CENTERS FOR DISEASE CONTROL AND PREVENTION

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

ADVISORY BOARD ON RADIATION AND WORKER HEALTH

TELECONFERENCE OF METALS AND CONTROLS WORK GROUP MEETING

WEDNESDAY, MAY 12, 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

Kotelchuck, David, Member

Martinez, Nicole, Member

Pompa, David, 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

Petitioner:

Elliott, Michael

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PROCEEDINGS

(11:00 a.m.)

WELCOME AND ROLL CALL

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

All of the materials for today's meeting are posted on the NIOSH website for this program. You can find them under the schedule for public meetings. You just need to go to calendar year 2023 and click on the tab for May to find them. 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. These materials were provided to work group members and also to staff prior to this meeting.

As you know, the meeting is being conducted by telephone and by Zoom. On the website, there is 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, 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 -- you'll only be able to speak and hear the presentations through the telephone line. If that's the case for you, please make sure that your phone stays muted unless, of course, you're speaking. If you don't have the mute button, press star six. If you

need to take yourself off, press star six again. Also, if you're only participating by telephone, we're unable to see you or your name, so please identify yourself before providing your comments or questions.

So first off, let's go ahead and talk a little bit about conflict of interest. And I will speak to that with respect to members of the Board who sit on this particular work group. In order to sit on a work group like this, they -- all members have to have been determined not to have any conflicts of interest with regard to that particular site, so we don't need to have the -- the work group members address conflicts in the roll call.

So, with that, let me move into the roll call for -- starting with members of the work group, and then I will go ahead and start with the chair.

CHAIR BEACH: I am present. Good morning.

DR. ROBERTS: Good morning. Anderson.

MEMBER ANDERSON: Present.

DR. ROBERTS: Kotelchuck.

MEMBER KOTELCHUCK: Here.

DR. ROBERTS: Martinez. Okay, And Valerio.

MEMBER VALERIO: I'm here.

DR. ROBERTS: Okay. We do have a quorum, so I'm gonna go ahead and move on to the roll call for others. And 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 discussions accordingly. So let's go ahead and start with NIOSH/DCAS/ORAU.

MR. CALHOUN: This is Grady Calhoun. I have no conflicts at Metals and Controls.

DR. ROBERTS: Okay.

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

Mr. Rutherford: This is LaVon Rutherford. I have no conflicts at Metals and Controls or Mound.

DR. NELSON: This is Chuck Nelson. I have no conflicts and Metals and Controls or Mound.

MR. ULSH: Brant Ulsh. No conflicts at either site, Metals and Controls or Mound.

MR. BAILEY: Nick Bailey. I have no conflicts either.

DR. ROBERTS: Okay.

MR. MCCLOSKEY: Pat McCloskey, ORAU, no conflicts.

DR. ROBERTS: Okay.

MR. SHARFI: Mutty Sharfi, conflict at Mound.

DR. ROBERTS: Anyone else at DCAS/ORAU? Okay. Moving on to SC&A.

MR. BARTON: Bob Barton, no conflicts.

MR. FITZGERALD: Joe Fitzgerald, no conflicts.

MS. GOGLIOTTI: Rose Gogliotti, no conflicts.

MS. MANGEL: Amy Mangel, no relevant conflicts.

DR. ROBERTS: Okay. Anyone else for SC&A? Okay. Moving on to HHS and contractors.

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

DR. ROBERTS: Any other HHS or contractors? Is there anyone here with the departments DOL, DOE, others? Okay. Hearing none, let's move on to members of the public who would like to register their attendance now.

MR. ELLIOTT: This is Mike Elliott. I'm one of the petitioners for SEC petition 236.

DR. ROBERTS: Thank you and welcome. Anyone else? Okay. Well, hearing none, we'll just move forward. Again, welcome to you all.

Again, before we officially start, just a reminder throughout the meeting to just please make sure that you're muting your phone or yourself on Zoom. If you don't have a mute button and you're on telephone, press star six to mute and then to take yourself off, press star six again. For those on Zoom, the mute button should be on the lower left-hand side of your screen. And I just ask that everyone periodically check your phone and computer just to make sure that you're remaining muted if you're not speaking. So, with that, let's get started and I'll turn the meeting over to the working group Chair, Josie Beach.

CHAIR BEACH: Okay. Again, thank you and good morning. I just had a brief comment before SC&A starts their presentation. Metals & Control, as you know, has had a long history. Our first work group meeting was held on May 3, 2018. We've had five work group meetings since then, the last meeting was held on March 18th. It was a very full agenda, and due to circumstances beyond our control, we had to cut the meeting short. For the presentation that NIOSH presented, the DCAS response to work group and petitioners' questions, the work group was only able to discuss and respond to the first 12 or 13 slides out of the 42 leaving many of the discussions on

the table.

The reason I'm mentioning this is it's important to note that the work group has never accepted or agreed with the conclusions advanced by either NIOSH or SC&A's exposure pathway modeling. We were raising questions and receiving answers. To date there have been six exposure models added to the evaluation review in addition to OTIB-70 and TBD-6000. The work group was concerned with the outstanding issues not yet discussed in the work group and questions that remained to be answered.

That is why we decided to task SC&A to focus on any remaining questions or outstanding issues that have -- had yet to be raised as a review, looking at the issues in data with a different set of eyes and perspectives, not so much to question the analysis that had been done before, but to broaden the interpretation of the information involved. The tasking led to the August 2022 supplemental review that we will start this meeting with. So with that, I wanted to go ahead and turn it over to SC&A.

SC&A TR-2022-SEC002

Supplemental Review of M&C Work Group Issues

MR. BARTON: Okay. Thank you, Josie. This is Bob. Hopefully, everybody can hear me clearly and can see my presentation slides.

CHAIR BEACH: Yes, we sure can.

MR. BARTON: Excellent. Excellent. Well, good morning, everybody. First, while I'll be giving this presentation and also the second presentation, I wanted to thank the diligent work put forth by Joe Fitzgerald who is on the call, and I will certainly probably lean on him for any -- any specific technical

questions I may otherwise stumble over.

