236, after the last working group meeting in early May, he provided comments that were dated May 27th. And the purpose of this presentation, as I understand it from the agenda, is to respond to those. And the petitioner presented two main points that related to the comparability of

drain cleaning between D&D and maintenance workers and also the use of blended data. But again, it's a little bit confusing. We'll get into the inside subsurface data too.

So, just to review, we are presenting a bounding method to -- to put a cap on --

DR. TAULBEE: Brant, your slides have not advanced. Sorry to interrupt.

DR. ULSH: Thank you, Tim. I'm driving two computers, and apparently, I forgot to drive this -- the one that counted. Okay. Thank you, Tim.

So, just to review the internal doses, we are proposing to bound them using -- this is indoor data -- using a survey from 1996. And like I think Pat said, this is not meant to be a random representative survey. This is a targeted survey. So, they targeted the sampling to areas of suspected high contamination. That means that it is biased high in all likelihood. It's not representative. That gives us more -- even more confidence that we are being appropriately conservative. It notably includes soil data around a fuel rod and a drain line, and I'll be talking a bit about that. And the intakes that we calculated, the bounding intakes, are based on the 95th percentile concentration. And you can see the 6887 picocuries per gram. And that's about 1 percent of the specific activity of natural uranium. That goes to Nicole's earlier question. We're putting we're making that point just for context to show that this is really a bounding scenario. And let me see if I can advance both at the same time.

Okay. So, the outcome -- the outside -- outdoor source term is based

on surveys, again, that were targeted to areas of likely contamination. And it's also based on the 95th percentile. The intakes that we calculate are based on, as has been discussed, 95th percentile Mound dust loading. Now, notably, we assume that all subsurface soil and piping are at the 95th percentile concentration, even though we know that more than 80 percent of the source term, the operational source term, involved sources that are not covered by this program. And none of the source term that was added during the residual period was covered activities. It's just that we don't have any way to plausibly disentangle those, so we're just taking what's there without trying to separate it out into covered and noncovered. And the result is that that's another layer of -- of claimant favorability in our method.

So, the first issue comparability of drain cleaning D&D versus maintenance workers, and this is a theme that you're going to see kind of repeated throughout my presentation. Here is the -- the quote -- the bullet is the quote from the petitioner that -- the petitioner's comments. He said that the health physics awareness training and monitoring provided for D&D workers did not exist for AWE residual period maintenance workers. So, please don't miss -- when I respond to these comments, please don't misunderstand what I'm saying. I'm not saying that these are unimportant points or that they don't matter. What I'm saying is, this isn't the context where that has a big impact. If we were doing a best estimate dose reconstruction, and those are pretty rare, then these points could be more important than they are here. But that's not what we're talking about here. We're talking about trying to come up with a bounding internal dose

estimate. And we are using a source term calculation to -- to bound the intakes. We are not basing that source term calculation on any assumptions at all about the awareness of the workers to the hazards that they were working with, the monitoring -- because we're not using monitoring, it's a source term data. We're not making any assumptions that these factors were the same between the two groups, between the maintenance workers and the D&D workers. I know that rhetorically, it's important in that context of maybe a best estimate D&D, it would be more relevant than it is here. But that's just not a factor that is included in our source term calculation.

The next comment was that the methods and means of performing the tasks were completely different. Well, you know, I might take issue with the word completely. There were certainly unique tasks that the maintenance workers performed and unique tasks that the D&D workers performed, and then there was some overlap. But I don't want to get drug down a rabbit hole on a rhetorical point here. Our source term calculation does not make any assumption that the work, the activities that were being performed, the tasks that were being performed, are the same between the two groups. That's not a factor in the source term calculation.

The next comment was the tasks were completely different, and it placed the residual period maintenance workers in more intimate contact with the residual contamination. Okay, point taken. That's an important fact when you're doing those reconstructions. But we're doing a bounding methanol -- methodology based on a source term calculation, we are assuming intimate contact with the source term. We're not assuming that the level of contact with the source term was exactly the same between the

two groups or that it was greater. That's not a factor that's included in the source term calculation. We are also not taking credit for any use of -- of personal protective equipment, respiratory protection, or engineering controls. Because, you know, the petitioner is concerned that -- and I think SC&A is concerned -- that we're trying to say that everything was the same between those two groups. We're doing a source term calculation. We're not taking credit for any of those factors, so it doesn't affect our ability to bound the internal doses.

The tasks were completely different and placed the residual maintenance workers at a higher risk of elevated exposure to residual radiation. Again, and I know you're probably going to be tired of hearing this, that's not a factor in our source term calculation. Our models reflect the fact that the maintenance workers performed activities where they were placed at risk of exposure to the residual activities. We don't assume any protective measures. In fact, we have air monitoring data and bioassay data from the D&D activities at -- at Metals and Controls. And the petitioner, you know, asserts that the exposure potential was higher for the maintenance workers -- or yes, for the maintenance workers. And if you look at what our bounding internal dose method calculates, those doses are, in fact, greater for the maintenance workers than the doses that we calculate for the D&D workers, just as the petitioner asserts they should be because we have to make a number of bounding assumptions.

So, the next general area is the use of blended D&D characterization survey. This is where it got a little bit confusing. I think just maybe a mismatch on the agenda with the petitioners' comments. The petitioner

quoted SC&A's finding from August of last year, and I think Joe presented this as well. The back application of a 19 -- high 1995 result to limit inside subsurface activity is not -- they're concerned that that's not adequately supported. But I just need to make it clear just to avoid any confusion, there was no data blending for the inside subsurface model. The insert -- inside data is separate from the outside data.

So, let's move into the inside data. There. Okay. So, one of the scenarios, one of the data points, or some of the data points that we used, that Pat described earlier, were samples taking -- taken around a pipe where a uranium fuel pin was found inside the pipe. Now, what is the significance of that scenario? What is the significance of that fuel pin being there? Well, first of all, it tells us that this is not one of those pipes that was snaked out, otherwise, the fuel pin wouldn't be there. It is not one of those pipes that was replaced, otherwise, the fuel pin wouldn't either. That's the main point is that it gives us some assurance that we're looking at a worst-case scenario pipe, because that fuel pin is still there.

Now, you know, there was some discussion about could the -- the exposure potential be higher in the residual period when the maintenance work was going on than it is at the D&D period. Well, keep in mind, the 95th percentile value that we are proposing is dominated by this -- these particular samples around this fuel -- this fuel pin in the pipe. And think about what would happen with the fuel going in the pipe. On day one, when the pin goes down the pipe, starting then, the probable uranium concentration in the soil around the pipe is background most likely. And over time, as the pin degrades physically, corrodes, starts decaying,

physically not -- not radioactive, but physically, and the pipe does the same thing it corrodes over time, it develops cracks and fissures, the uranium from the fuel pin starts to migrate into the soil. So, you're starting from essentially background and then on that day in 1995, I think, the samples are taken. The concentrations would have been increasing over time, as the -- as the uranium migrates off the fuel pin into the soil. So, I think that we could make the case pretty convincingly that in the part of the -- the distribution that matters, the upper tail that -- around the 95th percentile, that's actually higher in 1995, than it would have been in -- in preceding years. So, in order for a conclusion to be drawn that we cannot possibly bound doses, a plausible scenario that would result in higher doses than the one that we proposed is needed. And so far, we don't think that any specific scenario higher than this one has been presented. And so, we conclude that it's just not plausible that there's a scenario that exists that would result in a higher source term estimate. And again, the survey data that we used was not random, it was not meant to be representative; it was targeted, so it's biased high. That gives us another lay -- layer of confidence that the 95th percentile is clamant favorable. And we assume that all of the subsurface soil and piping are at the 95th percentile concentration, even though we know 80 percent of the source term is not covered.

Now, I want to address this issue about the phrase extreme conservatism, because I think a lot of hay is being made of the fact that we use that phrase. And it's been presented -- being presented as if it's synonymous with implausibly high. But this was our phrase, we said this, and that's not what we were implying when we -- when we said that we

were using extreme conservative -- extremely conservative. I mean, this entire program is extremely conservative. Start with the fact that we apply the 99th percentile probability of causation value. That is extremely conservative. And then -- then you can go through all of the other claimant favorable assumptions that we make, because we are directed by law to give claimants the benefit of the doubt when we do our dose reconstructions. But it seems that we've been kind of sucked into this doom loop where we're pushed to account for these hypothetical situations with high exposures, and then we show that we that those can be bounded and then our knees are kicked out from under us saying that it's implausibly high or insufficiently accurate. So, when we say extremely conservative, we are not saying implausibly high. We are saying that we are being claimant favorable as we are required to do.

Okay. The precedent for the application of the back application of data. We are proposing to use survey data from 1996 throughout the residual period from '68 to '97, and that is similar to the situation -- similar to what was done at Chapman Valve, where soil data was -- from 1987 was back extrapolated all the way back to 1949. Chapman Valve also involved diverse intrusive work, similar to the situation at Metals and Controls. Now, let me pause and make very clear what I'm saying. I'm not saying that Chapman valve and Metals and Controls were 100 percent identical, the activities were 100 percent identical. I'm not saying that. What I'm saying is that they were diverse and intrusive, just like the activities at Metals and Controls were diverse and inclusive. Similarly, at Linde. Data from 2001 was back applied all the way back to 1970. And that included subsurface

maintenance utility work, and confined spaces by the way. Vitro, air data was applied from 1977 back to 1965. So, again, -- and the important point here is that the Board concurred with all of these back extrapolations.

Now, you know, I understand the working group members have to decide to what degree they are bound by precedent. But that is certainly applied to us when we have established precedent. The expectation is that we -- that we acknowledge that and act accordingly.

So, the petitioner quoted SC&A's first observation, and that's the use of blended D&D characterization data outside, and I think SC&A raised the concern about hot spots and whether or not using this data was appropriate given the presence of hot spots. But the important point here is that we're modeling representative exposures and not -- and hot spots are included in the dataset that we are modeling. Sure, there are hot spots. That's one reason why we use the 95th percentile to address those hot spots and uncertainties. Now, it's not the 100th percentile. It's not the max value. We aren't saying that there aren't hot spots here or there that might exceed that value. But it's not -- that's not representative. That's not the representative dose that we are trying to establish.

Now, NIOSH and SC&A, have done extensive work on this model. And in 2020, SC&A recommended closing this issue. And here's a quote from them. They said in theory, we can assume that a worker might be involved in subsurface work in building 10, two months per year, and spend 10 months per year exposed outdoors to resuspended contaminated sediments. Given that scenario, the additional dose from this pathway of less than a millirem per year can be ignored. Now, I don't want to misspeak, I think

from Joe's remarks, that maybe that's still SC&A's position, but I'll let him or someone from SC&A correct me on that if I'm wrong. That is our position today.

The petitioner quoted SC&A's finding two, that the application of surrogate data from the Mound project to provide a dust-loading factor does not meet the surrogate data policy. Now, it's worth noting that SC&A conducted an independent evaluation and came up with a similar dust-loading estimate to ours. They previously agreed that Mound data could be applied to Metals and Controls. We both agreed, NIOSH and SC&A both agreed, that Mound dust-loading data would not necessarily apply blindly at every other site that would have to be considered on an individual basis. And I don't know this, I think maybe that this is an issue where perhaps there exists some disagreement between NIOSH and SC&A today. We contend that the application of outdoor dust loading to indoor environments, including confined spaces, is a TBD issue; it is not an SEC issue.

So, let me talk a little bit about this issue of confined spaces. They are typically -- they involve low airflow environments, where heavy gases can displace oxygen. So, there is a suffocation hazard to workers. Typically confined -- because of that -- nothing to do with radioactive material. But because of that issue, confined spaces require respiratory protection, supplied air usually, because of that hazard. But if it's a low-flow environment that mitigates against high-dust loading, but it's being presented here as if it's both a low-flow environment where dust could be trapped, but also an environment where dust is stirred up in the first place, which is typically a high-flow environment. It's both confined where oxygen

can be displaced, but it's also an environment where workers went in without PPE, and so they could be exposed to high airborne radioactive materials. I mean, it's sort of like a Schrodinger's cat situation where the cat is both alive and dead depending on the observer. These spaces are being presented with two different aspects and they're not consistent.

Now SC&A's present -- presentation contain the quote from NIOSH to imply that NIOSH had agreed that the confined space issue is broadly relevant to Metals and Controls. We did not agree to that. We agreed that the confined space issue should be addressed globally in the context of OTIB-70. And that was in the very next bullet after the one that SC&A quoted. Up -- up until recently, SC&A agreed with NIOSH that work in manholes did not even involve radioactive materials. And the workers involved that were interviewed, they were involved in the drain unclogging, they described it sometimes involves digging shallow trenches to access the clogged lines. Now, these trenches were about three to three-and-a-half foot -- feet deep. In a shallow trench like this that is open to the environment on top does not fit the typical definition of a confined space that can elevate airborne radioactivity concentrations. And it's certainly not a situation that is unique to Metals and Controls where there's no precedent -- I mean, drains clogged all across the DOE complex. This is not a unique situation to Metals and Controls. But it is, I think, at least to my knowledge, the first time that unclogging a drain is being presented as a confined space issue. Now, I might be wrong, because I've been gone for a decade, but I'm not aware of another situation like that.

So, even if you reject everything that I've said above, confined spaces

is a TBD issue. We -- I mean, the literature is full of confine -- confined space measurements, resuspension factors, dust loading, from zero all the way up to choke -- a choking environment. It's not an unbound double parameter. If you think we've used the wrong one, what I can commit to you is that we would participate in a conversation about what a more appropriate value might be and how it should be applied. But we are certainly not agreeing that this is an issue that compromises our ability to bound internal doses at Metals and Controls.

Okay. Let me see here. So, the petitioner quoted SC&A's observation two that references to the Metals and Controls Safety and Health Manual do not substantiate the conservatism of the 95th percentile soil contamination value. Again, I mean, we are not trying to substantiate the conservatism of the 95th percentile value by relying on those documents. The conservatism of the 95th percentile soil contamination value is based on the sampling data that was collected and that was targeted to contaminated areas. We, again -- our intake calculation does not take credit for work practices, for PPE, for training or any assumed -- assumptions about the robustness of the radiation protection program.

So, in conclusion, it's important to remember what parameters impact our bounding intake calculation and what parameters do not impact them. Our modeled intake is a function of source term. It is a function of resuspension factor and dust loading, and it is a factor of occupancy and time. And I think that roughly corresponds to the three legs of the stool that Joe mentioned. But our modeled intake is not impacted by any assumptions about training or knowledge of hazards or about PPE or about monitoring.

Those are important factors in the context of perhaps a best estimate dose reconstruction, but here we are talking about a bounding estimate in the context of an SEC evaluation.

So, we, again -- just to conclude here, we assume that all of the subsurface soil and piping are at the 95th percentile concentration, even though 80 -- over 80 percent of the source term is not covered. We assume that all workers who are occupationally exposed are in close contact with the 95th percentile concentration. So, again, don't misinterpret my last bullet. I'm not saying that the petitioner isn't raising important issues, or, you know, that those should be ignored; we just need to discuss them in the appropriate context.

So, data have been extrapolated to cover residual periods at other sites with Board concurrence, and that's what we are proposing to do here at Metals and Controls. We are not aware of any plausible bounding scenario for the source term other than the fuel pin in the pipe that we discussed. Now, I don't think that you can claim that that scenario is implausibly high, because it's a scenario that actually existed at Metals and Controls. We are using -- because it's a bounding estimate, we are using multiple claimant favorable assumptions, and we just don't think that the workers exposures were higher than these assumptions -- assumptions suggest. And it -- we do think that it's sufficiently accurate because it's based on the actual source term, from Metals and Controls. And I think that SC&A summed it up very well in their 2021 paper, when they said taken in combination, SC&A believes that the methods and assumptions used by NIOSH to reconstruct internal doses, the M&C workers involved in subsurface maintenance and

repurposing activity in building 10 during the residual period are scientifically sound and claimant favorable. Now, you know, I'm not going to claim anything about what their position is today, but that's what it was in 2021. And our position is the same. We agreed with them in 2021, and we think they had it right the first time.

And I think I'm done.

CHAIR BEACH: All right, thank Brad -- Brant. You ready for some questions?

DR. ULSH: Hit me.

CHAIR BEACH: I want to take you back to slide 15. You talked about the fuel pin.

DR. ULSH: This one?

CHAIR BEACH: Yeah.

DR. ULSH: Okay.

CHAIR BEACH: So, with that fuel pin, there is no bounding scenario -- scenario for internal intakes of the fuel pin. It was a solid piece of metal, uranium. So, it's really an external alpha radiation. And there were more than just that one fuel pin found. That one was in a pipe that D&D found in '95-'96, I believe. But there was also workers who carried around the fuel pin in their back pocket and showed to people. That's neither here nor there, but it's just -- it seems like you were guesstimating of that being the highest source. The -- the real question is whether the bounding value can represent radioactive source terms and exposure scenarios for the previous 27 years of Metals and Control -- Controls radiation -- or excuse me -- residual period with sufficient accuracy. And we do have some new source

terms that -- I know you discussed them, exposures that were identified, you know, cutting the pipe scale, coagulants (ph), confined spaces, which NIOSH has shown can be bound without -- or I should say you haven't shown that you can bound those without extreme conservative assumptions. And I believe we're still missing some models if we're going to cover some of these other newer source terms, which I'm sure we'll get into later.

And then my only other comment was on 19. You said that, quote, petitioners quote, SC&A's finding -- SC&A at that point, may have had that stance. The work group never agreed with that, which is why we moved forward to review all the documents and everything that had gone on with Metals and Controls, because the work group was uncomfortable with many of the assumptions and models that were presented, which I'm sure you'll hear more from us later today. If you have any responses, that's great. If not, I'll ask for others -- other comments or questions.

DR. ULSH: I do. I do have a comment on your comments on slide 15, --

CHAIR BEACH: Okay,

DR. ULSH: -- the fuel pin in the pipe. To be clear, what I'm saying here is that we modeled our intake on soil contamination sample data. And the soil contamination was -- the high ones, the ones that dominate the 95th percentile, were in the soil around where the fuel pipe -- where the fuel pin was found inside the pipe. And that is a pretty -- I mean, I guess our point is that this scenario where the fuel pin is still there give some credence to the fact that this pipe was undisturbed. Otherwise, the fuel pin wouldn't be there. So, it kind of represents the worst-case scenario from that

standpoint. But also, the fact that this is 1 percent of the natural -- the concentration of natural uranium, I mean, that indicates that the soil around the pipe was -- was relatively undisturbed, and it's a very high -- okay, no, I don't want to say that. It's a bounding-type scenario that -- you know, if there were coagulant, for instance, that's another one of those Schrodinger's cat kind of things where, you know, the -- the argument is being made the coagulant, both increases the concentration of radioactive material in the pipes, but then, when the pipe is exposed and cut -- I mean, this is a gooey substance, which would suppress the resuspension of dust. So, it's both gooey and sticky, which increases the concentration but then as soon as a worker gets near it, it turns into dust, and he can respire it. That's just not plausible. I guess does anyone else on our team have a response about the plausibility or rather the bounding nature of this scenario?

DR. TAULBEE: Yes, this is Tim. Just to try and emphasize this just a little bit more -- well stated there Brant -- is that we assume this 95th percentile every time they go in to dig up one of these pipes. So, this is on an annual basis. So, this isn't just a one-time shot. We are assuming this every year that they go in, and they're experiencing this very high concentration of nearly 1 percent uranium. So, I think that's important to point out. And I see that Dr. Martinez has her hand up.

CHAIR BEACH: Go ahead, Nicole.

MEMBER MARTINEZ: Thank you. Two things. The first one is real quick and maybe silly, but I just wanted to confirm that TBD was to be determined in this context.

DR. ULSH: It's actually technical basis document.

MEMBER MARTINEZ: Technical basis document, thank you. Good thing I confirmed it. It wasn't silly. The -- the second thing was along the conversation we were just having is maybe I mishearing. But this is kind of the -- the feeling I got in our last meeting, is it -- what I hear is that we're saying it's both too conservative and not conservative enough. And those two things feel like they don't go together. And I don't know how to reconcile that. But that's kind of what I -- it feels like.

DR. ULSH: Well, we're in the same boat, Nicole. That's kind of the point I was making.

MEMBER ANDERSON: I would say that comes to be the issue of accuracy, that it could be too low, or it could be too high. So, accuracy then becomes uncertain. And that's -- that's really part of the issue here is how accurate is this, and then when you don't have a lot of data and then you model it, what's the distribution there and how do you come up with 95 percent. I think you raised that issue of 95, or -- or whatever. So, the statistics of it, I -- you can always put things into a statistical model and come out with some kind of result and how accurate or reliable is that.

The question I had is you talked about the targeting samples that bound the pin and -- and how -- how did they estimate? You said that they targeted high point -- high areas. It was likely high point -- high areas. Do you know what the criteria actually were? How -- how did they determine whether it might have been high?

DR. ULSH: Okay.

MEMBER ANDERSON: Was this chosen because it was a pipe that had never been disturbed before or were they actually getting measurements

above the surface within the facility that were elevated and therefore, there may be something here.

DR. ULSH: Okay. Well, I will address the first part of your question while I give the team here time to address the second part of your question. With regard to the question about sufficient accuracy as -- as we've previously done, just on this call, that is a much more important and compelling issue if you're talking about very high doses that can impact a POC determination. And we're talking about committed doses that are on the order of 71 millirem. So, I mean, if we've got it wrong by 20 percent, you're still under 100 millirem. So, the Board, the working group -- well, the Board SC&A, and us have all kind of committed to the position in the past at least, that when doses are this low, you can tolerate less precision and less accuracy.

So, Pat, can you address -- or someone -- can -- can address the question about how the survey locations were chosen?

MR. MCCLOSKEY: Yeah. I can -- I can do that for you, Brant.

So, that '95 survey that we talked about where Metals and Controls characterize the subsurface, Dr. Kotelchuck. What they did with that, they were very interested in two things, basically, the criticality concerns after they found that fuel pin, and also the safety of the maintenance work -- workers that were doing the subsurface maintenance that was ongoing up until and even past 1995. And so, if you read that drainage characterization survey, which is, for the record, SRDB165965. In section 2.1 of that characterization, they say that, after available -- I'm going to read from it -- (reading): After available Texas Instrument 'as-built' diagrams were

reviewed, the locations were selected based on historical information or suspected transfer of contaminate -- contaminated material to these lines. Radiological survey data from previous investigations and removal actions (undertaken in the pilot program) were used to identify potential routes of transfer through the facility. And in general, one cast iron and one vitreous clay line were present at each location and if selected locations were blocked by stationary equipment or stock, alternate representative locations were identified. And so, they had -- had a knowledge of the work that was done there, and they also did, like I said earlier, gamma scintillator surveys to determine from the surface above the concrete, you know, where high levels of radiation were emanating, and those -- that is the targeting aspect of this survey that Dr. Ulsh talked about.

MEMBER KOTELCHUCK: Uh-huh.

MEMBER ANDERSON: Okay. Thanks. The other question I had for you is during the earlier years, when they went in and dug a pit, did they just return the soil they took out back into the hole or they -- did they put in new clean fill? I know they would have, maybe, had a break up the concrete above. They wouldn't probably put that back in. But the question would be in '92 was there -- they were doing repairs and replacement, and it sounded like quite a bit, during those earlier years. And one would hope some of the exposure might have -- of the earlier period might have been removed so it wouldn't be part of your survey results. So, it's only what was left.

CHAIR BEACH: Hey, Henry, this is Josie. One of the things I might add is they wouldn't have saw that dirt as clean or dirty because they weren't aware of any hazards when they were doing the job.

MEMBER ANDERSON: So, they're likely to just have pushed it back in.

CHAIR BEACH: Yes, most likely.

MEMBER ANDERSON: Yeah.

MR. MCCLOSKEY: I could talk about that a little --

MEMBER ANDERSON: I thought --

MR. MCCLOSKEY: -- if you like. It would vary. I mean, they had larger jobs that they would contract out where contractors would come in and cut the concrete and do the excavation. In one case -- in the larger cases, for larger tanks, they would put clean soil back in, and then the M&C workers would go in and do their install. But for the smaller emergent-type work, for a flood or a clog that they had to get to right away, it is -- those workers would do more of a shallow dig and, likely like Josie said, put that same soil right back in or -- we don't have any indication of them going off and get -- getting cleaned or do that, so our assumption would be that that soil was replaced.

MEMBER ANDERSON: Thank you.

CHAIR BEACH: Any other questions, comments?

MEMBER KOTELCHUCK: Dave.

CHAIR BEACH: Dave, go ahead.

MEMBER KOTELCHUCK: Again, coming back to that slide 15. It's still on the screen, which is fine. The first sentence, the presence of the fuel pin in the pipe indicates we've captured the worst-case scenario with the 95th percentile. I'm -- and Pat, I'm not sure if what you were just reading was from the Weston report. I would -- from 1996, which

MR. MCCLOSKEY: It was.

MEMBER KOTELCHUCK: It was. That's what I thought, because it seemed familiar. I reread that recently. And I noted that when they were looking at the physical characteristics of what was happening, they said that the fuel -- the fuel rod was five inches long and a half inch in diameter. And a pipe is four inches in diameter. And so let me ask, and in a -- in a simple way, I mean, the cross section -- the relative cross section of the fuel pin and the pipe, right, are 64 to one. And the question in my mind was, is it possible that at another time, which was not sampled, of course, that several fuel rods could have entered the system and sat there for years? Is -- and that would be a -- a worst case -- a worst case scenario? In other words, what -- why is that not possible that there may have been, in fact, more than one at some times -- at various times? We took the one and we said, we'll find it every -- the NIOSH model says we'll apply it every single year. Is -- what's -- is there something wrong with the reasoning that there may have been more than one fuel rod?

CHAIR BEACH: And Dave, let me ask, you're talking about in a different pipe potentially?

MEMBER KOTELCHUCK: No, the -- the pipe that they got the fuel rod from was the 4-inch pipe.

CHAIR BEACH: Yeah, no, but I mean, all the pipes that the maintenance workers dug up were four inch or --

MEMBER KOTELCHUCK: Four or six --

CHAIR ANDERSON: -- six --

MEMBER KOTELCHUCK: -- actually.

CHAIR BEACH: Yeah. So, I was just -- I thought you were asking if

maybe they dug up those at other time periods, not just what was in that one particular pipe?

MEMBER KOTELCHUCK: Oh, I -- yes. I mean, that is -- it's just -- suggests that the worst-case scenario was a single fuel pin, which was then applied to every single year to give, if you will, maximization. But I wondered whether in any of the fuel pipes that people were working -- in any of the pipes and people were working with, there may have been more than one fuel rod, which --

MR. RUTHERFORD: Pat, let me take a shot, and then you prepare.

MEMBER KOTELCHUCK: Okay, please.

MR. RUTHERFORD: I -- I guess what I would say is we can't prove a negative. What -- but we certainly see no evidence of that situation. We don't see any other comparable soil sampling data that indicates that there were other situations where a fuel pin was there and then somehow got moved down the system so that it's not there anymore.

MEMBER KOTELCHUCK: I -- I -- I understand. It's -- you can't prove a negative. But in fact, we are --

MR. RUTHERFORD: Well, --

MEMBER KOTELCHUCK: -- that this is the worst -- that the single pin is the worst-case scenario.

MR. RUTHERFORD: We also have the benefit of that (indiscernible), you know, surveys, that -- they would snake a long -- if you have remember from that same report that you read, Dr. Kotelchuck, they -- they would snake a long peanut probe --

MEMBER KOTELCHUCK: Right.

MR. RUTHERFORD: -- detector into -- into all of the places they could access. They did gamma scintillator surveys, and that would be found -- additional fuel pins would be found that way more than likely. So, --

MEMBER KOTELCHUCK: Well, --

MR. RUTHERFORD: -- and there is fuel accountability issues too that would drive us to believe --

MEMBER KOTELCHUCK: Well, that is a -- that's -- that's real, except that, you know, we have the fellow during the interviews where the fellow was -- found a fuel rod, and it was not the 5-inch fuel rod. It was somewhere on site. And the man brought it in into one of the interviewees in the EHS department. So, I'm not sure that -- there should have been an accounting. I mean, you can't -- you can't lose -- you can't lose 10 percent of your -- your uranium and thorium just out of no where. I mean, accountings are kept. But --

MR. RUTHERFORD: Can I add something. Dr. Kotelchuck?

MEMBER KOTELCHUCK: Yes, please.

MR. RUTHERFORD: Yeah. I just wanted to add that remember, yes, we we've talked about the fuel pin scenario as being the worst case, but it's not exactly the fuel pin in and of itself. It's the issue from an inhalation perspective. It's actually the contamination of the soil around that fuel pin. So, whether there's one or four, what is the contamination around that fuel pin. And in this case, around that fuel pin, we had 10 percent of the specific activity of uranium. That is an extreme -- I mean, extremely conserved -- conservative -- using the 1 percent, that we use it the 95th percentile, --

MEMBER KOTELCHUCK: Right.

MR. RUTHERFORD: -- that basically assumes every soil -- bit of the soil underneath building 10 as 1 percent of this specific activity of uranium. And, you know, I think -- I think just the knowing that that sample around that fuel pin was 10 percent gives you a very good feel of how high that concentration was. And then we turn around and assume 1 percent over every bit of the soil. And then we assume that from the time they start cutting into that concrete or get -- breaking out the concrete, going in the whole time they're being exposed to that 1 percent, and it's being lifted and brought up and then into our intake model and then we -- we assume that occurs for two months, eight hours day, up to two months. And -- and so when they go to cut a line that -- that has no contamination, or whatever, we're still assuming that was that same value. And -- and, you know, I just wanted to remind everybody of that.

MEMBER KOTELCHUCK: Thank you.

CHAIR BEACH: thanks, LaVon. Any other comments or questions? I think when we're finished with this, we should take a break and then move on to the petitioners' comments, but I don't want to cut anybody short, so.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: Any other comments? Questions?

MEMBER KOTELCHUCK: Good idea.

CHAIR BEACH: Okay. Hearing no one, Rashaun, what do you think, 15- or 30-minute break? It's about lunchtime for you guys or past lunch.

DR. ROBERTS: It is past lunch. What would the members -- what would the members like?

CHAIR BEACH: I'd be comfortable with 30, but I can go less too,

depending on what others prefer.

MEMBER ANDERSON: Thirty is fine for me.

MEMBER KOTELCHUCK: Thirty is fine.

CHAIR BEACH: Let's say 10 till two. That gives us about three extra minutes.

MEMBER KOTELCHUCK: Okay.

DR. ROBERTS: Sounds good.

CHAIR BEACH: All right. Thanks, everyone.

MEMBER KOTELCHUCK: Thank you.

(Whereupon, a lunch break was taken from 1:18 p.m. E.D.T. until 1:50 p.m. E.D.T.)

DR. ROBERTS: I have 1:50 p.m. Eastern. I will take a quick roll call. So, Beach, are you back?

CHAIR BEACH: Yes, I'm here.

DR. ROBERTS: Okay. Anderson?

MEMBER ANDERSON: Yes, present.

DR. ROBERTS: Kotelchuck?

MEMBER KOTELCHUCK: Here.

DR. ROBERTS: Martinez?

MEMBER MARTINEZ: I'm here.

DR. ROBERTS: And Valerio? Loretta, are you on? Okay.

MEMBER VALERIO: Can you hear me now?

DR. ROBERTS: Yes, I can.

MEMBER VALERIO: Yes, I'm here.

DR. ROBERTS: Great. Great. Josie, over to you.

CHAIR BEACH: Did you ask for Andy? I didn't catch that if you did.

MEMBER ANDERSON: Yes. Yes.

CHAIR BEACH: Oh, hi, Andy. Sorry, I missed -- missed your voice. Okay. So, it looks like our agenda, we are up for the petitioners' comments, and I believe Mike was going to share his screen. Do you have access to that, Mike?

MR. MIKE ELLIOTT: Yes, I will share my screen now. Thank you, Josie. Give me just a second to change my view, so get it on presentation mode. I need to close the view of all the people. How does that look? Do people see my -- my -- my --

CHAIR BEACH: Yeah, that looks great.

MR. MIKE ELLIOTT: -- screen?

CHAIR BEACH: That looks great.

PETITIONER MIKE ELLIOTT'S COMMENTS

MR. MIKE ELLIOTT: Great, thank you. Let's see, Josie, is -- is it still morning out there? Well, I will say good morning, Chairperson Beach, and good day to Dr. Roberts, other Advisory Board Members who serve on M&C work group, and to all the others on the call at whatever time of day it is in your respective time zones. As Josie mentioned in her introductory remarks, my name is Mike Elliot. I'm a copetitioner on SEC petition SEC-236 that was submitted for evaluation in August of 2016.

The petition covers M&C construction and maintenance workers during the AWE residual period, which extended approximately 29 years from 1968 to 1997. For those who are new to the work group, my title at M&C in the

1990s was environmental branch manager. And in that capacity, I served as the project manager for the nuclear decommissioning project and termination of M&Cs special nuclear material license, SNM number 23. I was responsible for site characterization surveys and subsequent D&D activities. The impetus for M&C's nuclear decommissioning project really took hold after Congressman Synar -- I believe it was from Oklahoma -- identified it as one of the SNM license sites that NRC had failed to decommission in a timely manner after the operational activities had ceased. Consequently, NRC added MRC -- M&C -- excuse me -- to the site decommissioning management plan in 1990. So, you know, that was visibility that our management, especially down in Dallas at headquarters in Texas Instruments they did not want. So, in August of 1992, M&C --

CHAIR BEACH: Hey, Mike, -- Mike, --

MR. MIKE ELLIOTT: Yes?

CHAIR BEACH: -- let me stop you. Your slides are not advancing. Are --

MR. MIKE ELLIOTT: Yeah, I'm sorry. I don't have --

CHAIR BEACH: You're not there yet?

MR. MIKE ELLIOTT: Yeah. I'm just --

CHAIR BEACH: Oh, okay. Thank you.

MR. MIKE ELLIOTT: I decided this morning, with the new members, --

CHAIR BEACH: Okay.

MR. MIKE ELLIOTT: -- you know, Ulsh, the work -- work group member -- I apologize, I didn't catch your name --

CHAIR BEACH: Okay.

MR. MIKE ELLIOTT: Yeah. We have a couple -- couple new people. So, I just wanted to give a little bit of background.