Also, before I get started, I wanted to sort of echo your comments, Josie, and acknowledge the elephant in the room, and it's a somewhat unusual situation. It understandably has led to confusion, but the general process that has happened, I remind everyone that it is not unprecedented for the Board to ask for further information, discussion, and send SC&A or NIOSH or both back to provide further clarification so that you-all, the work group, is in a position to make the best decision under your purview. So, I'm hoping that we can approach a place of clarity on the issues at hand today.

To that end, I'd like to keep everyone focused on the big picture here that, in my mind, there are two main issues to consider today. The first concern is whether the data is sufficient to put plausible limits via the bounding models and when to draw the line there. Basically, the first question is --

(Whereupon, a telephone sounds.)

MR. BARTON: The second issue is really the individual models they have been developed and if they're acceptable for dose reconstruction. Basically, if the data's okay and how do we go about the actual mechanics of reconstructing the doses.

This first presentation basically discusses that -- that first policy decision. The second SC&A presentation gets more into the nuts and bolts of how we would go about modeling the doses. With that said, we can get started.

All right. So a little bit of background here. There are persistent

concerns, as Josie said, by the work group about the use of the various exposure models, which we'll discuss in the later presentation and if they were really sufficient under the auspices of this program to perform dose reconstruction. So, SC&A was tasked with an additional or supplemental review to really look at the implications as far as -- or policy when it comes to constructing DR approaches and really interpretation of the data. So, we issued what we termed as a supplemental review last August, as -- as was said, that took a -- really a second look at the transcripts of the work group deliberations, behaviors of the workers themselves, and really the significant wealth of SC&A and NIOSH reports on the subject. Again, this was to provide the work group with as much information as possible to inform their recommendations.

And to that end, SC&A had really three lines of inquiry to accomplish or trying to illustrate this. The first line of inquiry, really, it's a question for the work group, is M&C unique in its residual period and activities performed, such that standard models and the available data really do not apply. Of course, we can always apply a big number, but is that really sufficient and acceptable to the work group and for what purpose here. So, that's really the question. And again, I'm gonna say this over and over again, that's a question on the table here for this first discussion. And it -- it's really a policy issue.

A little background here. Again, the main concern expressed was that work activities might be judged different than other AWE facilities. It's a judgment call. Some things to consider, though, are the level of inclusiveness, the actual work environments, and I'm really talking the

confined space issue with cutting pipes and whatnot, and our source term that we're base -- basing the model on. NIOSH's response is that the operations were similar and that there is consistency and president with other Board decisions.

So, the pertinent questions here, under line of inquiry one, what SC&A is really pointing out is that there are significant unknowns and uncertainties when constructing these models. This is really a program-wide question, not specific, necessarily, to M&C of where you draw the line on putting the big number on it. I guess, adding to this uncertainty is really the fact that workers really weren't aware of what they were dealing with, so they certainly wouldn't have practiced any safety protections to -- to avoid exposure. We believe this is another element that leads to the extreme conservatism exercised in the model doses. Again, going to sound like a parrot, but this is a matter of pretty much philosophy -- of policy. Where is the line drawn on bounding, and that's the decision -- decision for the work group and the Board as a whole.

I -- I'm a health physicist, and as any HP will tell you, we -- we believe we can model anything. But really, the question is, do we have the appropriate and sufficient information to do so. Again, like so many of these discussions, it comes down to a judgment call. NIOSH's response was that it incorporated extreme conservatism in its modeling to account for intrusive activities. High exposure conditions, uncertain facility activities, or unknown contamination sources. So, the question is really what is acceptable to the work group as far as when plausibility is in question? And furthermore, when is bonding -- bounding gone past the line?

On to the second line of inquiry that SC&A performed in its supplemental report is consistency and appropriateness compared to the other AWE sites. So, past practice and policy is certainly in play here. And again, we're talking plausibility and sufficient accuracy. M&C is similar to other AWEs because we're talking about uranium and thorium. The usual actors. Many of the work activities were similar. However, the nature of some specific activities may be unique. I'm talking about the subsurface work, obviously, the confined spaces issue, and how the model doses have incorporated the extreme conservatism to try to account for this.

Another point to consider here is the Board's policy on back-extrapolation. Does this really meet the admittedly subjective criteria of sufficient accuracy when we're talking about a 27-year period, in which we really don't have much monitoring data to go on?

A bit more on the subsurface. Basically, the variation and factors to consider are considerable. We brought up the issue of a coagulant oil concentrated contaminants that may -- may be aerosolized upon, you know, cutting into the pipe. But this really just gets back to the uncertain elements in modeling these scenarios. Also, that D&D work, or remedial work as it's called, is going to be rather different than the maintenance activities that happened during this nearly 30-year residual period. Maintenance involved the cleaning and repairing of pipe sections, D&D it's basically just removal and disposal.

So, moving on to finding one of the supplemental review. Again, the back application of the 1995 measurements, NIOSH has responded that they don't -- they do not agree with the coagulant oil factoring in. But again, I

repeat the main message here is the consideration, philosophically, of the many factors that are at play here. NIOSH also disagrees that there was a difference between regular maintenance and D&D activities. It's ultimately up to you all to decide what information is sufficient that would allow for dose reconstruction.

This next slide is really a discussion on the outside subsurface model, basically digging in the dirt. And the question is whether activities in the '80s might have diluted the varied contaminations. This is mostly predicated on finding in the '90s by CPS that contamination was nonuniform. So, the question posed is whether a blended model with the 95th percentile applied can really accommodate the varying uranium concentrations. And this was observation one. Simply put, is this really bounding. NIOSH's response was that the 95th is appropriate because the exposures were limited and not normally expected. And so, SC&A agrees with NIOSH's clarification based on the available data set.

Okay. Line of inquiry three, and this was the last line of inquiry, so we're moving quickly. So, this is really, obviously, the universal question of sufficient accuracy and plausibility for your consideration.

Basically, the NIOSH position is that these concepts are really mitigated when the model doses are low. This is, again, a question of policy, which is -- the most pertinent previous conversations were really regarding the Linde site. Former chair of the Board spoke to this specifically. And what Dr. Melius said was carried to an extreme, you could take any site and we'd come up with what we think is the highest possible exposure at that site that would occur and that would be bounding and apply that to

everybody that ever worked at the site. However, is that a plausible bound, and then who are we trying to characterize? And NIOSH is positive that the extreme conservatism in the applied modeled assumptions allows for these noted uncertainties. And that's really the question of the day.