CHAIR BEACH: Oh, thank you. Sorry about that, Mike.

MR. MIKE ELLIOTT: Oh, no problem. No problem. Thank you. And if it doesn't -- I'll let you know when I advance the slide. If it doesn't -- if it doesn't advance, then, please, do speak up again.

So, in August 1992, M&C initiated the nuclear -- what we call the nuclear decommissioning project by focusing on excavation of the former (indiscernible) radioactive waste burial site, which was located between buildings 11 and 12. In 1983 -- it's interesting to point out that in 1983, after ceasing all nuclear operations, the NRC had already released all the building interiors for unrestricted use, and according to NRC, the only remaining barrier to terminating the license was addressing the burial site, which is why we focused on that feature initially in 1992.

And we basically planned our action based on surveys from the 1980s, most of which were performed by Oak Ridge Associate Universities group, which we now know to have been inadequate for the purpose of actually determining how much material needed to be excavated. But with -- with that incomplete information, we initiated the project with the belief that we could remove all the low-level radioactive -- radioactive waste debris from the burial site over a weekend at a cost of about $250,000. That's what we told our management. That's what we told the NRC.

Five years later and as removal of over 500,000 cubic feet of radioactive contaminated soils and debris from both internal and external to -- to the buildings at a cost of $27 million dollars, the NRC terminated M&C's

SNM license and released the site for unrestricted use. Clearly, the magnitude and extent of residual contamination leftover from AWE operations far exceeded what anyone expected. We found extensive residual contamination in the previously release -- released building interiors, in subsurface soils and in the trenches, drains, vaults, and pits that carried subsurface services and utilities. And we found contamination in overhead areas, on at least one roof, and in exterior subsurface soils where waste management activities had historically been performed.

So, this also came with the realization that all during the residual period, 1968 to, you know, 1997, M&C construction and maintenance workers had been regularly working in contaminated areas with close and intimate contact with radioactive materials without any radiation training, monitoring, or controls, and, in fact, no awareness whatsoever that they were being exposed to these hazards. So, for this reason, we -- I and two other copetitioners have submitted the SEC petition evaluation that we're discussing.

All right, I just changed the slide. How's that look, Josie?

CHAIR BEACH: You got it.

MR. MIKE ELLIOTT: Thank you.

CHAIR BEACH: Thanks.

MR. MIKE ELLIOTT: All right. As concerns estimating the bounding dose of any member of the class, the only known facts based on historical records that are verifiably true are the following: There is no measurement or monitoring data for the class of workers covered under this petition for any of the work they performed during the residual period. Work was

performed, as I said, with radiological controls, no health physics training, and no awareness of any radiological hazards. Workers unknowingly came in direct contact -- direct and indirect contact with elevated levels of residual radioactivity that had been released in an uncontrolled manner during the operational period into subsurface soils, drains, some trenches, vaults, pits, and overhead areas in the building interiors, into exterior soil waste was managed, in -- or onto the roof of the building housed the majority of nuclear operations and into the pockets and recesses of certain pieces of manufacturing equipment that remained in service after the operational period concluded.

There is no known contemporaneous written records of the nature, extent, and duration of construction and maintenance activities that M&C workers performed in contaminated areas during any part of the residual period. All we really have is the distant memories of a handful of M&C workers were interviewed decades after the period in question.

In its 2022 supplemental review SC&A stated the following, as reported on this slide, M&C maintenance activities are unique in terms of their level of intrusiveness, work environments, and uncertain or unknown source terms. We certainly agree with that. Use of extreme conservatism in formulating proposed upper bound concentration to account for intrusive activities, high exposure conditions, uncertain facility activities, or unknown contamination sources is not a plausible approach to compensate for inadequate or insufficient -- any (indiscernible) -- insufficient information about M&C workers during the residual period.

So, now, let me specifically address some of the limitations that I see

in the NIOSH exposure modeling for estimating a bounding dose to M&C workers. And I'll do that over the next three slides; one on source term, one on resuspension factor, dust loading, and one on occupancy, slash, time but that's the three legs of the stool that Joe referred to earlier and -- and Mr. -- or Dr. Ulsh referenced. So, in terms of the source term for the subsurface inside, the 95th percentile of -- of one drain survey, which was -- okay. There were -- I went back and checked. There were about 20 samples, but it was 15 locations, okay. During -- and -- and this occurred during the D&D activities, all right. I'll -- I'll explain that in just a second. But we contend that is not bounding and not necessarily conservative for M&C construction and maintenance workers during the entire residual period from 1968 to 1997. It was just a snapshot in time, as it has been referenced to by others.

We -- we've heard a lot today about the discovery of this five-inch-long piece of fuel rod in sediment plugged pipe with elevated activity concentrations. It was mentioned by Mr. Rutherford. There was like 10 times, you know, natural uranium or concentrations of -- of uranium, natural uranium. So, around 53,000 picocuries per gram. That said, that does not necessarily equate to worst case as claimed by NIOSH. Yes, it indicates poor control over the operations, and it could have been, you know -- but who's to rule out that they couldn't have been other similarly plugged drains or worse that were cleaned up by M&C workers in the past.

And if you will give me a moment to just talk a little bit more about the drain survey, I believe I'm the only one on this call today who can say that I personally observed that five-inch piece of fuel road that came out. And contrary to what Dr. Ulsh suggested that, you know, it physically

degraded over time and that's what built up pipe with these elevated sediment levels that were measured there, the 53,000, I personally don't believe that conceptual model. I think that's completely incorrect. Okay. I -- like I said, I personally observed that piece of fuel rod. And it was not the least bit corroded, did not exhibit any physical decay whatsoever. It looked like it had just -- you know, just been manufactured that day. It was in perfectly good shape. I believe a more plausible explanation of why the fuel rod was found in that particular pipe was because the pipe was plugged with sediment -- 50 to 90 plugged with contaminated sediment, and I think that's why it got stuck. And I think that gets to Dr. Kotelchuck's point that, you know, why did that -- why did that -- that fuel rod get stuck in that pipe. I think it's because that that pipe was completely plugged or nearly completely plugged, 50 to 90 percent plugged, and it couldn't get through. It got plugged. And that just happens to be where -- you know, that was just a random location where one of these pipes (sic) got dropped down the drain. The contaminated sediments, I believe, came from suspended solids that were associated with the wet processes that we had in those areas, and probably floor washing, which is probably how the piece of pipe down there.

And -- and -- and I'd like to just point out, you know, we -- we -- Dr. Anderson, I believe, asked -- or yeah. Dr. Anderson asked how did we select these 15 locations to sample and Pat -- Mr. McCloskey, correctly stated what was in the report that, you know, TI and -- and our consultants relied on available TI as-built diagrams to select these locations. I want to ask you, okay -- I was there. How many -- how many -- how many available as-built drawings you think we had? I'll tell you we had one. We

had one as-built drawing at a certain point in time that showed some wet operations here and others there, but honestly, we didn't know. We just -- it was somewhat random where these 15 -- yes, we tried to, you know, find locations we thought we would you know find the highest concentrations, but we didn't really know.

And you know LaVon Rutherford claimed that Mr. Fitzgerald misspoke when you said there was only one surface contamination level measured, you know, in dpm for 100 squared centimeters. It was like around a million dpm or as -- using Weston -- it was the Weston report 1996 report. Weston said as high as -- as high as a million dpm per 100 squared centimeters. And I know the person who wrote the report, (indiscernible) [identifying information redacted] and he was always coaching. He was very careful to never say anything, you know, with absolute certainty. So, he didn't want to say that, you know, there weren't maybe locations that there were higher, but no, he just -- as high as a million dpm. That's all that -- that's all that meant. And the statement that there were other measurements, well, it's not in the -- I don't remember any other surface activity measurements and dpm per 100 square centimeters that were performed. It's not reported anywhere in the 1996 Weston report.

Yes, they report on direct measurements in the -- the vertical feeder lines where they use a one-by-one sodium iodide detector that was reading out in counts per minute and they did snake, the horizontal mains and arterial lines with a GM peanut probe that was also reporting or -- or displaying measurements in counts per minute. But they went on to say that -- that -- that -- you know, GM peanut probe, which did the majority of

those horizontal lines and arterial -- main and arterial lines, they make a very clear point in the report that that probe has limited relative response capabilities when measuring enriched uranium due to the low energy X-rays and limited beta emission rate associated with the isotopic abundance of highly enriched uranium. And that's what we were, you know, largely encountering, not entirely, but most of the contaminated sediment that we encountered in these lines exhibited, you know, somewhat to highly elevated levels of enriched uranium.

So, I just throw that out there to show you, again, you know, the more you dig into this, the more uncertainty there is around the source term and what this 1995 -- one-time 1990 -- 1995 drain survey means and how -- how, you know, plausible it is to back apply that -- that -- that -- that information back over a 27-year period, or 29-year period for the entire -- the entire time.

All right. Additionally, NIOSH ignores SC&A's observation that coagulant oil may have had compounding effect on sediment source concentration. Now, obviously, they've, you know, made reference to that today, but it doesn't sound like, you know -- they don't see that as a source-term issue. I'm not sure I agree with that. I can't speak to Schrodinger's cat. That's -- that's above me. NIOSH' s repeated reference to majority of source originating from AWE program operations versus noncovered program operations is irrelevant and a distraction, okay. It had no bearing on the SEC evaluation for, you know, the operational period, SEC number 149 that was granted. You know, Department of Energy decided this was an AWE site. So, and as Dr. Ulsh pointed out, you -- you can't distinguish, you

know, uranium from -- from one program versus another. So, you know, that's just -- that's just the cards we're gonna be handed. Again, it's further evidence of the uncertainty and unknowns surrounding the source.

And I know nobody wants to talk about subsurface outside. And we've all accepted, you know, that NIOSH's 95th percentile is perfectly acceptable. But I continue to say that the systematics split-spoon sampling consistently underestimated the activity concentration and the geographic extent of contamination. And I learned that the hard way, you know, when I saw every -- every year, our project just getting bigger and bigger and bigger because the -- the -- you know, we largely relied on split-spoon sampling and -- and it was -- it was inaccurate.

And by blending the data to get the 95th percentile concentration, blending the data from '84 and '92, that, again, has its flaws. The '84 data was inadequate as evidenced by the fact that, you know, that was -- that '90 -- '84 data was largely from the burial site area. Well, we totally underestimated how much material was in the burial site based on the '84 data. That's what we -- that's what we -- you know, when we started the decommissioning project in '92, that's what we were primarily using, okay, as -- as the basis of our determining our limits of excavation. And the '92 data, that was taken after we had already removed the burial site, which had all the -- you know, highest levels of -- of contamination. So, all that -- that area where -- you know, the burial site area was not factored in to the blended data.

And -- and -- and what we found when we were doing the burial site remediation was that contamination levels were primarily -- the highest

levels of primarily associated with a very thin -- you know, less than a -- less than, you know, a couple -- just a few -- it was less than a centimeter, you know. It was a very thin layer, you know, probably a -- maybe 10- or 15-millimeter-thick layer of a gray dark layer of what we called ash. And we never measured that. We never set that off for analysis, because we knew we were excavating it. And the split-spoon samples didn't typically identify that. But that's -- that's the area that the M&C workers primarily encountered.

That was the -- the -- the ash layer was usually the first thing you encountered. Okay. That was the first thing you encountered when you dug down a couple of feet, two to three feet. And that's what the maintenance workers were exposed to when they were, you know, servicing the subsurface utilities and services. So, I still think the subsurface outside is -- is -- is a source term that is not -- has not been adequately characterized.

All right. I promise I'll speed it up from here. Sorry.

Concerning the resuspension factor, dust-loading values used by NIOSH in its modeling, you know, we -- we've heard, I think, clearly articulated by Mr. Fitzgerald that NIOSH has ignored the ample -- amplifying effects on resuspension and dust loading associated with confined spaces. And, you know, whether or not -- whether or not it's a regulated confined space or just the fact that, you know, these -- these workers were down there with no respirators, often no gloves, just wearing pretty much work clothes that they took home at the end of each day, laundered in their -- in their -- you know, in their home, probably exposing the whole family you know, there was definitely -- it was definitely unique, and -- and it was

definitely elevated.

Also, NIOSH fails to recognize the difference and unique characteristics of clearing drain lines using conventional (indiscernible) means and methods without any radiological controls. Yeah, they said it -- we didn't -- you know, we didn't take that into -- you know, it doesn't matter for the source term. Okay, I'll give you that. But it definitely matters for this, you know, resuspension factor and dust loading. And I think I've heard them say they agree that that's something they're gonna -- I don't want -- again, I want to put words into their mouth, but I think I've heard talked about that's something that needs further evaluation.

Okay. Moving on to the next slide, the limitations associated with occupancy and time. As I stated in -- in my second slide, you know, there's no known contemporaneous written records of the nature, extent, and duration of construction and maintenance activities that M&C workers performed in these contaminated areas during any part of this residual period, all the way from 1968 to 1997. So, was it LaVon Rutherford who was asking what should the period time be? I say 1968 to 1997.

The -- the model occupancy time of exposures were estimated by NIOSH based on the distant memories of a handful of workers. To the best of my knowledge, no interviewee responded with absolute certainty to questions about frequency and duration of -- of intrusive work, other than saying that it was frequent, and it happened often. That's really all we know. So, as far as I'm concerned, NIOSH's occupancy time estimates are completely arbitrary, without any basis in fact or verifiable contemporaneous records.

All right. Don't worry, I'm get -- I'm getting close to the end.

As someone, you know, who now works for a state regulatory agency, I often find it helpful to check back from time to time to the enabling statutes and regulations that provide authority to agencies to conduct their activities. And in that spirit, in these next three slides, final three slides, I'd like to briefly revisit the statute, regulation, and guidance that applies to the specific -- to the special exposure cohort provisions of the EEOICPA. So, the name -- enabling -- the enabling statute, of course, is the EEOICPA of 2000, and within that Section 7384q establishes the ability to designate additional members of the SEC. And I think it's important to note that designation of a new class of workers is done under the recommendation of the Advisory Board on Radiation and Worker Health. It is the Advisory Board, not NIOSH, that makes the determination that, one, it is not feasible to estimate with sufficient accuracy the radiation dose that a class receive; and two, there's a reasonable likelihood that such radiation dose may have endangered the health of members of the class. The SEC provision of the statute is codified into regulation at 42 CFR 83. The regulation states that if it is not feasible to estimate with sufficient accuracy radiation doses for members of the class, the NIOSH -- NIOSH must determine, as required by the statute, that there is a reasonable likelihood that such radiation dose may have endangered the health of the members of the class.

In regulatory speak, the use of the verb "must" is a very strong word. It does not leave much room for equivocation about what action must be taken when this condition is met. When it is not feasible to estimate the -- the bounding dose with sufficient accuracy, NIOSH must determine that it's

reasonably likely that such radiation dose may have endangered the health of the members of the class, and by extension, the class is eligible to be recognized under the SEC provision upon recommendation by the Advisory Board.

And in executive -- and in an executive order that was dated December 7, 2000, the administration acknowledged that AWE employees had been placed in harm's way by some of the unique hazards they faced while performing job duties to build the nation's nuclear defense. And that the administration -- it's the administration's policy to provide fair and timely compensation to these workers and their survivors to right these wrongs. The order directs all departments involved in the implementation of the EEOICPA, Labor, Health, and Safety -- or Health -- Health and Human Services and Energy to compensate these workers and their families in a manner that is compassionate, fair, and timely.

So, as I've stated, from the very beginning, the class of workers covered under the SEC petition as the M&C construction and maintenance workers represent a class of workers for whom I believe Congress intended to apply the SEC provision. This is a class of workers for whom there is insufficient measurement and monitoring data available to estimate a bounding dose with sufficient precision and accuracy for any member of the class. I cannot imagine that NIOSH's process of evaluating this SEC petition is what Congress intended. The process has dragged on for seven years and has not yet been concluded. So, (indiscernible) on longer. With so much unresolved uncertainty about the source term, an agreement by all involved that there -- there is no measurement or monitoring data for the class of

workers under consideration, an agreement that by all involved that standard exposure models are inadequate to bound the dose to any member the class, instead of following the letter of the statute and regulation and determining this class of workers to be eligible for the SEC provision, nonetheless, NIOSH has insisted on inventing six unproven exposure models for scenarios not covered by the standard models and created exposure assumptions that NIOSH considers plausible, but have no basis in any verifiable facts, nor any measurement or monitoring data. And from that shaky foundation, NIOSH boldly asserts that it is able to bound the dose to any member of the class with sufficient accuracy to be considered scientifically sound. This, to me, seems like a complete distortion of Congress's intent. So, in an appeal to the wisdom and professional judgment of the Advisory Board Members, the petitioners respectfully request that the Board Members of this work group recommend to the full Advisory Board to exercise their statutory authority and recognize this class of workers under the SEC provisions of the EEOICPA.

I don't know if I'm allowed to take questions, but I am available to take questions. Otherwise, my copetitioner, John Eliot also would like to make a brief statement --

CHAIR BEACH: Mike, this is -- this is Josie. I don't know if -- if anyone's got questions, but I do want to comment that I appreciate your slide presentation. It was helpful to have it in front of us. Also, you're always prepared and ready to share your knowledge of the site and expertise with us, and I very much appreciate you for that. Thank you. Before we move on, does anybody want to ask Mike questions or have

comments?