Just a bit more on confined spaces. The Mound project data and really thinking about how it would apply to someone in the subfloor and indoors. Again, we're really just illustrating the amount of uncertainty that feeds into these models. There's ventilation factors, the variety of activities happening, operating saws, grinders, and drills. Basically, the invasive activities involved in the repair of these contaminated subsurface lines. Again, the question is, does the extreme conservatism address all these and is it acceptable to the Board? We're simply presenting the question.

So, a key question here: Is the Mound excavate -- excavation applicable to a confined space exposure situation? The numbers may be in the range. Certainly, can't know for sure, but we can speculate. But again, this is just another layer of uncertainty, which leads into finding two, which is the application of surrogate data from the Mound project to provide a dust-loading factor for M&C's subsurface activities does not satisfy the Board's surrogate data policy. The NIOSH response acknowledges that the dust-loading factors can't be just universally employed.

And this comes down to a work group judgment on the use of surrogate data considering the Board's surrogate data criteria.

DR. ROBERTS: I think someone on the phone is off mute. Would you, please, mute yourself? Thank you.

MR. BARTON: Okay, moving on. This is regarding observation two.

This again concerns the use of the 95th percentile as an extreme conservatism. And since the contamination surveys during the first few years of the residual period also cited where procedural requirements from a variety of documents and also NRC inspections of the HFIR facility.

Observation two basically points out that making judgments only on procedures may not be sufficient. It's a weight of evidence, a common theme in this program and discussions and, again, it's subjective. NIOSH appears to clarify that they are not using these procedures to justify the 95th percentile. And, I guess, SC&A's comments, basically, we're a little -- little confused, but they're inclusion in the discussion there. But, again, that may just be part of the weight -- weight of evidence approach. We're not really sure. It's really not -- not -- not a real big deal from my view.

So, to try to wrap this up in just a few more slides, precedent does suggest that while less precision or technical accuracy can be tolerated, it may not be appropriate if the exposures could be higher, based on the conditions present, or we just really don't know. We don't have the information to really make that judgment.

And, again, the renovation period at Linde is relevant here. The question is really where you draw the line when we talk about bounding the exposure situations. At Linde the DR method was proposed that would likely be bounding. Specifically, it was -- I mean, you remember it was a jackhammering operation, and I believe there were air samples taken that were associated with that. And they were going to apply that to basically everybody at the site. So, but that wasn't accepted by the Board is sufficiently accurate, at least for that renovation period, which presented,

again, a different set of conditions than may -- maybe were experienced during the subsequent residual period at Linde.

This slide basically reflects NIOSH's response to the Linde comparison or corollary. Basically, that the situation at Linde was different. The exposure conditions were different, and the idea that lower exposure conditions at M&C allow for the use of the extreme conservative in its modeling. SC&A acknowledges that. But the question to the work group and Board as a whole is where do you draw the line when accepting methods and values for bounding the exposure.

All right. Just some more general comments here. There's some time line notes on the response cycle here. The most recent response NIOSH had noted several times that the SC&A supplemental review which explores these policy questions had no new technical information or technical justifications. Also noted that extensive work had already been done on the modeling, which is clear to everyone, I'm sure, present on the line. But the point here is that the work group concerns persist. And we, SC&A, were -- were asked and tasked to provide additional means and discussion of the concepts of sufficient accuracy and plausibility for the work group to consider. And again, this comes down to a policy question on where to draw the line.

So, overarching question: Are the data sufficiently accurate, appropriate, and representative of a set of plausible exposure models to support dose reconstructions for M&C workers during the entirety of the residual period, which is 1968 to 1997? And ultimately, this is a work group and Advisory Board judgment.

That's my last slide. There's some references here just for ease of accessing the various documents that feed into this. And that concludes my presentation.

CHAIR BEACH: Thank you, Bob. work group members, any questions for Bob on his presentation? Comments? Questions? Okay. Hearing that, I think we're ready to hear from --

MEMBER KOTELCHUCK: I'll just --

CHAIR BEACH: Oh, I'm sorry.

MEMBER KOTELCHUCK: -- if I may say, --

CHAIR BEACH: Please, --

MEMBER KOTELCHUCK: -- if I may say, Bob, that was an excellent presentation. And -- and on a -- and on a complex subject. And delineating what's policy and what are, sort of, policy issues and what are technical calculation issues for dose reconstruction, I think was helpful, so thank you.

MR. BARTON: You are most welcome.

MEMBER ANDERSON: I have one question. You may not know this, Bob. It may be a NIOSH question. And over -- over the course of this, we now have six new models for specific types of exposures. And I'm just wondering, it seems to me on other sites like this, there haven't been that many new models. I mean, have these new models -- are there -- are they being used for other sites now, or is this just unique to here, M&C?

MR. RUTHERFORD: Well, technical --

MR. BARTON: -- step in, but --

MR. RUTHERFORD: Go ahead, Bob.

MR. BARTON: New territory for the -- for the program to develop

these complex models to deal with these various situations. I would say that's new. I'm not sure if it -- that's the approach going forward for NIOSH, so I'll let them answer that one.

MR. RUTHERFORD: Yeah, I -- generally I agree, and I -- and Dr. Taulbee can pipe in if he'd like to. But generally, I agree that we -- and for most residual periods, we typically don't go to developing this many models in order to support dose reconstruction. But I think the difference is here -- is we had so much worker input and that defined -- I mean that described a number of situations that we were able to come up with these scenarios. So, I think that plays into a little bit.

MEMBER ANDERSON: And just to follow up to that, I appreciate getting a summary of the -- of case reviews that just -- just appeared in my email from, I guess, yesterday. And I noted that there you had 14 claims awarded for workers that only worked during the residual period. Were these models used to calculate those doses that were then sufficient to reach the 50 percent or --

MR. RUTHERFORD: No, actually, Dr. Anderson, these models were not used at that time. We had a DR methodology in place that offered some different approaches. Ultimately, you know, whatever we end up with here, we will have to revise our -- and I'll talk about that later today. We will be converting our DR methodology into a TBD and -- a technical basis document and a PER will be -- program evaluation report will have to be done in order to reassess all cases.

MEMBER ANDERSON: Good. Because there is a major issue as well. These are very low doses. That's what clearly, you've -- it wasn't so low

that it didn't get to (indiscernible) these 14 individuals who all worked there for 40 years, but during the -- only in the residual period, but --

MR. RUTHERFORD: Yeah, there's a number of factors --

MEMBER ANDERSON: -- (indiscernible) -- but really, they are all -- were all very low. So, either method you used overestimated that you're now saying was way overestimated and now we're also saying that the models you're using are also continuing to overestimate. Just I'm curious about -- about those individual cases said.

MR. RUTHERFORD: Right.

MEMBER ANDERSON: I was expecting you to say that word any, which could have been more reassuring than that this is actually almost 10 percent of them that you can find the -- were in fact awarded.

MR. RUTHERFORD: You know, I can speculate, but I – the -- I one thing I can speculate on if skin cancers -- if multiple skin cancers and we used the operational data that we've previously had put forth, then that ultimately -- the more skin cancers you get the -- you know, the more that the POC drives up and you can have some compensation claims from that. So, that's -- that's one factor. But, again, without reviewing each of the 14 cases -- cases, I can't really be for sure.

MEMBER ANDERSON: Yeah. And then the other is even if there's a small dose, if it's added to the dose while they were working there and the majority of the awards where people were both in the active period and the post period. So, it would be interesting. We can't dismiss low doses. Again, we've had discussion on other sites on individual case reviews when you get to 48 percent, an additional 2 percent makes a difference on the

compensation side, so that's just something to keep in mind as well.

MR. RUTHERFORD: Yes.

MEMBER ANDERSON: But thank you, yeah.

CHAIR BEACH: Thanks, Henry. Any other comments from working group members?

DR. ROBERTS: Excuse me, Josie. Can the person with the phone number ending in 206 go on mute, please?

CHAIR BEACH: Thanks. Thanks, Rashaun.

And just to note, this -- this time is for work group discussion. Any Petitioner comments will come later. And I think -- I don't know who was at the number that Rashaun just asked and mute. But if -- if a working group member has a question or a comment, and if -- if not, we'll move on to NIOSH's presentation.

NIOSH'S RESPONSE TO SC&A'S SUPPLEMENTAL REVIEW OF M&C'S WORK GROUP ISSUES

MR. RUTHERFORD: All right. All right. Thanks, Josie. First, I'd like to say that yes, in the end that the decision on whether the -- using the data and back extrapolating the data from 1995 to 1968 is definitely the work group's decision and the Advisory Board's decision. So, I -- I don't disagree with that. I want to put that up front.

CHAIR BEACH: Thank you.

MR. RUTHERFORD: Okay. All right.

CHAIR BEACH: I'm assuming you're going to share your screen.

MR. RUTHERFORD: Oh, yes. Thank you. That --

CHAIR BEACH: (Indiscernible) --

MR. RUTHERFORD: -- would help, wouldn't it?

CHAIR BEACH: We see you, but I know you have slides, too.

MR. RUTHERFORD: Yes. All right. Let me -- let me see if I can get these up here. Okay. Let me see if I can shrink some of the people out of my way so I don't -- okay, can everybody see that?

CHAIR BEACH: Yes, I can.

MR. RUTHERFORD: Okay. All right. All right. So, I won't be nearly as -- as concise as Bob just because I want -- I -- I -- I think that some things need to be talked about and ultimately reminded to the work group so when they make their decision, you know, that it's kind of fresh in their mind. I know 74 slides probably scares everyone to death, but that -- that's mainly driven by our font size, so it's really not -- it's not as bad as it seems.

I want to thank the ORAU team that worked on the response paper. They pretty much worked on all the papers. It's Pat McCloskey, Mutty Sharfi, Roger Halsey, and Nick Bailey. So, okay, my slide is not moving. Why is it not moving? Hold on one moment. Let me try... Okay, now it's moving. Everybody still see it okay?

DR. TAULBEE: Yes.

CHAIR BEACH: Yes.

MR. RUTHERFORD: Okay, thank you. Thank you. All right. This presentation has a brief introduction and NIOSH's response to SC&A's three lines of inquiry and then our conclusion.

So, on August 22nd of last year, NIOSH received SC&A's supplemental review. NIOSH, with ORAU, developed responses to that review and sent

the response paper to the work group on February 1st of this year. SC&A's review put forth three lines of inquiry, which they based on current work group concerns. In SC&A's review, there were findings and observations, which we responded to, and there were comments that we felt needed clarification, so we responded to those as well.

So, the first line of inquiry is condition and work activities associated with Metals and Controls' residual period. SC&A indicated the key issue is how Metals and Controls compares to other AWE sites in terms of unusual work activities and high dose potential, which NIOSH can't determine the source term. So, in other words, how does Metals and Controls' residual period compare to Linde, Vitro, and Norton, where SECs were added, versus the other AWE sites where it was not added. SC&A concluded that the active and intrusive nature of the described maintenance work and Metals and Controls during the residual period clearly exceeded the residual period conditions and activities at other AWEs, as described in their corresponding evaluation reports and site profiles, and what would be assumed under OTIB-70 for application of its resuspension and volumetric -- volumetric soil values.

They further comment it falls within the -- and most of this was generally spoken by Bob, but I'm repeating it. It falls within a continuum of post operational intrusive activities ranging from Norton and Vitro to that of Linde with Metals and Controls being closer to the latter, but without the radiological protection controls, protective equipment, and personnel monitoring that were typical of a formal D&D program. Okay. And so, their -- their conclusion clearly different than our 2020 paper conclusion.

First, I want to talk about working intrusiveness. Work intrusiveness is primarily addressed by applying standard industrial hygiene or nuclear industry factors -- factors to a source term, like a resuspension factor. And as for adding SECs based on intrusiveness, Norton and Vitro were not added to the SEC because of the intrusive work. They were added because of the lack of knowledge of the source term -- source term to calculate a plausible dose. It is true that Norton and Vitro were D&D-like activities, Norton included dismantling, kiln, and a furnace, and Vitro also included burying of residues and waste.