MEMBER KOTELCHUCK: Just will this be distributed to the Board, the -- would Mike be willing to? It will be on the record and the transcript, but it would be helpful to distribute it, --

MR. MIKE ELLIOTT: I will. Yes.

MEMBER KOTELCHUCK: -- if you don't mind. Good. Thank you.

CHAIR BEACH: Any other work group members have a question? Okay. And I think you said Mike was on?

MR. MIKE ELLIOTT: John, John Elliott.

CHAIR BEACH: John Elliott, sorry.

MR. MIKE ELLIOTT: I hope you can unmute himself. He's --

PETITIONER JOHN ELLIOTT'S COMMENTS

MR. JOHN ELLIOTT: Yes, I -- I -- can everyone hear me?

CHAIR BEACH: Hi, John. Yes, we can. Thank you.

MR. JOHN ELLIOTT: Okay. Good day. I thank you for this opportunity to speak and please be assured I'll be quite brief. My name is John Elliot, and I am named on this petition. I have the same surname as Michael but no relation though. I would be honored to be so. I wish to thank Michael for his unwavering advocacy in presenting such a compelling and balanced and factual perspective. He's done so time after time, year after year. His comments should be considered with extreme carefulness.

I suffer from -- yeah.

CHAIR BEACH: Take -- take your time, John. When --

MR. JOHN ELLIOTT: Well, hold on.

CHAIR BEACH: -- you're ready.

MR. JOHN ELLIOTT: I was gonna finish it.

MS. ELLIOTT: Hello, I'm Denise Elliot, John's wife.

CHAIR BEACH: Hi, Denise, thank you for stepping in.

MS. ELLIOTT: My pleasure. He's having a moment. So, it continues on, he wants to say, he suffers from CML, chronic myeloid leukemia, and it has had some significant impact on the quality of his life. Though setbacks in the past 12 months have been hard, he's currently stable again. It should be noted radiation exposure is a very significant risk factor in causing CML. In conclusion, John wishes to thank in advance the Advisory Board work group for its careful consideration of this important matter. Thank you. I don't think he can continue. I'm not sure.

MEMBER KOTELCHUCK: Wow.

CHAIR BEACH: Denise, we appreciate you.

MS. ELLIOTT: Thank you.

CHAIR BEACH: Thank you, John and thank you Denise. We appreciate your time and calm -- comments.

All right, thank you, Mike.

I think we're gonna be ready to move on with Dave, Dr. Kotelchuck's comments. Is that -- are you ready Don -- Dave? You're on mute.

STATEMENT BY DR. DAVE KOTELCHUCK

MEMBER KOTELCHUCK: -- moment. All right. Let me get -- let me get straightened out here. Zoom and I'm sharing. Let's see. Take me just a moment, if you don't mind.

MEMBER BEACH: No, take your time.

MEMBER KOTELCHUCK: Okay. And then I want to share the -- wait a second, wait a second. Pardon me. Share.

CHAIR BEACH: Not yet.

MEMBER KOTELCHUCK: Are we okay?

CHAIR BEACH: Now we see them. Can you -- can you stretch it out, make it a little bigger?

MEMBER KOTELCHUCK: I'm not certain how to do that.

MEMBER ANDERSON: Put it in the presentation slide you --

MEMBER KOTELCHUCK: Slide control --

MEMBER ANDERSON: Up top --

CHAIR BEACH: If you go over to the -- your left, the -- I believe it's --

MEMBER ANDERSON: Slide show.

MEMBER KOTELCHUCK: Slide show, hold it to my --

MEMBER ANDERSON: You're on home now.

MEMBER KOTELCHUCK: Slide show, slide show.

CHAIR BEACH: Yeah, look up -- look at the red portion up at top.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: Under -- underneath your name. I think if you click on that. You're on home. If you go to slide show, I believe.

MEMBER KOTELCHUCK: Hold it.

CHAIR BEACH: It's in the middle of your screen. Keep going to the left --

MEMBER ANDERSON: -- go left --

MEMBER KOTELCHUCK: So, I'm under slide control; that isn't it?

MEMBER ANDERSON: No.

MEMBER KOTELCHUCK: And it's on that icon. Keep going to my left. I don't see --

MEMBER ANDERSON: Well, our left looking at it. Yeah. Far left.

CHAIR BEACH: Okay. Go to the middle of the screen. No, is it one of those?

MEMBER KOTELCHUCK: Wait a minute.

CHAIR BEACH: I think it's up the top where it says slide show.

MEMBER ANDERSON: Next in animations.

CHAIR BEACH: Yeah, in the middle of your screen, Dave, on the red part.

MEMBER KOTELCHUCK: The middle of the screen on the icons above?

CHAIR BEACH: Yes.

DR. TAULBEE: Dr. Kotelchuck, the tabs across the top where you have home --

CHAIR BEACH: Thanks, Tim.

DR. TAULBEE: -- insert, draw, if you go -- there's one called slide show right next to animations.

MEMBER KOTELCHUCK: Okay. On the --

MEMBER ANDERSON: No, no.

CHAIR BEACH: No, no, no. Keep --

MEMBER KOTELCHUCK: No, okay. Hold --

CHAIR BEACH: -- going.

MEMBER KOTELCHUCK: -- it. I am so sorry. And I thought I had this

going before.

CHAIR BEACH: Dave, do you see where it says home highlighted on the tabs?

MEMBER KOTELCHUCK: Home highlighted on the tabs?

CHAIR BEACH: Up at the top, it says home, file, insert, draw. Do you see that?

MEMBER KOTELCHUCK: No, I don't.

CHAIR BEACH: Okay.

MEMBER KOTELCHUCK: Okay. Now, let me you're -- your screen sharing

is paused. Let me go to screen share again. Pardon me. Pardon me, folks.

Screen share. Why am I not seeing screen share? I've wandered around and --

MEMBER ANDERSON: You want --

MEMBER KOTELCHUCK: -- and I lost my -- stop share. Okay. Okay. Hold it. Share screen. Share. Pardon me. Now, you're saying this is not the full screen?

MEMBER ANDERSON: Right.

MEMBER KOTELCHUCK: And --

CHAIR BEACH: I think we can go with this if you can advance it, Dave.

MEMBER KOTELCHUCK: Oh, yeah, sure, I can --

CHAIR BEACH: I think we're --

MEMBER KOTELCHUCK: -- advance it.

CHAIR BEACH: -- I think we can handle that.

MEMBER KOTELCHUCK: Okay. Let's see. Here we go. Can you do that? I'm gonna go -- is that -- can folks see that? I just changed the slide.

MEMBER ANDERSON: Yes.

CHAIR BEACH: Yes. Yes.

MEMBER KOTELCHUCK: Fine. And look, I'm gonna go -- I'm gonna go through this fairly quickly, because a lot of these issues have now been discussed well by -- by others and will be further discussed later by Josie. But I felt as a working group member who has to vote on this and also as a Board Member who will have to in the future vote on this, I thought it would be useful to go over my own opinions. It's one of the rare times that I have some fairly major disagreements with the proposals put forth for dose reconstruction and models. So, I don't need to --

Here, let's start out. Look, there are two basic background facts. No individual exposure measurements were made during the residual period for any of the claimants, and the records of the individual work activities of the claimants during the residual period were not found. These facts basically force a one-size-fits-all exposure model. It -- it undermines the contention that we all agree upon that it is best if we can do and do -- do individual dose reconstruction for -- in each individual case. The bounding model developed must assign the identical exposure to each and every one of the 400-plus claimants -- and actually Dr. Ulsh updated that -- except for their differing durations of employment. So, I do note that although all the -- all the claimants are going to have the same -- the same exposure, except for the differing -- differentiate -- differing durations of employment, I -- I

should note that even if several claimants have identical durations of employment and thus identical exposures, their doses and probabilities of causation may differ depending on their different types of cancers. So, that -- in that sense, it's beyond one size fits all.

The available exposure data during the residual period -- well, I'll go -- I mean, we measured the -- we have measured radiation exposures of personnel at the end of the operational period that can be extrapolated. And then in '95, two years from the end of the residual theory, radiation measurements were conducted.

Now, I want to talk about the quality limitations of these two data sources. The initial '68 exposure data were extrapolated from the operational period. The bounding model applies this -- the geometrical mean annually to all maintenance worker claimants but note Dr. Neaton (ph) said in the very first presentation he gave to us in the evaluation report in 2017, two-thirds of the claimants, 70.1 percent again employment during the residual period. So, the initial data poorly characterizes as the exposures of most of the special exposure cohort claimants. Now, Dr. Ulsh had -- gave data at the beginning of this where the number is now -- there is more than 500 claimants, and the numbers are still pretty close to three-quarters, 70 percent. The exposures experienced by the maintenance workers are not adequately characterized by the NIOSH bound -- bounding model, thus, nor are the doses derived from it.

Now, the working group attention to subsurface exposures in building 10, and then I'm gonna make clear the working group and staff generally agree that the greatest exposure to the MN -- M&C maintenance workers

came from the subsurface work. Since the NIOSH bounding models applied to all claimants, further discussion during this focus -- presentation focuses solely on subsurface work and whether or not it is bounded. And in my mind questions -- there is a real questions as to whether it was bounded. Okay.

Now, M&C workers had greater exposures than expected. Weston, during its 10-day work period was assigned to enter into and access higher radiation levels of fluids and slug within the subsurface pipes, meanwhile removing any physical obstructions, such as the full -- fuel rod that was discovered. In contrast, M&C maintenance workers -- and we've talked about this -- do subsurface work routinely easily over the years, had the snake out, repair, cut, saw, grind, weld underground pipe as well as remove observed -- obstructions. So, the M&C workers are exposed to additional radioactive sources of exposure than considered in the NIOSH model which just discusses the dusts from the -- from the soil in which the people are standing.

And the next slide. Individual exposure measures made on the Weston workers were available. And I want to, sort of, set the record straight from -- at least from my perspective. The individual exposure measurements made on Weston workers were available but not used in the NIOSH bounding model in recognition of the differences in job tasks of the M&C and Weston workers. So, I understand that led to -- often to confusion on my part, as well as others that we were comparing M&C and D&D workers. We were talking about the exposures from the pipes. The -- but also -- and this is something I think we need as a working group to consider a little more thoroughly -- M&C workers experienced greater doses than

expected due to lack of health and safety information, training, and personal protective equipment. As the -- as -- as the claimants have said, and as was -- as was clear from the interviews that were held, the maintenance workers were given no radiological health and safety information and training during the residual period and only occasionally received protect -- personal protective equipment.

Also, after 1983, following NRC's removal of radiation work restrictions for building 10, the claimants believed they were not working under hazardous radiological conditions. Thus, after '83, certainly, M&C workers could not be expected to have followed the ordinary common-sense precautions that any intelligent person would follow when working on or near piping in a potentially hazardous radiation environment. And you'll notice, for example, when people -- and during the interviews at least one of the persons -- I believe it was -- I'm not quite sure what number -- I think it was 12, worker number 12 in that, talked about a person coming in, finding a -- a -- fuel pipe -- not -- not -- not the five-inch one that was discovered subsurface --but coming in and showing -- holding in his hand -- their hand, the radiation -- the -- the fuel pipe. And then after the discussion, putting the fuel pipe in his pocket. Those are things that work will profoundly affect the -- the dose that people get. And -- and the question and -- this is -- this is you disturbing and difficult to evaluate. So, basically M&C maintenance workers are expected to have experienced greater doses of radiation than assessed from the bounding model.

So, now, NIOSH bounding model seeks to compensate by going to the 95th percentile rather than the 50th as would ordinarily be done. And but

the determination really rests off -- on professional judgment. To be sure, 57 out of the 60 previous SEC proposed -- proposed -- proposals during -- for the residual period were rejected, and three were approved. But, again, as always, it's the Board's responsibility to look into each proposal individually and seek out its particular and perhaps unique features. Among other things, for example, while I have heard in many cases that we've judged claimants say well, I didn't know that it was dangerous, I wasn't given information. We have -- we have virtue -- I don't know that it's a unique -- we have a particularly developed record that people were not given information and that -- in this way, that I've noted, it could impact on their having a very much greater exposure than what we were trying to talk about here on the Board. So, I -- in my professional judgment, I don't have competence that using the 95th percentile rather than 50th bounds the workers exposures.

I don't -- let's go briefly over the Mound surrogate model, because I think this is -- we've talked a lot about this. The -- in the next slide, I -- I said the Mound project trenching data were collected outdoors on a country lane. If I may, give more detail. As I was reading over the interview with Tim Taulbee, this -- this path where the trenching was done is, of course, above ground and also it was basically a -- a cupboard over -- a covered over -- a covered over canal, right, an early 19th century canal that was in -- was not used and now has grown over. So, no wonder that the -- the work that was done there, basically had -- above ground had to get rid of bushes and -- and roots. They didn't have to encounter, you know, major obstacles and, of course, there were no utility pipes running through there because it

had been a canal. So, this -- this is so different than the kind of subsurface work that was going on at M&C. So, and, of course, using the Mound data as surrogates for M&C violates the criterion that -- that they have to have similar functions of the -- of the work that was -- that was done. At the last working group meeting the -- SC&A staff appealed to professional judgment that the use of Mound data for surrogacy was acceptable. And because of major differences in work environments between Mound and M&C, this work group member believes the Mound database is a poor fit for M&C surrogacy. I think it's not an appropriate use of that data. Even if the Mound -- and then, even if the Mound base is accepted by the working group for surrogacy based on its professional judgment, the Mound alone is inadequate to fully characterize the M&C maintenance workers radiological exposure. The Mound data seeks to account for radioactive dust loading of the soil which when stirred up results in worker exposure to dust and particulates. Fine, that's good. But it's noted and M&C maintenance workers do work that routinely repair and caught, repair and snaked out underground pipes and create dust particles and particulates and aerosols that need to be taken account in -- taken into account or the NIOSH model and the current NIOSH bounding model does not appear to account for these, and it should.

So, based on insufficient data to assess doses over a lengthy residual period and despite serious efforts by NIOSH to develop a scientifically sound bounding model, I do not believe that the model developed for these M&C residual period claimants is a plausible one. Okay. Thank you.

CHAIR BEACH: Dave, thank you. I appreciate you putting your thoughts and judgments and perspective out for the Board. Any questions

for Dave, other Board members, work group members?

MEMBER MARTINEZ: I have a general question. In --

CHAIR BEACH: Sure.

MEMBER MARTINEZ: -- this context, how is bounding defined? What's the definition of bounding?

MEMBER KOTELCHUCK: Well, it seems to me -- is this Nicole speaking?

MEMBER MARTINEZ: Yes, sorry, this is Nicole.

MEMBER KOTELCHUCK: Nicole, Dave. Yes, that's fine. I think bounding essentially involves professional judgment. It involves professional judgment based on past experience. And I will admit the past experience with some of the models, they have used the very limited data and said it's bounded, because the professional -- there seemed to be enough data or information that the professionals who are part of the Board and not all Board -- and that all of us decided that was bounding. So, bounding is really a professional judgment issue. And --

MEMBER MARTINEZ: But is it -- just to make sure I under -- because we -- we -- I've have seen that bounding a lot. And just to make sure that I have the same, kind of, concept in my head, --

MEMBER KOTELCHUCK: Sure.

MEMBER MARTINEZ: -- is it intended to be, like, the maximum plausible dose that someone receives? Is it intended to be, you know -- that's kind of what I'm asking is what that's really intended to be.

MEMBER KOTELCHUCK: Right.

DR. TAULBEE: If I can speak to this, Dr. Kotelchuck?

MEMBER KOTELCHUCK: Go ahead.

DR. TAULBEE: Okay. Thank you. To answer your question there, Nicole, --

MEMBER MARTINEZ: Thank you.

DR. TAULBEE: -- what we look at is from a bounding standpoint, it -- yes, it is the maximum plausible dose that a worker could be exposed to. In this particular case, we used a very high source term, in our opinion, this soil around that fuel pin, and we assumed that it was over the entire time period, that every time they went into dig, every time they went into remediate one of these trenches or pipes, that they were exposed to that scenario, where a fuel pin would be found or the contamination -- the contaminated soil around it would be there. And so, when you take that and then you take the resuspension factor, we use, again, a kind of bounding figure, the 95th percentile of the distribution of what the resuspension factors would be. And so, you know, you can look at different literature values for different dig projects you -- Mound is the one that we used. However, there could be others. SC&A did an independent review and came up with a very similar number. I mean very similar the numbers. The numbers that Mr. Fitzgerald pointed out earlier today were 10 to the minus fourth, I think four times 10 to the minus fourth. Again, it's in the same ballpark of what we came up with, with Mound. And so, when you multiply those two together and then you multiply in the occupancy time, you come up with a bounding dose.

Now, because we saw the source during -- you know, during one of the surveys, we consider that to be a plausible scenario. If you consider

that somebody might have only worked for one particular year, they very well could have received that dose. That's why we call it plausible under -- you know, a bounding dose under plausible scenarios. Is it plausible that somebody for 30 years was exposed to this; I don't think so. I mean, that's really, really high from that standpoint, that they would run into this scenario. So, it is a bounding dose from our standpoint, and that is what we are meaning.

MEMBER MARTINEZ: Thank you.

DR. TAULBEE: Does that help?

MEMBER MARTINEZ: Yes, it does very much. Thank you.