But I want to read an excerpt from NIOSH's SEC evaluation of Vitro. It reads: Without additional documentation, NIOSH cannot make assumptions about the relative amounts of material that have -- would have been encountered at the site during the evaluated period. Therefore, there is insufficient source term information available to NIOSH to bound internal exposure for the period January 1, 1960, through September 30, 1965. So, it was clearly the source term and not the unusual activities at Vitro.

This is not the case at Metals and Controls. We do have source term data, which I will talk a little bit more about later. After looking at SC&A's table 1 in their supplemental review, we feel that this needs further development. There's yes or no’s, and what we want to do is, we plan to develop a similar table with more detail that lists the known activities that occurred during the richer -- the residual period of these AWE sites.

In our 2020 paper, we listed some of the activities that occurred, including soil excavation, welding, and torch cutting in contamination areas. We also provide an example of some of the activities. Bliss and Laughlin is a

site that was not added to the SEC. And we just -- you know, we will detail this out in this table that we've described, but these are some of the activities that are listed. The trench was cleaned, scabbled, jackhammered, and sandblasted, ceiling trusses and perpendicular members were decontaminated, concrete pad over trenches and pits removed, and trench remediated. Again, we'll put more detail in that table once we develop that.

All right, now let's move on to the blocked drains. SC&A provided a statement that they obtained from an interview of a former Metals and Controls maintenance worker who spoke of cleaning out blocked drain lines from building 10 on a regular basis. They also pointed to an interview of a health physicist who worked during the D&D period about the differences between D&D work and maintenance work. Remediation workers are not handling the material in the pipe and maintenance job is to clean the pipe out.

And, you know, Bob had mentioned that we -- we disagree with the D&D being different for maintenance. In general, no, I don't disagree with that. D&D activities are typically controlled more in a lot of fashions. But the point here was -- was that -- and I'll get to it -- is -- is that it's not necessarily that much difference in some cases.

All right. The health physicists also indicated D&D is a controlled environment where the workers were very aware of what they were doing whereas the latter was uncontrolled, unconfined, aggressive as hell using mechanical process that cause aggravation and clouds of dust. And then he said, Moreover, maintenance worker environments were rarely cleaned because they are not part of the normal process. Okay, first, I want to point

to -- point out that the maintenance worker indicated they cut the line with the snap cutter and replaced the line. That's not the same as cleaning out the blocked drain lines. That's very similar to the process used in D&D. Obviously, we don't have any indication it was sealed at each end, and likely wasn't, but it does go to the aggressiveness of the work in removing the clogged pipes. It does not sound like the aggressive nature identified by the health physicist.

Additionally, Metals and Controls placed cones around the work area, and they primarily used an outside contractor to cut the floor. Water was used as a suppressant. After the concrete was broken, two or three Metals and Controls workers would use shovels to access the clogged pipe and remove it. And also, as noted in SC&A -- in their 2022 paper, where they quoted a Metals and Controls maintenance worker, It was incumbent on us to clean up after we finished the job. As noted earlier, SC&A quoted a health physicist who worked during the D&D period that maintenance activities were significantly different from a control perspective than D&D. However, in our response paper, we provide quotes and portions from maintenance worker interviews who worked during the period in question that would lead to a different conclusion.

Now, these are not quotes about the -- the activity of cleaning out blocked drains, but it's more about the safety and environment. And in addition, it's also about the surveys that were done prior to cutting the floor. One worker quoted, As far as I'm concerned, they were top notch in their security and all that kind of stuff. They really cared about their people. Another quote: I was lucky to be there. I loved the job. They were so

safety conscious. If they said something was safe, I believed them. Another quote: Texas Instruments had a great safety program. If you did not follow the safety procedures, you would be terminated.

And also concerning surveying prior to equipment removal, now, I know we do not have any physical evidence of these surveys occurring, no documented surveys or anything like that. But I think it's important that we at least add these quotes from the workers who worked during that residual period: I know that was done when there were some major mills that went into building 10. Because of the foundations that were associated with the mills, they had to saw-cut the concrete floor to get into the soils below. They did some readings then to see if there was still any residual contamination. Another quote: So, what they wanted to make sure of was that there wasn't anything residual at the floor line before they started to cut the floor.

All right. SC&A -- conclusion on SC&A's line of inquiry one. NIOSH's position is still the work activities at Metals and Controls are not unusual, but all sites have their differences. We start with approved standard modeling procedures and apply scientifically sound conservative modifications to tailor the models to each site. Furthermore, NIOSH has demonstrated the Metals and Controls exposure potentials are not higher than those addressed by OTIB-70 and TBD-6000.

All right. Let's move on to SC&A line of inquiry two, exposure pathways bounding methods for Metals and Controls compared to other AWE sites. SC&A stated that the threshold questions are whether the bounding approach for nonroutine exposures applied to Metals and Controls are

consistent with past precedent -- past practice or past precedent, for AWE residual periods and whether dose reconstruction methods prescribed for these pathways can be considered plausible and sufficiently accurate.

SC&A posed the question: Would it not be as likely that the regular release of a coagulant to the drain line system during active building 10 operations would have led to more frequent and substantial blockages, perhaps even higher concentrations of uranium and thorium as a function of the binding properties of the coagulant and other residues? A fur -- they -- they further commented they -- the accumulation of various artifacts in the Metals and Controls drain lines can be attributed to missing grates on the drains, which allowed production residues and items to go down them contributing to blockages that were apparently aggravated by the presence of vegetable-based oils used in production that coagulated in the drain line. So, they concluded this section with finding one, which Bob has already mentioned. The back application of a high sediment survey result found inside subsurface activities is not adequately supported by information from Metals and Controls workers' activities from the earlier residual time period.

So now I'm going to go through our response to that finding and why we disagree. All right. So first, I think it's important to start this -- start out where -- where did they find -- where did this site end up with AWE operations? I mean, did they shut down the site and just walk away from these operations and continue on or what was done? So, I want to report and talk about some of the cleanup work that occurred. Texas Instruments reported to the NRC that the AWE operations were decontaminated and decommission and that all radioactive materials were removed during the

period from 1955 to 1968. The largest building 10 cleanup effort occurred at the end of 1958. Additionally, it was noted that contaminated scrap material and machinery were collected in 55-gallon steel drums and disposed through authorized agencies or buried on site. So, they did not just shut down the AWE operations and walk away. They cleaned the area and removed machinery, except for what they -- couldn't be moved. So, it'd be very little contribution to the drains of residual contamination from AWE operations at that point.

Texas Instruments also reported that all three areas were surveyed after each area's respective D&D efforts. Texas Instruments could not locate the survey documentation from 1968 for buildings 3, 4, and 10, so in 1982, they resurvey the area for AWE operations, and documented that the three areas had remained decontaminated since the end of AWE operations.

In 1983, the NRC was satisfied the interior of the buildings was sufficiently decontaminated, and they released buildings 3, 4, and 10 for unrestricted use. They withheld licensed terminations pending further investigation into the radioactive waste burial site. After hearing reports of different areas of concern from workers, the NRC hired a contractor to investigate. They identified contamination to outside areas, so the NRC directed another interior survey of building 10 using revised release criteria and more comprehensive surveying methods.

They did identify additional contamination these -- with these updated methods, including sections of the concrete floor and subsurface previously inaccessible areas, but felt it did not present a significant exposure hazard. So, you know, NIOSH agrees that the -- the introduction of coagulant is --

is, I guess, basically a new item, but we don't see where it affects our conclusion. Based on Texas Instruments' reports, the normal surface areas were clean and any contribution to the drain lines from radiologic work that occurred during the residual period is not covered under this program. NIOSH modeled the drain sediment as that dusty material -- dusty, dry material for claimant favorability. Further, any wet or oily material would trap potential contaminants reducing or preventing resuspension of the contaminant and limiting the potential for inhalation.

All right. I want to talk a little bit about the 1995 data -- I know my slide says '96, but it's actually the 1995 data -- and why this data can be used back to 1968. Just remember, the sampling was done specifically to identify hot spots for upcoming D&D and maintenance activities. One of the locations contained a portion of a uranium rod. In the vicinity of that rod was concentrations as high as 53,000 picocuries per gram, which is roughly 10 percent of the specific activity of pure uranium. The line with the rod was noted as being 90 percent clogged. And as SC&A noted in their March 2020 issues resolution roadmap, it states: However, the location where the highest ratings were taken was found to be 90 percent clogged and contained a fuel bin. SC&A believes that the high-end concentrations of uranium that were used as the basis of our calculations remained in place throughout the residual period.

I also took a quote from the transcript from the April 13, 2020, Metals and Controls work group meeting, when SC&A presented their issues resolution roadmap. Quote: Now, we'll get into this in a little bit more detail, but we found that though the pipes were snaked and likely a

considerable amount of radioactivity might have been removed inadvertently by the Metals and Controls workers performing subsurface activities, that we also found that there were a number of pipelines, which were clearly never snaked and never cleaned up, never removed. In fact, this is where we found this small piece of fuel. Now, the fuel was pure uranium, but we also found right there in the vicinity of the same network of pipelines, elevated levels of sludge that were as high as 10 percent of pure uranium. And other case -- in other cases, 1 percent, and in most cases, well below that. So, clearly -- clearly, there were pipelines that were never snaked, and they contained the highest levels of uranium that conceivably could have been present because it included an actual piece of uranium. End quote.

All right. I want to talk a little bit about the sediment more. So, as we indicated in our July 2020 paper, the sediment data at Metals and Controls was similar to other AWEs where we had data. It was not necessarily an activity concentration, but you had a few hot spots, but the majority of the data was order of magnitudes below those hot spots. SC&A and their supplemental review qualified the data by saying it depends on how they were sampled. But the fact is, samples were taken in the distribution of the data was similar for all the sites. We also point out that we're assuming the uranium rod, 53,000 picocuries per gram and all the sediment sample activity was from AWE operations when we know the majority of the radiological work on site was in support of naval reactors, which is not covered under our program. As well as HFIR, which is not covered.

Obviously, we can't separate out the data into covered activity and not covered activity. But this certainly goes to the level of conservatism and this

-- in this data and supports back applying this data to 1968. The 95th percentile sediment concentration is 1 percent of the specific activity of pure natural uranium. Of the 20 samples taken specifically looking for hot spots, 16 were an order of magnitude below this value that we're assuming is everywhere.

NIOSH assumes all workers in close contact with the 95th percentile for two months per year. We assumed all workers were digging up the soil, cutting out the contaminated pipe, and doing it continuously for two months. SC&A, in their supplemental review, points to one project that took up six months. That was information from an interview conducted with the Metals and Controls worker who identified the project as moving a large piece of equipment, the Beckett line. Based on that workers interview, it appeared that all -- all or most of that activity was contracted out. And as we know, contractors to AWEs are not covered under this program.

But I think one of the most important things from that interview is the worker brought up to six months but then towards the end of that interview, an SC&A member states: The reason that we asked these things is that these were people who would have had more potential for radiological exposure. The more time that someone spends down in the hole kicking up dirt, working in that situation, the more inhalation there will be. The takeaway that I am getting is that there were probably people who spent a lot of time working down in the dirt, but it probably wasn't more than two months. There may have been 200 or 300 hours when he may have been working inside a hole, but probably wasn't the rest of the time. And, again, that was from the same interview where the six-month operation was

identified. The conclusion by SC&A member was two months is more appropriate.

So, again, we find the 95th percentile concentration is bounding for dose reconstruction and can be applied back to 1968. I also want to point to the fact that NIOSH and SC&A have done extensive work on this subsurface model, and we had previously agreed, as shown in the following twenty -- SC&A 2021 paper. SC&A believes the impacts of the conservativeness of the assumptions applied to the model are greater than the impacts of the uncertainties associated with the material dilution and extraction. SC&A further commented: Taken in combination, SC&A believes that the methods and assumptions used by NIOSH to reconstruct internal dose to Metals and Controls workers involved in subsurface maintenance and repurposing activities in building 10 during the residual period are scientifically sound and claimant favorable.

All right, I'm gonna take a drink and start on the outside.