CHAIR BEACH: All right. Any other questions for Dave?

MEMBER KOTELCHUCK: Obviously, we have some disagreements among us.

CHAIR BEACH: Yeah. And there's --

(Whereupon, Member Kotelchuck and Chair Beach speak simultaneously.)

MEMBER KOTELCHUCK: -- that's what we're here for is a --

CHAIR BEACH: The other -- some more information on the Mound data and the surrogate data steps that it doesn't meet the criteria, but we've discussed that. So, if nobody has anything else, we'll go ahead, and I'll ask Bob to load my slides. And --

MEMBER MARTINEZ: Jose, do you mind if I ask a question of --

CHAIR BEACH: Of course.

MEMBER MARTINEZ: -- Dr. Kotelchuck?

CHAIR BEACH: Yeah.

MEMBER MARTINEZ: On slide 10 you talked about the -- I remember it. You don't have to pull it up.

MEMBER KOTELCHUCK: Okay.

MEMBER MARTINEZ: You talked about the health and safety training, and then we could presume that workers received higher than expected doses because of lack of safety training, right. So, if you have safety training, you behave differently. I get that.

MEMBER KOTELCHUCK: Yes, right.

MEMBER MARTINEZ: Yeah, for sure. I understand that. But my question is, I had thought, and maybe I misunderstood, in Dr. Ulsh's presentation that he said that they basically in -- incorporated that somehow, like there wasn't a difference between someone who did and did not have safety training? And am -- am I --

MEMBER KOTELCHUCK: I don't --

MEMBER MARTINEZ: -- misunderstanding?

MEMBER KOTELCHUCK: I -- I -- in my mind --

DR. TAULBEE: This is time. I can answer it.

MEMBER KOTELCHUCK: Well, okay. I would say to my mind, yes, you've misunderstood or at least I would argue against, but Tim, you want to talk, too, and I'll come back.

DR. TAULBEE: Okay. If you think of an exposed -- the exposure model that we're assigning dose, it doesn't take any of that into account. We're not assuming any protection from PPE, we're not assuming any protection factors for respirators, we're not assuming they changed or altered any behaviors. We're simply taking the soil, we're resuspending it,

and they were exposed to that for two months of the year, and the two months per year, the occupancy is -- is based upon interviews with the workers. So, all of those factors, yes, it would change your behavior if you -- if you were cognizant that this was radiological, you know, materials, but we didn't take that into account whatsoever in this exposure model. The -- the factor of two months per year, like I said, that came from interviews. The workers acknowledged they didn't do this every day throughout the year, but we came up with, what we felt, was a bounding time interval that they would do this type of work. But again, it doesn't take into account any of those factors. You know, if they were wearing respiratory protection, then we'd be dropping this concentration by whatever that respiratory protection factor was. And we don't do that with a source term.

MEMBER KOTELCHUCK: And that -- it seems to me that is a major issue that I am concerned about, that people are handling, for example, radioactive material, putting it in their pockets -- we've had interviews -- handling things without gloves. Those -- that would -- that would suggest that people would have a very large dose of -- a large dose of radiation, which may, in fact, trigger development of a cancer.

Everybody who is claimant has cancer and has been certified as having cancer. So, you have to ask if people don't take care of themselves, if they don't know how to take care of themselves -- and by the way, they were given this information by the E -- by the NRC in 1983 and said, you don't have to worry, the exposure levels are so low, it's not dangerous to work her. You can just work here like your work in any other place. Well, the radiation continued and eventually was gotten rid of. But the question is,

what did workers do when they were exposed to that radiation, and I would argue, if you're a sensible person, if you're an -- then you will not -- and you're working with something hazardous, then you take care, and they did not. And they were exposed in ways, I think, that would enhance -- enhance the development of their cancers.

DR. ULSH: Josie, can I chime in?

MEMBER ANDERSON: You're on mute, Josie.

CHAIR BEACH: I just realized that when you didn't change your facial expression, yes, go ahead, Brant.

DR. ULSH: Okay. So, I -- I think we're kind of talking past each other here. Dr. Kotelchuck is right, and the petitioners are right, and SC&A is right, that if workers are informed about the hazards, they behave differently. And what Tim is saying, what we are saying, is that when we say we don't take account of that, if we in our intake calculation, tried to make the assertion that they were using PPE, we would apply a protection factor that would lower the intake rate. I think you could make the argument that, you know, if we had a respiratory protection factor where we took account of engineering controls, the lower the intake rate, you could maybe make a compelling argument against us saying you shouldn't be doing that. But we're not because this is a bounding source term model. Any of those factors that we would apply would lower the intake. Does that make any -- does that clarify anything?

MEMBER MARTINEZ: What I hear -- and I can be corrected -- but what I hear is that NIOSH has basically done a model that assumes that the workers have not had training.

DR. ULSH: Correct.

CHAIR BEACH: Well, let me say that early on, NIOSH is one -- one of NIOSH's white paper -- and because I have 500, I can't look for it right now. NIOSH took and said that because the workers had a health and safety manual, that they took credit for that health and safety manual. But when we dug into that and went back through interviews and every single interview that was done that day, several years ago, none of the workers said they saw a health and safety manual. So, NIOSH was not able to take credit for that being in place. So, I think some of these things that we bring up now started from that earlier white paper about the health -- health and safety manual. Is that your recollection, Dave?

MEMBER KOTELCHUCK: Yeah, yeah.

MR. RUTHERFORD: Keep -- Josie, can I say something? I mean, -- I mean, --

CHAIR BEACH: Sure. Sure.

MR. RUTHERFORD: Yeah. Even taking -- let -- let -- you know, when we put in the health and safety manual, the whole discussion on that, that was only to identify that there was potential conservatism then. We have never ever reduced our dose expected based on any PPE or any additional worker knowledge. It has always been assumed that there's been no PPE. And so, we -- we've never -- we've never put in any factors that I know of that I can remember that would have reduced the dose because of a health and safety manual.

CHAIR BEACH: Thanks. Okay. Anything else?

MEMBER KOTELCHUCK: Andy.

MEMBER ANDERSON: Yeah, I -- I would -- I would -- I mean, we need to go on, but -- but it seems -- I mean, the kind of the bottom line for Nicole is this 00 using a bounding model, it's a one size fits all. So, once you've said nobody could have had higher than this combined dose, however you've constructed it, that's the dose they get. So, it doesn't matter who you are, the only difference in whether you would get compensated is, is that goes for your type of tumor sufficient to make it 50 percent probable of causation.

So, by taking a worst case for a, you know, the benefit of the worker -- benefit to the worker is really -- I mean, what the worker is looking for, will he be compensated or not when we're really -- these models being used, we haven't really gone through that, but unless there's a really long period, they're not going to -- even with the exception approach here -- they're not going to reach a 50 percent probability of causation where it's unlike -- that's partly why looking at the 14 cases that had been compensated, how those were arrived at, and apparently it was all by external doses.

And in this particular scenario of the remedial action, it's all internal doses. So, we're not really looking at or calculating or NIOSH hasn't felt, and we haven't felt that there's external radiation available exposures, such as were done with -- during the operational period. But this really becomes a one size fits all. And everybody gets assigned the same dose, when, in fact, we know workers were exposed differently. And part of the issue is -- is -- that I raised before, and as the claimants have suggested, for their class definition, the maintenance workers, I think we would all agree that those are the workers who were more likely who had been exposed and come into the scenario, as we talked about. There are other workers there,

that if it -- if we don't establish a SEC for the maintenance workers, would be excluded. So, we don't really know whether we're only addressing the maintenance workers as defined by the claimants or not.

MEMBER KOTELCHUCK: Uh-huh, uh-huh.

MR. CALHOUN: Hi, this is Grady. Can I say something?

MEMBER ANDERSON: And so really -- really, for me, it's gonna be -- it kind of gets into so, is it how -- what's the reasonable amount of exposure that the workers had. And as Mr. Elliott pointed out, and I think we'd all agree, I would hope, is that when you're trying to remember activities from 50 years ago, it kind of -- you read the interviews and say well, is it reasonable to assume that it -- that it would be no more than two months. And I can say yeah, well, I don't really remember. I mean, all I remember is we did this fairly frequently, but what constitutes frequent. And if we then went to say well, the -- the bounding would be assumed that some -- there's one worker there, that's all he did, is work in the plumbing day in and day out and didn't get to do anything else. So, they instead of the 20 percent or the 20 weeks or days, a year, did it for their full period, I mean, then everybody else gets far more dose than they actually did. But the bottom line is, even if we give them added dose, will make a difference between compensation or not. Now, if -- and work --

CHAIR BEACH: You know, --

MEMBER ANDERSON: -- (indiscernible) --

CHAIR BEACH: Yeah, you'd --

MEMBER ANDERSON: -- they might accumulate enough that getting an additional 3 percent would tip them over. And we really don't know that.

CHAIR BEACH: Yeah, you know --

MR. CALHOUN: This is Grady, I gotta say --

CHAIR BEACH: Wait a --

MR. CALHOUN: -- something here --

CHAIR BEACH: -- sec, wait a sec.

MR. CALHOUN: -- because you've --

CHAIR BEACH: Grady, hang on a sec. I have --

MR. CALHOUN: -- got to be careful about --

CHAIR BEACH: Grady.

MR. CALHOUN: -- right now. You're --

CHAIR BEACH: Grady.

MR. CALHOUN: You're wading into territory where you're focused on whether people are gonna get paid or not. And I say this with the utmost respect, that is not the task of NIOSH, that is not the task of the Advisory Board. You're advise -- you're evaluating this SEC, to determine whether or not we put for a bounding dose estimate with sufficient accuracy, but I would caution you since this is a public forum to not say that you're worried about who's going to get paid and who's not and you're making your decision based on that. This is a scientific technical discussion to determine if, in fact, we have put forth a scenario of bounding dose with plausible accuracy. So, I'm just --

CHAIR BEACH: Okay.

MR. CALHOUN: -- cautioning you.

MEMBER ANDERSON: The other part --

CHAIR BEACH: Thank you, Grady.

MEMBER ANDERSON: -- of that is claimant favorable.

CHAIR BEACH: Yeah.

MEMBER ANDERSON: -- and what does claimant favorable mean.

CHAIR BEACH: Yeah.

MEMBER ANDERSON: Is it favorable to be exposed? The favorability for the claimant is, in this program, to get compensation or not. So, I would agree with you we're -- we shouldn't think about that, but that's really what comes down to the client-favorable issue. When we say that, what does the -- what did the claimants think when we say it this is claimant favorable?

CHAIR BEACH: Yeah, and I wanted to point out, Andy, when you were talking, it reminded me in the Linde SEC designation, we recognize the issue of rad versus no rad controls in that -- in that decision, so -- and I do believe Grady is correct, we -- we need to stay focused on --

MEMBER KOTELCHUCK: Yes.

CHAIR BEACH: -- and --

(Whereupon, Member Anderson and Chair Beach speak simultaneously.)

CHAIR BEACH: I think you're -- I think you're there Andy. I just --

MEMBER ANDERSON: Yeah.

CHAIR BEACH: -- sometimes we circle around.

Any other comments? I see, Tim, you have your hand up, and then let's move on to my slides so that we can move forward.

DR. TAULBEE: Sure. I just wanted to circle back to the bounding issue. That is our requirements under the SEC -- is to determine whether we can establish a bounding dose under plausible circumstances. And so

that is what we have done here from this standpoint. And as Grady pointed out, we don't look at the other, you know, kind of, aspects that of that, of who gets paid or who doesn't along those lines. We're merely looking at is there sufficient information to bound the dose or under plausible circumstances, and that is what we have done here.

CHAIR BEACH: Yeah. That --

MEMBER ANDERSON: But is it -- is it for an individual or is it for the class?

DR. TAULBEE: It is for -- it is for an individual across -- and it applies across the entire site for this particular case. Can we come up with a bounding dose, and that is where -- we've come up with along these lines. And I would also like to point out that this dose isn't that large, okay. The dose that we've come up with on a per year basis, all of these six scenarios and assuming this multiple times in these high concentrations comes out to about seven -- a little over, like, 75 millirem per year type of dose, it's committed effective dose. So, these are not large doses along those lines. So, we do feel that this is a bounding dose, and it happens to also be fairly low.

CHAIR BEACH: Okay, thank you.

Bob, if I can get you to tee up my slides, we'll go through -- through those. And then we'll circle back around to any other items that may need to come before the work group and then moving forward.

MEMBER KOTELCHUCK: Good.

STATEMENT BY CHAIR JOSIE BEACH

CHAIR BEACH: Of course, I put myself on mute right away. I am not going to go through this first couple of slides either. We've discussed this, the background. I think we're all aware of the background. But I am not going to rush through this because I want it to be clear where -- where I feel the work group is. And I'm not saying everyone -- I'm saying where I feel the majority of the work group is and, of course, you can always comment from there.

So, the SEC issues for Metals and Control (sic) from the work group perspectives, or if you'd rather, my perspectives, first, there is no monitoring data for the residual period at M&C for the years 1968 through 1997. NIOSH considers the 1995 pre-D&D drainage pipe sediment concentrations as relevant source term data for bounding purposes. NIOSH's bounding approach, they back apply the 95th percentile of the 1995 pre-D&D priority one sediment measurements to bound potential inside subsurface exposures for the M&C maintenance workers. It compares Metals and Control (sic) maintenance activities to other AWE sites. We have discussed some of that. I don't believe we're in total agreement with that, but I think that will come up again. It applies extreme conservatism to account for in -- intrusive activities, high exposure conditions, uncertain facility activities, or unknown contamination sources. The question here is whether the 1995 pre-D&D survey measurements are sufficiently informative about exposures during the Metals and Control residual period to support NIOSH's bounding approach as being sufficiently accurate under EEOICPA and 42 CFR, Part 83. I'm trying to end each one of my slides with the question at hand and agreement or nonagreement, so you'll see Is that

throughout.

Next slide, please.

So, we're looking at the inside subsurface and what NIOSH is -- what they're coming up with is NIOSH applies the highest building 10 subsurface drain line sediment concentration of total uranium and calculates the 95th percentile of 6887 picocuries per gram for bounding uranium in the Metals and Control (sic) subsurface maintenance activities, concluding that these priority one drain lines contain the highest subsurface radioactive material concentrations to which workers were exposed. NIOSH assumes dust loading equal to the 95th percentile of Mound project air sampling and work occupancy of the two months -- you've heard Tim mentioned that a couple of times -- the intrusive -- intrusiveness of activities as seen by NIOSH as comparable to other AWE facilities with D&D worker handling of pipe removal similar to that of M&C maintenance workers.

SC&A's supplemental review of the inside subsurface. SC&A finds that the unaddressed and uncertain source terms and elevated exposure pathways may have been present during M&Cs residual period, including elevated workplaces airborne contamination due to confined spaces, cutting of pipe containing contaminated scale leading to airborne releases, concentration of pipe sediment due to discharge of coagulants. SC&A, in their paper, concludes that the back application of the high 1995 sediment survey result to bound inside subsurface activities may not be adequately supported by information for Metals and Controls worker activities from the earlier residual period. The work group's concern is, is there insufficient information it -- exists to address these uncertainties and reliance on

extreme conservatism to bound potentially higher or unknown exposure is not a plausible approach to compensate for inadequate or insufficient informations (sic). So, that is still a concern.

If we look at the comparability between other AWE sites -- we spoke of that earlier. But in NIOSH's original petition back when we started in 2008 -- we were at the first meeting at Cincinnati airport hotel -- M&C had passive exposures consistent with ORAU/OTIB-70 and Battel TBD-6000 models and compares well with other AWEs. That was our first go. NIOSH has resigned -- revised position after workers identified intrusive activities for which six exposure models and bounding values were developed. Extreme conservatism applied for Metals and Control (sic) models to account for intrusive activities, high exposure conditions, uncertain facility activities, or unknown contamination sources. SC&A finds that Metals and Control to be comparable to facilities with more intrusive activities. For example, those related to facility renovations, as defined by the Nuclear Regulatory Commission, the NRC, and it was found at Linde.

So, moving on to the Linde precedent, which was set in 2011 at a February Board meeting. I'm going to give you SC&A and NIOSH's positions here. SC&A, in their supplemental review, Linde precedent as having two precepts, based on deliberations by Linde and the SEC work groups at the time. The first one, less precision or technical accuracy can be tolerated if the exposure of a worker cohort is relatively low. You've heard that spoken to a couple of times today. And two, the use of high exposure or concentration values based on these data to bound or represent that of other workers in a facility or on a site for long periods of time would not be

appropriate if their exposure potential could be higher, conditions were different, or if there is a lack of information upon which to make those judgments.

Now, NIOSH disagrees with that second precept. Also, it applies -- as it applies to M&C. Linde exposures were higher, and there were more relevant source terms -- source term data for M&C. So, we continue with NIOSH's response to the Linde precedent -- precedent that was set, again, in 2011. SC&A's response finds that information is lacking on newly identified exposure concerns. The D&D-era source terms and conditions are not clearly reflected -- reflective of the entire maintenance -- or M&C residual period. Radiological controls were not in place for M&C workers as they were for the D&D-era workers. The potential exposure levels may have been relatively higher at Linde, but the SEC question is sufficient accuracy of the proposed bounding level. The reliance on extreme conservatism to compensate for inadequate or insufficient information may not be plausible or appropriate.

So, we move on to the exposure potentials in the confined space. This is out of the supplemental review, again. Confined space work at M&C is not reflected in the exposure modeling and may -- and may lead to increased dust loading and resuspension of contaminated -- contaminant particles and aerosols. The surrogate use of Mound project data used for M&C dust-loading factor does not account for confined space effects. NIOSH acknowledged that potential particulate enhancement in a confined space represents new information that is not a source-term issue. This issue remains unresolved. I know we've talked around that issue, but we haven't

completely finished it.

So, another exposure potential is the contaminated scale. Accumulation of contaminated -- contaminated scale on the inside of pipe being confirmed with one survey exceeding the 1 million dpm 100 centimeters squared for a four-inch main line drain being cut and removed source term of the contamination is either covered or uncovered. We don't know. I'm assuming we're covering it. Drain lines were frequently cut and cleaned out with power tools and cutting torches. SC&A supplemental review. Such pipe cutting -- excuse me for a sec. Sorry, I had people walk in. Such pipe cutting may have released fine aerosols that would have been concentrated by confined spaces within the pits, the torch -- trenches, whatnot. NIOSH respond -- responds that such contamination would have constituted isolated hot spots -- we heard that earlier -- and not a systematic condition. The work group finds this exposure potential still remains uncertain and unresolved.

The next exposure potential, we talked about the coagulants. The mineral oil used for drawing wire and building 10 had properties of coagulants used upon discharge into the drainage system. M&C workers found it frequently plugged up the drains and may have concentrated existing drain pipe sediments, including uranium and thorium. NIOSH -- SC&As' premises inaccurate in that the HFIR operations had not introduced higher concentrations of the covered uranium and thorium from AWE operations, and wire operations during the residual period did not process radioactive materials. SC&A's response to that was releases of nonradioactive coagulants, oil to drain line, was done separately from any

HFIR operational radioactive releases and may have influenced how AWE-related uranium and thorium contamination already in piping may have concentrated over the years.

Again, the work group finds increased exposure potential associated with higher source-term concentrations of AWE contaminants in drain pipe -- drainage pipes, and it remains uncertain and unresolved at this time.

So, let's look at the D&D and the Metals and Control (sic) maintenance time period and the work activities. NIOSH finds that maintenance -- M&C maintenance workers used common practices similar to those used by the D&D workers to remove priority one drain lines. The removal of versus clean out, we -- we already heard D&D typically bagged and cut those where when you interviewed the -- during interviews with maintenance personnel, workers likely handled the pipe cleaning more intrusively than the D&D workers for pipe removal. The key difference is where the controlled radiologic -- radiological-covered work versus the non -- noncovered for M&C workers. So, basically M&C workers had absolutely no idea there was any hazard. So, they went in, you heard before, using methods similar to plumbers and cutting without any thought of any contamination sources. So, the question is are M&C inside subsurface exposures sufficiently different from other AWE and D&D related activities that normal models do not apply?

All right. Couple more to go. So, we're still on the comparability M&C maintenance workers versus D&D. I had a petitioner comment submitted to me on May 27th of '23, and what was said was, D&D workers were simply cutting out the drain lines, whole and intact, sealed prior to removal and under carefully controlled conditions. M&C maintenance workers would clear

the lines using conventional plumbing methods and only after those efforts failed, they would cut out the closed section of the drain as a last resort, and even then, it was done without sealing or removing the line to prevent any release of contaminants. Like I said earlier, they just cut it, probably banged it up and down and to clear it, moved it out of there. The work group finds that while pipe removal by M&C maintenance workers as compared with D&D-era workers had some analogous steps, the former would have likely been more intrusive with no radiological controls.

So, in summary, the work groups concerns are as follows: Intrusive work activities by maintenance workers at M&C during the residual period led to potential exposures for which there are no available monitoring data. NIOSH applies the 1995 D&D survey data as a basis for an upper bound for residual period exposures. For radiological data from one time period to be considered informative about exposures during -- during another time period, there should be sufficient -- sufficient similarities of conditions and processes between the two periods. Although NIOSH has proposed a claimant favorable inside subsurface bounding concentration, -- back to that 6887 picocuries per gram -- there remains uncertainty about source terms and exposure pathways during the residual period of 1968 through 1997. There is insufficient information available to account for the exposure contributions of confined spaces, pipe scale releases, and released coagulants in a workplace not controlled as a radiation environment, unlike that of the labor D&D era at M&C and from which NIOSH -- NIOSH draws its data. The application of extreme conservatism is formulating the proposed upper bound concentrations to account for intrusive activities, high exposure

conditions, uncertain facility activities for unknown contamination sources. It is not a plausible approach to compensate for inadequate or insufficient information.

In conclusion, because of the identified differences between the two periods, the -- the residual versus D&D era, there is insufficient basis to conclude that radiological data from D&D efforts, including pre-D&D surveys are sufficiently informative about exposures arising during the entirety of the Metals and Control (sic) residual period to be applied in the manner proposed by NIOSH.

And that is the end of my presentation. Any comments, and I apologize for having to read them. When I get thoughts on paper, it's better to just go through them systematically for me. Questions or...?

MR. CALHOUN: Yeah, this is Grady. I got my hand up.

Yeah, I can't see. I can --

MR. CALHOUN: Okay. Yeah, --

CHAIR BEACH: So, my screen is still up there. Bob, you can go ahead and take that down if you like. Thank you so much for sharing.

MR. CALHOUN: I --

CHAIR BEACH: You made that much easier. Okay. What's your hand?

MR. CALHOUN: You -- you put out a lot there and what I -- I just wondered if you can clarify for this -- this --

CHAIR BEACH: I'll try. If I can't, I'll ask for SC&A to help me. Go for it.

MR. CALHOUN: It -- it almost sound -- are -- are you saying that that

-- that -- that you believe that the dose is bounding, but it's not sufficiently accurately derived?

CHAIR BEACH: I am not really sure I'm saying it's bounding. I'm saying that you -- I don't want to take away from the work that you did. I just don't feel like it's plausible for the entire time period.

MR. CALHOUN: Well, I -- well, I mean, I just -- we need to find that out, because that's going to have to be part of the basis. Is there -- is there a higher dose plausible? It seems like most your slides are just -- they come back to it's -- it's just not sufficiently accurate the way we derived it. And I just want to get that clear.

CHAIR BEACH: Correct. I don't feel like it is sufficiently accurate, and I'm not convinced that what you're counting as the highest is actually the highest.

MR. CALHOUN: Okay. Thanks.

MEMBER ANDERSON: Yeah, I mean, I would go -- I think those two is sufficiently accurate to -- for all the workers, I think it may be sufficiently accurate and bound for some of the workers who did a lot more of the work than others. I think when you say, we use a two-week period, there's -- there's certainly --

CHAIR BEACH: You mean two month? Yeah.

MEMBER ANDERSON: -- there are some that would have been different. And for instance, the people had cut with -- I would think you would have the welders would do a lot of the cutting of the pipe, which would do the fuming and other since they had welders at the facility, if you needed to have a pipe, cut with a torch. I don't know if that would be done

by anybody. They're likely to say, bring in a welder. And so, the welders are more likely to have been doing the torch-type exposures than others. So, --

CHAIR BEACH: Yeah.

MEMBER ANDERSON: -- I think is the -- the issue is for some people are definite -- on an individual basis when you review the individual case, that certainly could be bounding, sufficiently accurate. But I think when you go across all of the people just wandered around indoors, then I think it's probably way overestimate.

MR. CALHOUN: So, Dr. Anderson, it --

CHAIR BEACH: Right.

MR. CALHOUN: -- sounds like you believe it's bounding for the highest exposed people, but it's an overestimate for everybody else?

MEMBER ANDERSON: Well, I think it could be. I don't -- I don't really -- we haven't calculated what the highest dose would be. I would -- I'm not sure. It's sort of like saying well, do you remember how many days you spent at home in 1968. Well, you can say, well, let's see, I went away to college, and so you may kind of give a ballpark. And I think a lot of the amount of time that the workers said that work was really a ballpark where really, it's not particularly accurate. And now, we use the two period in the -- in the model. So, I think a lot of that has a lot of uncertainty in it. But it could well be bounding for some of the people. But when you -- the bounding, as you described it, would pound every possible individual's exposure, and I'm not sure that that would be true. I think there's probably a range of exposures that is far broader than, you know, what would be

covered here and would not be appropriate.

CHAIR BEACH: Yeah, I think if you go to my second to the last slide, it ties it up pretty well of what -- what activities are -- it's -- you don't have the data, basically.

MEMBER ANDERSON: Yeah.

CHAIR BEACH: So, we have a couple of different things. I don't -- I haven't heard from Loretta.

MR. RUTHERFORD: Josie, there's a couple of us that had our hands up. I know Dr. Kotel --

CHAIR BEACH: You know, and I can't see that. If you -- if you have your hand -- just go ahead and break in, please.

MEMBER KOTELCHUCK: Can I reply quickly, I --

CHAIR BEACH: Yes, Dave, please.

MEMBER KOTELCHUCK: -- Henry --

CHAIR BEACH: Yes.

MEMBER KOTELCHUCK: -- said. You know, if we don't -- if we didn't -- if we don't have data on exposure, that was one thing. But what I find really devastating is the second aspect that we don't have the work records of where the people worked or how often they worked. And that to me --

CHAIR BEACH: Correct.

MEMBER KOTELCHUCK: -- is really one of the profoundly undercutting concepts, or -- or -- or lacks for our efforts, because I would agree it -- it may -- probably the -- the estimates made in NIOSH will easily cover many -- or they're bounding for a large number of workers, but I don't know how many. I don't know. And to say every worker is that -- it's that one -- it

forces the one size fits all, and it makes the concept of -- of individual dose reconstructions almost meaningless. Then it just becomes a question of what kind of cancer do you have and how will that -- how will that measure up. So, it's that second lack of data that is, to my mind, crucial in -- in making me uncertain about bounding.

CHAIR BEACH: Okay. And Nicole, you have your hand up?

MEMBER KOTELCHUCK: And also, LaVon did, too.

CHAIR BEACH: Yeah, I know. I'm going to try and go through work group --

MEMBER KOTELCHUCK: Good, good, yes, sure.

CHAIR BEACH: -- members.

MEMBER MARTINEZ: LaVon, I'm sorry. I -- I just want to -- oh. Let me turn my camera on. Okay. I just wanted to mention that, at this point, just respectfully, I disagree with some of the conclusions. I -- to me, this seems like it is abounding dose. I just wanted to offer that. I am, you know, one person.

CHAIR BEACH: Sure.

MEMBER KOTELCHUCK: Okay.

MEMBER MARTINEZ: And it -- it strikes me in our conversations, it feels like there's a mix of asking NIOSH for a best estimate versus a bounding. And I think if we're going to offer feedback to NIOSH, we should be more clear about that, because as -- as Dr. Taulbee mentioned, the bounding is required, right. So, I don't know if that's an option to ask them to do something that's not at least trying to be bounding. Thank you.

CHAIR BEACH: Yeah. Well, and the bottom line here is there is no --

there's -- there's no data. There's no data from '68 to '97, as I stated earlier. They are using doses from 1995 and back extrapolating it through 27 years' worth of -- worth of work. And if you look at Metals and Controls' history, Metals and Controls put out flyers of the different things that they could provide, and I have a list of them. I was just looking at them earlier. They were constantly changing their -- their organization, they were constantly changing their product. So, they were constantly in and around that floor remodeling building 10.

So, what NIOSH is asking us to do with the bounding and everything, they're just guesstimating. And, I guess, that's the point I'm trying to make is, you can guesstimate, and they -- they're doing what they think is best based on their judgments, but the Board has the responsibility of making a judgment on what we can agree with or what we feel we're comfortable with. And so, that was what my presentation was trying to point out, that yes, there are some things we agree with. There's some things we need some more work on. Some of them are TBD issues. There's only a couple of SEC issues left here that -- I haven't seen anything that's convinced me, and we haven't -- they haven't answered some of the things I left open, the coagulants, the pipe scale, aerosols, the confined space. That hasn't been answered. And I don't see anything coming forward. And that's my next question to LaVon. Maybe he'll bring that up.

MEMBER ANDERSON: And just quick as a response --

MEMBER KOTELCHUCK: (Indiscernible) --

MEMBER ANDERSON: -- to Nicole, I would say, to me, the issue isn't sufficiently accurate. We really haven't defined what cons -- I mean, you

can bound with, you know, a very, very high value and it could be a, you know, a million times higher what the than the actual exposures, that's -- that's bounding. The question is really haven't defined -- and NIOSH doesn't define -- what constitutes sufficiently accurate. Now, we could do that with an individual trying to look at their doses and assuming how much time they -- they spent on an individual doing various parts of work. So, when the dose reconstruction is done, we can -- on an individual with all -- whether we're using coworker data, you know, or coexposure data and things like that, the predilection can be then to say well, yes, it's bounding because we -- we used instead of the 50th percentile, 95th percentile, that assures that we're in the bounding range. But are we overdoing it with the bounding. And I think that's the concern when we move to bounding, which is then applied to everybody. So, it really isn't an individual dose reconstruction. Simply saying, here -- here's the dose we think you'd never exceed, and we'll say that to you.

MEMBER MARTINEZ: So, we think NIOSH's proposal is too conservative; is that...?

MEMBER ANDERSON: Well, I'm saying it's -- the population it's covering has a broader range of exposure. For some of them, it's way overestimate. If we're -- I mean, NIOSH is confident that, given the methodology they're using, that it'll cover everybody's exposure. And I think we're saying we're not quite sure that that's the case. But I think we can say there's a lot of the individuals who would have a much lower exposure, and is that sufficiently accurate to assign somebody that dose?

CHAIR BEACH: LaVon, you can wait --

DR. TAULBEE: This is Tim, if I can --

MEMBER ANDERSON: Yeah.

DR. TAULBEE: -- jump in just --

CHAIR BEACH: Wait, wait, wait, --

DR. TAULBEE: -- before LaVon does.

CHAIR BEACH: -- no, wait, wait, Tim.

DR. TAULBEE: Okay.

CHAIR BEACH: LaVon's been waiting --

CHAIR ANDERSON: Yeah, I don't -- LaVon, --

CHAIR BEACH: -- patiently.

MEMBER ANDERSON: -- I'm sorry, I stepped in.

MR. RUTHERFORD: Okay. First of all, you know, I -- I -- oh, made me lose my point there for a second. But I want to say that, you know, when early on in this whole -- whole process, we worked with the work group members, we worked with SC&A, we work with members of -- of workforce for Metals and Controls to identify the highest exposure potential conditions that we could come up with. All right. So, what we came up with was our bounding model, we believe it bounds everyone, no matter what they were doing. So, I want to make sure you understand that.

The other thing is -- is that in Josie's presentation, she again said that exceeding 1 million dpm or 100 centimeters squared, it says as up to a hundred -- one million, and then also, there were more survey points. I just want to --

CHAIR BEACH: Yeah.

MR. RUTHERFORD: -- get that on record again. I also want to point

out that we have personal monitoring data after 1995. So, I'm trying to wonder how it goes to 1997 --

CHAIR BEACH: Wait, personal monitoring records for who?

MR. RUTHERFORD: For the workers.

CHAIR BEACH: From the Metals and Control (sic) workers?

MR. RUTHERFORD: From the D&D workers.

CHAIR BEACH: Okay. But not for the Metals and Control workers?

MR. RUTHERFORD: Are you saying that -- that the -- the -- in that given situation that -- that those after '95, when all this was identified, and they started monitoring workers that were doing the D&D, that the Metals and Controls people would have -- have not been covered? Is that what you're saying?

CHAIR BEACH: Would you be doing a coworker model for them? I mean, was -- I don't believe Metals & Control workers were doing the same work as the D&D workers. They were still doing their work. So, --

MR. RUTHERFORD: So, you're saying --

MEMBER ANDERSON: The -- the years is the value you gave us when you certified that review.

MR. RUTHERFORD: Yeah, but -- but Dr. Anderson, I have -- I mentioned earlier, that the class defined by the -- defined has to be defined based on the feasibility of dose reconstruction. You're identifying up to 1997 only because of that's what the petition qualified for. That -- that is not a reason to add 1996 and '97 to this class if that's what you're recommending. You have to define the parameters of the class based on the infeasibility. Now --

CHAIR BEACH: So, you're saying this class would only actually go up to '95 --

MR. RUTHERFORD: Based on what I --

CHAIR BEACH: -- based on --

MR. RUTHERFORD: -- what I've heard today.

CHAIR BEACH: -- and then we would be able to use potentially the D&D workers' exposure from --

MR. RUTHERFORD: And -- and --

CHAIR BEACH: '95 to '97?

MR. RUTHERFORD: Yeah, and don't -- don't get me wrong, but I'm agreeing -- agreeing --

CHAIR BEACH: No, I'm just trying --

MR. RUTHERFORD: -- with that recommendation because --

CHAIR BEACH: -- trying to -- just --

MR. RUTHERFORD: -- because I --

CHAIR BEACH: -- trying to understand.

MR. RUTHERFORD: -- I am definitely not agreeing with this recommendation. But I am just saying that I'm cautioning you after 1995 we have --

CHAIR BEACH: Okay.

MR. RUTHERFORD: -- personal monitoring data.