All right. Subsurface outside. Okay. SC&A states in the supplemental review that the appropriateness -- appropriateness of the bounding assumption for the data used for subsurface models are dependent on how much excavations prior to 1984 diluted, spread, and otherwise altered the levels of contamination and whether the bounding levels are sufficiently accurate and sufficiently conservative and plausible given there's no data prior to 1984. One specific comment and they -- SC&A says: NIOSH construes the lack of NRC regulatory direction to signify that the reported elevated levels were merely above background, but less than release criteria, and that information related -- related to this task supports NIOSH's

outside subsurface model in that the 95th percentile contamination levels NIOSH applied is approximately four times higher than the contamination levels these workers experienced, but without giving any apparent substantiation beyond inferring how NRC staff would have perceived the risk and what action they would or would not have taken.

Okay. First, I want to say our statement was about the airline installation process, and it is true we do not have any survey data from that airline excavation. We made our determination based on documents reviewed. NRC report in early August of 1980, Texas Instruments informed region one that while digging a trench for a pipeline, slightly contaminated material from an old burial ground was dug up. They further reported the safety engineer for Texas Instruments, a trained health physicist, surveyed the material, dug up, and placed any contaminated material into 55-gallon drums. The licensee revised the drawing for the compressed airline and marked the location where the radioactive low-specific activity waste material dump was excavated. The airline debris area was investigated but did not require remediation because the levels of radioactivity detected were below applicable NRC release criteria. And that was from a 1996 document.

So yes, we do not have survey data, but we did come up with a conclusion based on our review of that -- of those documents.

So, SC&A's observation one is the use of blended D&D characterization survey data from 1984 and 1992 to support a bounding dose for outside subsurface activities may not be necessarily bounding for work in nonuniform soil contamination given the presence of hot spots that existed during the residual period as Metals and Controls.

All right. Yes, there are hot spots, but hot spots are not a normally expected condition for a routine operation. That's why we used the 95th percentile to address the hot spots and uncertainties. You can see the hot spots in the data when you review all of the data of the 2000-plus samples, but you're not going to hit hot spots every time or the data would be different and the 95th percentile would be much higher. Additionally, we have no indication of blended data.

As we reported in our February 2021 memorandum, from our view, we know of two instances of disturbance of burial ground soil. The final grading of building 12 in 1968, which was the beginning of the residual period, and the 1980 airline installation that ventured into a small portion of the burial ground. As SC&A also noted, this small volume of material -- this is a SC&A, I think, 2022 report -- 2021 or 2022, I'm not sure -- also noted the small volume of material for the airline installation would likely not have altered the distribution of data for the burial ground.

Again, in our opinion, SC&A did not provide any new technical information or technical justification to indicate why the proposed approach for subsurface outside is not considered bounding. Again, as NIOSH and SC&A have done extensive work on this model, and SC&A has recommended closing this issue in the past. They've also included the following: In theory, we can assume that a worker might be involved in subsurface work in building 10 two months per year and spent 10 months per a year out -- exposed outside -- outdoors to resuspended contaminated sediment. Given this scenario, the additional dose from the pathway of less than a millirem per year can be ignored. Alternatively, we can assign the subsurface

internal exposures to uranium in building 10 to the subsurface exposures to outdoor workers. The data indicate that such an approach would be extremely claimant favorable but would still result in relatively small doses.

So effectively, what SC&A is saying here is even if you assume the 95th percentile subsurface data from building 10 was all over outside, which would be extremely claimant favorable, it would result in relatively small doses.

All right. Let's get to the third line of inquiry: source term, survey data, and other information applied by NIOSH. SC&A states that a guiding principle NIOSH -- a guiding principle NIOSH follows for addressing the uncertainty around the work performed or the complete understanding of the work performed is that it is not an issue when bounding doses are very low and specifically during AW residual periods, such as Metals and Controls. So, basically what NIOSH says is when your potential for a high exposure is low, we can apply more conservatism to the bounding model to allow for any large uncertainties.

One can expect that in residual periods, because you are not having active radiological work, there is going to be very limited data. We've seen that on all the residual periods, but we also expect the exposures to be much lower. This was discussed in addition to the Linde specific with Dr. Melius and mentioned that yes, in using OTIB-70, we're going to have to be -- to realize that we are going to have larger uncertainties because we're not going to have that monitoring data. So, I wanted to point that out.

They also said in terms of specific -- specific site characteristics for Metals & Controls is not apparent how the Mound project addressed

considerations related to resuspension or dust loading in a confined space, such as various manholes, trenches, pits, and vault spaces at Metals and Controls in which maintenance workers actively worked. NIOSH agrees that addressing the potential change in resuspension in confined space needs to be addressed; however, we don't see this as an SEC issue. This is a global issue that needs to be addressed in OTIB-70, along with the enhancement enrichment factors SC&A previously identified in their 2021 paper. As for manholes, NIOSH and other SC&A reviewers conclude that the manholes would not be a significant source of contamination at Metals and Controls. A quote from the 2021 work group meeting from SC&A: Well, there are certainly materials that accumulated, but since they weren't directly handing -- handling radiological materials in the manholes as far as we know, we wouldn't expect there to be a high contamination level there.

SC&A's finding two: The application of surrogate data from Mound project to provide a dust-loading factor for Metals and Controls subsurface activities does not satisfy the Board's surrogate data policy. Specifically SC&A's supplemental review indicates the criteria for site process similarities has not been met.

I want to refer -- in our response, I want to refer back to SC&A's 2021 report, where it s. es: Considering the totality of information compiled in this report, SC&A believes that use of a dust loading of 212 micrograms per cubic meter for subsurface work -- work both indoors and outdoors at Metals and Controls is reasonable, compatible with the data, and the information summarized in this report, including the data reported from the Mound by the interviewed subject-matter expert.

They went on to say: SC&A concludes at NIOSH's adoption of the 212 micrograms per cubic meter for estimating respirable outdoor dust loading during excavation activities is reasonable, but not necessarily bounding. Additionally, SC&A believes that NIOSH should refer to the numerous dust-loading studies cited in section five as the basis for the dust loading of 212 micrograms per cubic meter in addition to the Mound data. So my -- so my take is don't just rely on the Mound data, but add some basis by referring to these other studies, which seemed to me would remove the surrogate data issue.

SC&A continued to say: While going -- while SC&A's survey and interpretation of the data indicate that the suggested value of 212 micrograms per cubic meter may not necessarily be sufficiently conservative for many excavation area scenarios, a number of mitigating factors are also present at Metals and Controls that should be considered. The soil was likely moist, and we assumed close contact for the entire two-month period.