CHAIR BEACH: Okay. Well, we have not -- yes, I -- I understand what you're thinking there.

MR. RUTHERFORD: Okay.

CHAIR BEACH: Yeah.

MR. RUTHERFORD: And another thing I want to point out, you know, we keep talking about this one model fits all. You can go through a dozen AWE TBDs, and we have one -- one size fits all. Sometimes we have distributions based on whether they're a administrative person, whether they are a laborer or what. But we have -- the models are basically one size fits all. And so, to jump back in and question the one size fits all, we've been doing that since the beginning of this program.

CHAIR BEACH: All right. And Joe's had his -- Joe's just reminded me he's had his hand up, too. So, Joe, did you have a comment?

MR. FITZGERALD: I don't want to interfere on Tim. Tim -- Tim was before me, but I do want to say something. You're -- you're on --

DR. TAULBEE: Sorry, I was on mute.

MR. FITZGERALD: -- mute, Tim.

DR. TAULBEE: Sorry about that. I -- I just wanted to kind of circle back and emphasize some of what LaVon was saying there. It -- it -- you know, it's absolutely right. We use a one-size-fits-all model and many sites, especially during the residual periods. Okay. Because what we're trying to estimate is what contamination was left at the site that people were exposed to. And Dr. Anderson, I just want to try and clarify something that you said there that you felt that this dose was potentially bounding for, perhaps, the majority of workers. I thought I heard you say that, but it was an overestimate for other workers and -- and a very large overestimate. And that's the part that I want to address. I don't feel that this is a very large overestimate from the standpoint of we're talking between zero and 75 millirem. You know, this is less than background radiation from the

standpoint of -- of the U.S. population. So, this isn't a very large dose that we are proposing here. So, that -- that window has shrunk quite small here, even though we're applying these conservatism's of the 95th percentile, times the 95th percentile, and what I mean there is 95th -- 95th percent source term times the 95th resuspension, and then multiplied by two months per year, every year that that person worked there. And so, that's what I want to try and get at. This is still a relatively small dose. And this is where that sufficiently accurate comes into play, in that we have some tolerance down here at this lower dose region. And that's what Dr. Melius (ph) pointed out a few years ago, in that, when we get down here to these lower doses, yes, there is uncertainty and there's significant uncertainty, but it -- it's not an unboundable dose, and we can tolerate that in the exposure models and when we do the dose reconstructions. Thank you.

CHAIR BEACH: Okay. I think, Joe --

MR. FITZGERALD: And -- and thank you. Yeah, yeah, yes. And thank you, Tim, for that lead. Actually, the dialogue -- and I think we mentioned this in our supplemental review with -- with Linde Ceramics was, in my way -- it really does inform some of these same issues that we're talking about with M&C. And we -- we -- we tend to quote Dr. Melius quite a bit, but -- but some of the issues that were discussed, including the -- you know, the need for less precision, perhaps when you have lower dose levels. That was discussed relative to Linde. But also, what was discussed relative Linde was the plausibility of upper bounds, and I -- I -- I don't actually disagree with anything I've really heard from -- from NIOSH relative to the -- the -- the long history of applying upper bounds and how they've been used and -- and

based on -- on these reviews.

But I think going back, again, to Linde. I think there was a very big caution made by Dr. Melius, but also the SEC work group, that obviously, you know, one had to identify a plausible upper bound, not just simply a large number that was by virtue of its largeness would obviously be so conservative as to bound all conceivable doses, but one that would need to be plausible. And I heard Dr. Taulbee mentioned this earlier, that certainly the regs provide for the plausible upper bound. And that plausibility is the issue but really talking about because to be plausible, I think, that by -- you know, by that discussion with Linde and by other precedents, first off, you certainly have to account for, you know, the likely source terms and exposure pathways and potentials of the period we're talking about. And I'll be quite frank, I -- in reviewing the information that was provided for M&C, I still believe there are several source terms, or at least two key source terms, the one with the cutting of pipe -- pipes with radioactive scale, and also the -- the implications of coagulants concentration and consolidation of the varying sediments we're talking about in drainpipes. To my way of thinking, that raises questions and uncertainties regarding these -- the source terms that are the basis for the -- the bounding value that's being proposed.

The other thing I think that came out in that Linde discussion and also the SEC work group at that time was there had to be some equivalency, some comparability of the conditions and processes between the time period from which the bounding information is being drawn and the -- the period to which it's being applied, whether it's renovation, which was the case with Linde, or residual era, which is M&C. There had to be some comparability of

conditions and processes to apply that -- that bounding value. And, you know, clearly, anytime one applies a bounding value, there's uncertainty. I mean, that's just the name of the game. There's going to be uncertainty. And I totally agree with what's been said about the fact that you have to deal with the uncertainty and the -- you -- you -- if you didn't have uncertainty, you wouldn't need a bounding analysis to begin with. So, the bounding approach is -- is intended to address the inherent uncertainties that might exist. The -- the only issue is when one applies the conservatism. So, the different measures to apply conservatism to mitigate that uncertainty. Obviously -- and this is what I think Dr. Anderson was talking about -- there -- there has to be some constraint, if you want to call it that, on how extreme that conservatism would end up being. Otherwise, as Dr. Melius said, you could upper bound anything by coming up with large enough number. So, the -- the -- the question is, conservatism, yes, but the number that's arrived at has to have some bearing on the conditions and the circumstances of the site and can't be just simply a large number. It has to have some validity in terms of -- of what's being applied as far as conservatism.

So, I guess in the end, there's -- remains some questions about whether or not the existing bounded proposal is plausible, because it doesn't necessarily account for at least two of the source term questions that have been raised. The bounding analysis also -- and I used the three-legged stool analogy. Certainly, one of those legs is the resuspension factor. And even if that resuspension factor is ultimately a TBD issue, that bounding analysis certainly relies on that resuspension factor to be valid bounding value. So,

that still needs to be addressed. It's an outstanding issue.

And that's kind of my -- that certainly was the perspective of the review we did. It does not challenge the fact that there's been a long history and usefulness on the bounding -- the application of a bounding value. It just raises some questions about whether that bounding value as proposed accounts for the source terms that it needs to account for in the residual period or not. And I think there's still some issues revolving around that. And it's not clear to me that even though it certainly is a very conservative number, whether or not that conservative number isn't simply a large number, but, you know, certainly has some bearing in terms of the similarity of the D&D era with the residual era. And I think we were pointing to a number of differences that give us pause as to whether or not the -- the information and the conditions were the -- were close enough that you could apply that -- that value. That's -- that's -- that's -- that's all I wanted just to throw in from -- from my standpoint.

CHAIR BEACH: Thanks, Joe.

MR. RUTHERFORD: I just -- Josie, one quick thing, just forgot to answer your response about response. We are working on a response to SC&A's response. And that does address some of this that you brought up that we haven't addressed. Because in Joe's -- or in SC&A's response, they pointed out a couple of things that they felt that we didn't address. So, I just wanted to point that out.

MEMBER KOTELCHUCK: Yeah, okay.

DR. TAULBEE: And if -- this is Tim. I've just got one little follow on with what Joe was saying -- where he was talking about the -- kind of the

upper dose of the bounding scenario and being implausible, you know, for everybody put context on it -- and I know we've talked about Linde quite a bit here -- as I recall, the -- the -- the original scenario that we had proposed was workers who were jack hammering, which obviously resuspended a large volume of dust, and that was where the Board felt that this would not be appropriate for other people. The dose that would be assigned in that scenario was on the order of around, as I recall, about 6 rem per year type of scenario. And in this particular case, we're talking about a dose that is much, much, much lower, along those lines. And that's why we keep circling back to that and emphasizing it. I just think that context might help Dr. Martinez and others. Thank you.

MEMBER KOTELCHUCK: Uh-huh.

CHAIR BEACH: Thanks. Yeah. And there's two schools of thoughts with Linde. There's -- there's precedents that were set, and there's also whether it is similar in some ways. So, yeah, there's definitely two or three things there with -- where Linde comes in.

Loretta, are you --

MEMBER VALERIO: -- Josie.

CHAIR BEACH: -- Loretta, are you --

MEMBER VALERIO: Can you hear me?

CHAIR BEACH: Hi, Loretta. Do you have --

MEMBER VALERIO: Can you hear me?

CHAIR BEACH: Yeah.

MEMBER VALERIO: I know I've been pretty quiet. I've been trying to process all of this because there's so much information. But I do have a

question, and it's probably for NIOSH. Looking at your site's -- slide four, the last (indiscernible) where you talk about the intrusiveness of activities, it's seen by NIOSH as comparable to other AWE facilities with D&D work handling a piping (indiscernible) similar to that as the M&C maintenance workers. So, I guess my -- my question -- I (indiscernible) finding something on Linde, and I -- I couldn't find it. I don't know if I was looking at the wrong place. But, I guess, my question is when they were performing the D&D at Linde, were the Linde maintenance workers helping in the removal of the contaminated equipment, specifically pipes? And were those Linde employees monitored, and is that the difference between M&C and Linde, that maybe they were monitored at another site but not an M&C?

MR. RUTHERFORD: Well, Josie I'll -- I mean, not Josie, I'm sorry, Loretta. I'll attempt to -- I'll address part of it. Now, I -- I do not recall who was -- I mean, whether maintenance workers were separate how -- who did all of the work. I think a lot of the -- if I remember correctly, a lot of the renovation work was done by a con -- some of it was done by a contractor. And honestly, Joe may remember a little bit about that. I'm not sure. And I see Dr. Taulbee on here. He may want to address the -- the -- I -- I don't believe at -- there was any monitoring take -- data taken during that -- during the actual renovation period, that's why we used that prerenovation jack hammering data, the air samples that were taken right at the beginning and during the jack hammering, and that's why that day was -- so, I don't remember any workers being monitored during that period. And maybe -- go ahead, Tim.

DR. TAULBEE: That's correct.

MR. RUTHERFORD: Right.

DR. TAULBEE: That's what I was thinking. The monitoring data was the air monitoring data that was used --

MR. RUTHERFORD: Right.

DR. TAULBEE: -- for Linde from that. That's all that I was gonna say.

MR. FITZGERALD: Yeah, --

DR. TAULBEE: To answer Loretta's question, I don't know precisely. Go ahead, Joe.

MR. FITZGERALD: Yeah, actually, I have the SEC designation piece right here in front of me, and it answers it specifically. No personnel bioassay monitoring results have been identified for Linde Ceramic workers during the '54 to 2006 period. However, NIOSH has obtained survey data, to include air monitoring data from both the decontamination activities at Linde and several distinct major investigations during the residual radiation period. The residual period surveys include (indiscernible) characterization, building surveys, your sampling results. But, again, there was no uranalysis, chest counter, or other bioassay information available.

MR. RUTHERFORD: Joe, was that during -- that was the residual period that we determined dose reconstruction because you said to 2006; is that -- is that the correct one that --

MR. FITZGERALD: I think that was the -- yeah, believe that was residual.

MR. RUTHERFORD: I was just wanting to make sure because, I mean, the designation period, where we actually designated class we said that, but the remainder of the years where we did not -- where the determination was

made that dose reconstruction was feasible, there was no monitoring data there as well. It just sounded like you were reading that one to me, maybe I'm wrong.

MR. FITZGERALD: Oh. Maybe. Okay. Well, at any rate, it doesn't look like there was monitoring information available during that entire period. There's no personnel bioassay monitoring (indiscernible) identified for Linde Ceramic workers.

MR. BARTON: Let me sort of hop on to what Joe just said, and also what Tim was saying earlier about Linde, there's two things pretty much philosophically here at work. You can -- you can bound anything. And as Dr. Anderson put it, but does it go beyond the pale where it's not plausible anymore. And that's where the Linde SEC came in. It's the jack hammering operation, and that's what was suggested to be applied to everybody. And the SEC work group did not like that, and the Board eventually recommended an SEC because it was implausible.

Now, the other part of that, which has been mentioned a couple of times, and Tim pointed out, the second facet is the actual level of the dose. So -- so, when you start applying conservatism upon conservatism, does -- does -- does it get to a level where it's implausible? And that is a judgment call, and it's really one for the Board. But again, it's two -- it's two parts; is it -- is it plausible, and you have to factor in the actual level of dose against the plausibility question, and there's no threshold for that. It's a judgment call.

MEMBER KOTELCHUCK: Yeah, yeah.

CHAIR BEACH: Yeah, you're correct. And when we -- when we

decided that Linde SEC, we brought it to the full 2006 -- and then during Board deliberations out of the work group, because I was on the work group, we split that laboriously into two separate parts. We changed our -- what we -- we determined to be the years, and we voted on the two different years separately. So, the first part became an SEC, and the second part did not up to 2006. I'm try -- was trying to find that also. I think we went to '69. But --

MR. FITZGERALD: Yeah, '69.

CHAIR BEACH: Yeah.

MR. FITZGERALD: Yeah, '69.

CHAIR BEACH: I think it was '69. So -- so moving forward. All right. So, we can -- we have a couple of different options. We can move to the full Board with a referral from the work group to deny NIOSH's recommendation, to deny the SEC for 1968 to 1967. That's one option.

The second option is we can let NIOSH finish the work products that they are working on -- and LaVon forgive me if I -- I didn't realize you had taken it to -- to do those -- the response. I don't believe it was part of our discussion in May, but I could be wrong. So, just let me understand, LaVon, you are updating the -- the table for the AWE sites, and then you're working on a response to SC&A's paper, the response to their response to you?

MR. RUTHERFORD: Yes, and now -- and actually, I - I know for a fact I brought the table one up during the work group meeting.

CHAIR BEACH: Okay.

MR. RUTHERFORD: And --

CHAIR BEACH: I might have just missed it. I didn't get that. And

normally I read it before a meeting, but I didn't get it until yesterday.

MR. RUTHERFORD: And the other --

MR. FITZGERALD: That's -- that's correct. That's correct. Yeah.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: Okay.

MR. RUTHERFORD: And responding to -- to us was either in the email traffic between us the response or during the actual work group meeting -- meeting. I -- I can't remember, but I'm --

CHAIR BEACH: Okay. Yeah.

MR. RUTHERFORD: -- pretty sure if I did that, because when Bob recognized -- when -- actually, in the emails, it was either Bob or somebody recognized we wouldn't have time to respond to that, and I can't --

CHAIR BEACH: Okay.

MR. RUTHERFORD: -- like I said, I'm not sure what --

CHAIR BEACH: Okay. So, let -- let's recap. So, the table, update the table, and then the response to SC&A. Is there any other items, anything from -- anything else you're working -- and I guess that will cover everything, the questions of the work group has and SC&A.

MR. RUTHERFORD: Brant --

CHAIR BEACH: Your response.

MR. RUTHERFORD: Brant, was there anything else?

MEMBER ANDERSON: I was only going to raise the issue of (indiscernible) or does the committee want to talk about what would be our definition of a case and ask about, you know, your -- LaVon said, where you could eventually if we go with a case definition of just the maintenance

workers, goes to labor to see if they can actually identify those people. And I'm wondering if -- if we're going to put things off further. Is that a thing we could ask to have done, because it makes a difference if we're including everybody that's working there versus --

CHAIR BEACH: Well, --

MEMBER ANDERSON: -- just the maintenance people.

CHAIR BEACH: If you look at -- if you look at the ER, it is all maintenance workers spelled out. But Rashaun, that's a question I'll pitch to you. Normally, the work group refers to the full Board and then after deliberations, it goes to DOL. If you --

DR. ROBERTS: That's -- that's correct.

CHAIR BEACH: Okay.

MEMBER ANDERSON: Okay. And I wanted --

CHAIR BEACH: So, you --

MR. RUTHERFORD: I want to add that is correct for an 8313, like this is. 8314, when we go through and we're -- we know we're going to add a class, we send that class definition to DOL --

CHAIR BEACH: Correct.

MR. RUTHERFORD: -- to make sure they can administer it.

CHAIR BEACH: Yes.

MR. RUTHERFORD: The only thing I'm offering up here is that you will -- it will slow things down if you define a class that that Department of Labor cannot administer. So, if you have an opportunity, and you know what that class you're wanting to do, that might be something -- I think that's what Dr. Anderson's mentioning.

CHAIR BEACH: Okay. So, is that something we can do offline and at the -- at a future work group meeting, or I mean, I don't know if we could sit here on this call and do that.

MR. RUTHERFORD: Okay.

CHAIR BEACH: We could send in -- send out some stuff prior to the meeting for the work group members and NIOSH to look at.

MR. RUTHERFORD: Oh, yeah.

CHAIR BEACH: Here -- here's what I'm going to propose. I'm going to propose that we -- you said you were going to have your items available in August. I would propose that this work group come together either shortly after August for a face-to-face work group meeting and finalization of all of our concerns and move forward for a recommendation in December. So, I don't know how others feel about that on the subcommittee -- or the work group.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: But I think because of where we are, a face to face would be easier to have this conversation. But if that's not acceptable, we can -- we can certainly do it over Zoom.

MEMBER ANDERSON: The other is that date of '95. That was raised by LaVon as well, and I can see the argument for that. So, but we really haven't talked about the same as --

CHAIR BEACH: Which one? What are you talking about?

MEMBER ANDERSON: Changing the end date from --

CHAIR BEACH: Oh, yeah.

MEMBER ANDERSON: -- '97 to --

CHAIR BEACH: Yeah. We need to --

MEMBER ANDERSON: -- '95 --

CHAIR BEACH: Yes.

MEMBER ANDERSON: -- date beyond that, --

CHAIR BEACH: Yeah.

MEMBER ANDERSON: -- and we really haven't --

CHAIR BEACH: Yeah.

MEMBER ANDERSON: -- never occurred to me that we really had that as an option. We could look at it and one -- committee could change --

CHAIR BEACH: yeah.

MEMBER ANDERSON: -- we haven't dealt with can it be done after --

CHAIR BEACH: Well, --

MEMBER ANDERSON: -- '95.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: Yeah. I think we have to ask what data is available from '95 to '97 for D&D workers, and I believe NIOSH would be the one to ask for that data. Is that something you can do LaVon or Brant or whoever's actually doing the work? Pat?

MR. RUTHERFORD: It'll actually be --

CHAIR BEACH: Let me go through the --

MR. RUTHERFORD: -- Pat.

CHAIR BEACH: Yeah, that's what I thought.

MR. MCCLOSKEY: Yeah, we can --

MR. RUTHERFORD: Pat, can you answer that question?

MR. MCCLOSKEY: Yeah. Yes, we can do that, Josie.

CHAIR BEACH: What kind of time frame would we be looking at for that?

MR. MCCLOSKEY: Just to log all the D&D internal monitoring and monitoring data, you'd want to see a list of what all that was?

CHAIR BEACH: Yeah, to see what a cutoff date would look like.

MR. MCCLOSKEY: We can pull that together rather -- rather quickly, I would say.

CHAIR BEACH: Quickly?

MR. MCCLOSKEY: Yeah.

CHAIR BEACH: So, prior to any meeting that we propose?

MR. MCCLOSKEY: Certainly.

MEMBER KOTELCHUCK: Good. Good.

CHAIR BEACH: Okay. Other sub -- other work group members? Sorry, I keep saying sub, because I'm used to procedures. Other work group members, what do you think?

MEMBER KOTELCHUCK: I'm -- I'm very comfortable with going to a face-to-face meeting --

CHAIR BEACH: Okay.

MEMBER KOTELCHUCK: -- of the work group. I think that would be good. And --

MEMBER ANDERSON: You could all come --

CHAIR BEACH: Based on -- what's that, Henry?

MEMBER ANDERSON: I'll host it here in Madison.

MEMBER KOTELCHUCK: Sure, okay.

CHAIR BEACH: Typically, we would use Cincinnati, but --

MEMBER ANDERSON: Yeah, I know.

CHAIR BEACH: -- since COVID --

(Whereupon, Members Kotelchuck, Anderson, and Beach speak simultaneously.)

MEMBER ANDERSON: I thought I'd add a little levity to it here.

CHAIR BEACH: Yeah, I gotcha, although I'd be happy to come your way.

Rashaun, what are your thoughts? When could we schedule this?

DR. ROBERTS: Actually, I'm wondering about how other people feel about the face to face and their availability. So --

CHAIR BEACH: Okay. Well, that's why --

DR. ROBERTS: -- (indiscernible) you --

CHAIR BEACH: -- see about Dave -- that's why I wanted to see about Dave. Dave said, face to face would be good. Andy said yes, I agree with that.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: Loretta?

MEMBER MARTINEZ: I'm gonna have to say maybe, but it depends on when it is.

CHAIR BEACH: Okay.

MEMBER KOTELCHUCK: Okay. Well, we can -- we can work that out. I answered yes face to face, because I am the oldest -- oldest speaking member of this group, at this point.

CHAIR BEACH: Yeah. We typically went into Cincinnati right by the airport --

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: -- and in and out. I just think where we are and as much data as we've gone through, we started at a face to face, and I think it would be nice to end it. And with a recommendation in December, if that's agreeable to everybody, we just need to figure out timing.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: So, I'm proposing September or November. I'm gone the month of October.

MEMBER VALERIO: Josie, this is Loretta.

CHAIR BEACH: Hi, Loretta.

MEMBER VALERIO: Hi. So, and as far as a face-to-face meeting, I'm going to say maybe. I got some -- you know, I -- unfortunately, I got some news this morning that, you know, family commitments may be changing here pretty quickly. So, I mean, if -- if you decide on a face to face, and at that point, I will let you know if I will be available.

CHAIR BEACH: Okay. Is later better? Later better for you, or is it just, it's hard to say?

MEMBER VALERIO: It's hard to say.

CHAIR BEACH: Okay.

MEMBER VALERIO: It's -- it's hard to say. The next few months are going to be pretty -- pretty difficult.

CHAIR BEACH: Okay.

MEMBER VALERIO: So, yeah, we'll just have to take it --

CHAIR BEACH: Okay.

MEMBER VALERIO: -- as it comes.

CHAIR BEACH: Okay. We can -- we can do that. So, thank you for letting us know.

MEMBER KOTELCHUCK: I think the critical question is that there's -- I believe there is nobody in our group -- or let's ask. Is there anybody in our group who really does not want to attend a person to person. It could be for personally, even for health reasons? And I don't hear that. But if there is somebody who feels that way, and like Nicole, we can schedule a date, hopefully, that would meet your professional needs.

MEMBER MARTINEZ: Yeah. My only limitation is my schedule.

MEMBER KOTELCHUCK: Sure. That's --

CHAIR BEACH: Okay.

MEMBER ANDERSON: Same with me. Josie got out October. October is my bad month, too, so.

CHAIR BEACH: Good. So, October's out.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: Would people prefer September or the first of November? We're getting into the holidays if we go too late.

MEMBER KOTELCHUCK: September, but let's see what November -- I'm away for -- I'm away for in October as well. But I think I could --

CHAIR BEACH: So, the first week of November, the 6th through the 10th, does that look good for anybody's schedule?

MEMBER KOTELCHUCK: Wait a minute. I'm -- I'm busy November 12th, but early November I could handle.

CHAIR BEACH: Okay. So, the first week, the 6th, 7th, 8th, 9th, 10th, preferably on, like, on a Wednesday or Thursday.

DR. ULSH: This is Brant. I don't know if it matters, but I have on my calendar that election day is November 7th and Veteran's Day is November 10th.

MEMBER ANDERSON: I got a conflict on the 10th.

CHAIR BEACH: Yeah, Veteran's Day --

MEMBER KOTELCHUCK: I have a --

CHAIR BEACH: -- isn't listed in mine.

UNIDENTIFIED SPEAKER: I have a conflict --

MEMBER MARTINEZ: I'm out of the country --

UNIDENTIFIED SPEAKER: -- the week of the 6th.

MEMBER MARTINEZ: I'm out of the country the week of the 6th, yeah.

CHAIR BEACH: All right. What about September, the first week of September, the second week?

MEMBER KOTELCHUCK: Sure. Both.

MEMBER ANDERSON: I (indiscernible) --

DR. ROBERTS: -- does that in terms --

MEMBER ANDERSON: (Indiscernible) --

DR. ROBERTS: I'm sorry.

MEMBER ANDERSON: You have to get the material to us.

CHAIR BEACH: Go ahead, Rashaun.

MEMBER ANDERSON: -- (indiscernible).

CHAIR BEACH: Well, NIOSH said that they would have their stuff ready in August. That's why I was looking at --

MEMBER KOTELCHUCK: Okay.

CHAIR BEACH: -- September, so and we can go -- I mean, if they

were going to have it ready for the Board meeting, the only thing we asked them for extra was the data for the exposures for the two years, the '95 to '97, and Pat thought he could get that together relatively soon.

MEMBER KOTELCHUCK: The first week in September, we're really talking about the post Labor Day, remainder of --

CHAIR BEACH: Yeah.

MEMBER KOTELCHUCK: -- Labor Day, which could be tight for people. The next week looks better, the week of the 11th, I mean, to me, 12th, 13, and 14, they're all good.

DR. ROBERTS: And I don't know if there're any issues. You know, we do have the in-person Board meeting in August, --

MEMBER KOTELCHUCK: Yes, yes.

DR. ROBERTS: -- you know, there's that, so, I don't know if that factors into anyone's considerations.

CHAIR BEACH: No. How about the 19th? Does anybody have a problem with the 19th?

MEMBER KOTELCHUCK: No. It works --

MEMBER MARTINEZ: If we could tentatively -- I do teach Tuesday, Wednesday, Thursday, which is a challenge, but I can -- if we pencil it in, I can see if I can find a graduate student to cover for me.

MEMBER KOTELCHUCK: That'd be great.

CHAIR BEACH: We could try -- we could try a Monday. How does anybody feel about coming in and working on a -- do -- working on a Monday?

MEMBER KOTELCHUCK: Sure.

CHAIR BEACH: The 4th, 11th, or the 18th, or the 25th?

MEMBER KOTELCHUCK: Well, the 4th is Labor Day; is it not?

CHAIR BEACH: Okay. So, forget -- forget that. So, the 11th? Is that a problem Rashaun, if we flew in on a Sunday, worked on Monday?

DR. ROBERTS: I think that's just an individual preference as to whether they want to travel on the weekend.

CHAIR BEACH: Oh, true, true.

MEMBER KOTELCHUCK: (Indiscernible) --

CHAIR BEACH: That's true.

MEMBER KOTELCHUCK: We've been going for a long time. So, I'm -- I'm open to coming in -- to traveling over the weekend to be at a Monday meeting at least for one in person.

MEMBER ANDERSON: 11th --

MEMBER MARTINEZ: Well, perhaps --

MEMBER ANDERSON: -- (indiscernible.)

MEMBER MARTINEZ: Perhaps we could say 18, 19 tentatively. I've marked both of those, and then if I could find someone to cover my classes, then folks wouldn't have to travel on the weekend.

CHAIR BEACH: Okay. So, --

MEMBER KOTELCHUCK: Nice.

CHAIR BEACH: -- 18th, 19th, with a meeting date on the 19th. Okay.

MEMBER KOTELCHUCK: That'd be great. That would be great.

DR. ROBERTS: All right.

???: To -- to Rashaun's question, does this affect the plans for August? Because, I believe, M&C was slated for presentation at

(indiscernible) in August. I mean, we did just an update, but --

MEMBER KOTELCHUCK: It'd be an update.

UNIDENTIFIED SPEAKER: Certainly, we -- yeah, I don't think there would be any --

MEMBER KOTELCHUCK: No.

UNIDENTIFIED SPEAKER: -- (indiscernible).

DR. ROBERTS: I would assume an update. Josie, is that?

CHAIR BEACH: That -- that is fine.

DR. ROBERTS: Okay.

MEMBER KOTELCHUCK: Sounds good.

CHAIR BEACH: Then I'm wondering NIOSH, would you -- are you -- are you going to present then too or just hold off until the work group has your data?

UNIDENTIFIED SPEAKER: I would anticipate we will just hold off and let you --

CHAIR BEACH: Okay.

UNIDENTIFIED SPEAKER: -- give the update, unless Brant or Grady sees a reason for us to present at that time.

MR. CALHOUN: No, if it's -- This is Grady. If it's just an update, there's no reason for us to -- to -- to --

CHAIR BEACH: Okay.

MR. CALHOUN: -- have a presentation, in my opinion.

CHAIR BEACH: And is SC&A able to support that meeting?

UNIDENTIFIED SPEAKER: Well, certainly I can support it and be there. This is the work group meeting we're talking about, right?

MEMBER KOTELCHUCK: That's right.

CHAIR BEACH: Yes.

UNIDENTIFIED SPEAKER: September? September, yes.

CHAIR BEACH: September 18th or 19.

UNIDENTIFIED SPEAKER: Yes, for me, and Bob, I don't know what Bob's status is.

MR. BARTON: I'll make myself available. And I'll see you guys in -- in Augusta, who's ever going there.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: Oh, yep.

MEMBER KOTELCHUCK: Good, good.

CHAIR BEACH: Do we want to pick out a secondary date in November in case something comes up, or are we satisfied with our September date?

MEMBER KOTELCHUCK: Usually two days is -- is -- takes care of us. So, this would essentially be a third day. We could, if you wanted to.

CHAIR BEACH: That was more for Rashaun if she thought that was necessary.

MEMBER KOTELCHUCK: Sure.

DR. ROBERTS: Maybe. I don't think there's any harm in setting it up. We could certainly go for the 18th or 19th, but if there were extenuating circumstances, we have a fallback, if you'd like.

CHAIR BEACH: Yeah, that's what I was thinking.

MEMBER KOTELCHUCK: You said the 18th or 19th of November?

CHAIR BEACH: No, that would be --

MEMBER KOTELCHUCK: September.

CHAIR BEACH: That was September. So, a fallback in November.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: Is there any preferences, Nicole, with your schedule?

MEMBER MARTINEZ: I am going to be out of the country, in Japan, from October 29 through November 12. So, preferably not the 13th, because I will be jet lagged.

MEMBER KOTELCHUCK: Sure.

CHAIR BEACH: Yes, of course.

MEMBER MARTINEZ: But later that week would be fine.

MEMBER KOTELCHUCK: 15-16, something like that?

MEMBER MARTINEZ: Yeah.

CHAIR BEACH: We have a procedures meeting on the 16th, so, that wouldn't work --

MEMBER KOTELCHUCK: Okay.

CHAIR BEACH: -- for me. We don't want to go into the 20th because of Thanksgiving.

MEMBER KOTELCHUCK: Right, that's Thanksgiving.

CHAIR BEACH: And --

MEMBER KOTELCHUCK: So, --

CHAIR BEACH: And --

MEMBER ANDERSON: -- the 15th.

CHAIR BEACH: Yeah. How -- what if we hit the 14th, then I could get back in time for my procedures meeting?

MEMBER KOTELCHUCK: That sounds good.

MEMBER ANDERSON: (Indiscernible) -- we'll get Nicole medication.

CHAIR BEACH: Well, we'll give her one day to recover, the 14th.

MEMBER ANDERSON: Assuming she makes all her flight connections.

MEMBER MARTINEZ: Yeah. I'll have to call in on Zoom using the plane Wi-Fi.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: Yeah.

MEMBER KOTELCHUCK: Right.

DR. ROBERTS: Okay. So, as a first choice, I have the September 18th or 19th, and as an alternative, November 14, or 15th; is that what we're saying?

CHAIR BEACH: Yeah, but you know, what, can I cloud up the issue? We never talked about the last week of September. Is there any issues with the 25th, 26th, or 27th as a secondary instead of --

DR. ROBERTS: I actually would be on travel --

CHAIR BEACH: Okay.

DR. ROBERTS: -- the last week of September.

CHAIR BEACH: Okay, then I guess that's where we're at.

MEMBER KOTELCHUCK: And that is to say November what? Just for --

MEMBER ANDERSON: 14-15.

DR. ROBERTS: 14th or 15th.

MEMBER KOTELCHUCK: 14th or 15th?

DR. ROBERTS: Uh-huh.

MEMBER KOTELCHUCK: Okay. That's the alternate?

DR. ROBERTS: Yeah.

MEMBER KOTELCHUCK: Oh, yeah. So, we have four dates really. 14th or 15th. Okay.

CHAIR BEACH: Okay, thank you. Any last words or thoughts? Everybody's tired.

MEMBER KOTELCHUCK: Yeah, my --

MS. BURGOS: This is Zaida.

CHAIR BEACH: Hi, Zaida.

MS. BURGOS: Hi. I just remembered that for travel, we have to put everything in by July 31st, and September is this fiscal year.

CHAIR BEACH: Okay.

MEMBER KOTELCHUCK: Which means?

CHAIR BEACH: Which means we have to settle on our date now; is that correct?

MS. BURGOS: If it's September, all travel needs to be done.

MEMBER MARTINEZ: Then we can just say that Tuesday. I think that's fine. I think I can manage. I think that would be the 19th.

MEMBER KOTELCHUCK: Yeah.

MEMBER ANDERSON: And will we plan for Cincinnati?

MEMBER KOTELCHUCK: Yeah. Good, good.

CHAIR BEACH: Zaida, do you need things from us or just Rashaun at this point for that?

MS. BURGOS: I need all your travel, but I have -- also have to contact the hotel to make --

CHAIR BEACH: Arrangements.

MS. BURGOS: -- meeting.

DR. ROBERTS: Uh-huh.

CHAIR BEACH: Is that possible?

MS. BURGOS: Yeah, I hope so, if they --

CHAIR BEACH: Okay.

MS. BURGOS: -- if I don't have problems getting a hotel and the government rate.

CHAIR BEACH: Okay. And that may be a reason why November's gonna work, which is why I asked to pick us up another date.

MEMBER KOTELCHUCK: Uh-huh.

CHAIR BEACH: So, if we run into travel trouble, then we'll have to push it to November.

MEMBER KOTELCHUCK: Yeah. Okay.

CHAIR BEACH: Okay. Thank you for letting us know, Zaida.

MS. BURGOS: Okay.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: Okay. Anything more for the good of the work group? Lots to think about. I think most of our presentations are done, other than waiting for the few things from NIOSH. And then thank you, everyone.

MEMBER KOTELCHUCK: Thank you.

MEMBER MARTINEZ: Thank you.

MEMBER KOTELCHUCK: Very useful meeting.

CHAIR BEACH: All right. Well, I think we covered a lot.

MEMBER KOTELCHUCK: We did.

CHAIR BEACH: And we are out.

(Whereupon, the meeting was adjourned at 4:17 p.m. EDT).