They also indicated -- oh, actually -- and NIOSH's response to SC&A's 2021 paper, NIOSH completed -- NIOSH intends to review the references provided by SC&A and incorporate them as appropriate. In addition, NIOSH will update our Metal and Controls models that used dust loads to consider the impact of enhancement factors. And as I mentioned earlier, we will also add -- look and dig into the confined space issue and provide that update in OTIB-70 as well.

Okay. SC&A expressed concern about using the dust-loading factor generically. You know, they indicated that the use of a generic value for outdoor and indoor excavations at some unknown facility or site, they didn't

feel -- feel that that was appropriate. Our response was, although NIOSH will use Metals and Controls to inform our modeling of similar Energy Employees Occupational Illness Compensation Program Act for work, we agree with one size will not fit all. We will address this further during the next OTIB-70 revision.

Also, observation two from SC&A was the reference to the Metals and Controls safety and health manual, NRC, inspection results, operator training, and other programmatic considerations do not necessarily substantiate the conservatism of the 95th percentile soil contamination value being applied. But it was not NIOSH's intent to justify the 95th percentile with these NRC inspection reports, operator training, the safety and health manual. The 95th percentile is a statistical approach that we've used in almost every site under this program. The Metals and Controls' safety and health manual, NRC inspection results, operators training, and other programmatic consideration just provided credence this site was mindful of the impact associated with the current and historical radiological work.

All right. Let's get to our conclusion. All right. SC&A concluded that -- conclusion states that precedent suggest that while less precision or technical accuracy can be tolerated if the exposure of a worker cohort is relatively low. At Linde, as Bob mentioned, we had jackhammering data from -- at the end of operations that we used to estimate the dose, and we came up with five and a half -- 5479 millirem per year in an effective dose. This -- this was going to be applied to all workers. Then obviously, the Board came back and said, Okay, well, you're throwing a really high number at people that were not necessarily doing this renovation activity, and we

don't think it's appropriate. At Metals and Controls they have a dose of 71 millirem per year committed effective dose. So, I think the exposure at Metals and Controls is low.

The second part of SC&As conclusion: The use of a 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 time periods would not be appropriate if their exposure potential could be higher, conditions were different, or if there's a lack of information on which to make those judgments. We don't think this applies. This -- we think it applies at Linde but does not apply at Metals and Controls. I want to say approx -- if -- if you look at Linde, we have approximately five-and-a-half rem at Lindy and less than 100 millirem at Metals and Controls.

Now, I will say when we issued the evaluation report, we did not do our due diligence, which was brought out by the petitioner at the board meeting. Since then, NIOSH, the work group, and SC&A members held interviews with former workers who work during the time period. We worked with all involved to develop exposure scenarios that we all thought would have the highest exposure potential, all of which has reduced the uncertainty. So again, we feel that we have a more complete data set at Metals and Controls than we had at Linde, Vitro, or Norton.

SC&A's finding one, again, states the back application of a high 1995 sediment survey result to bound inside subsurface activities is not adequately supported by information for Metals and Controls worker activities from the earlier residual time period. Yes, we are back applying the data, but the data is pre-D&D, specifically taken to characterize the area

prior to D&D and maintenance activities. In previous papers, our response paper, and today's presentation we have shown why the 1996 data can be used back to 1968. The inside surface -- surface data, which included a 90% blocked line with uranium rod and 53,000 picocuries per gram sediment, which SC&A previously indicated that the high-end concentrations of uranium that were used as the basis of the calculations remained in place throughout the residual period.

So, also to back applying data. Back applying data from later years in the residual period has been done previously, as noted in their twenty -- SC&A's 2021 paper for both Linde and Chapman Valve. In both cases, data from much later in the residual period was used to back apply to much earlier years. For Linde, 2001 data was used to back apply to 1970. Chapman Valve data from 1992 clear back to 1949. In both cases, SC&A noted that the intake rates were not adjusted to due to degradation over time.

So finally, with the exception of the potential particulate enhancement in confined spaces, SC&A did not provide any new technical information or technical justification to indicate why they would not consider the proposed approach to be bounding. We continue searching for and welcome any new technical information available to prove our models -- our bounding models. And that's it.

CHAIR BEACH: Okay. Can you leave your slot slide presentation up?

MR. RUTHERFORD: Yes, I can.

CHAIR BEACH: And I was thinking for the work group members if we just kind of go through slide by slide where you have questions or

comments. Does that seem reasonable?

MR. RUTHERFORD: It does to me.

CHAIR BEACH: Okay, thanks, LaVon. So Henry, Dave, Loretta, and Ms. Martinez. It's Tori, right?

MR. RUTHERFORD: Nicole?

CHAIR BEACH: Nicole, I'm sorry.

MEMBER MARTINEZ: It's Nicole, yeah.

CHAIR BEACH: Nicole. I'm sorry, Nicole. I apologize, Nicole. So, okay. Nicole, yes.

MEMBER KOTELCHUCK: Nicole, welcome. Welcome to the --

MEMBER MARTINEZ: Thank --

MEMBER KOTELCHUCK: You came in --

MEMBER MARTINEZ: -- you.

MEMBER KOTELCHUCK: You came in at the end of a five/six-year-long discussion. Hey, I don't envy your position, but if it will -- but you're most welcome, and I'm sure you will contribute to our understanding as we go along.

MEMBER MARTINEZ: Thank you.

MEMBER KOTELCHUCK: Thank you.

CHAIR BEACH: Yes. So as -- as it was pointed out, by both Bob and LaVon, the sufficient accuracy and plausibility of bounding models is a judgment that weighs on -- on the -- it's for the Board to make that decision in this case.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: In absence of site operational data, the source term

area monitoring, worker monitoring, it's a site-by-site judgment call, and we need to weigh all considerations and look at precedents that have been set, how judgments were handled in the past, the inside subsurface bounding model is a unique concern in -- in what we're discussing today. It applies D&D-era data with extreme -- and I think that's new, Lavon -- extreme conservatisms added to ensure that they're -- that -- that there aren't any intrusive activities that aren't covered. So, no matter how uncertain or unknown the exposure is, you'll have it -- it'll be covered. And that's -- that's something that we're -- we're going to have to really discuss today.

I think we threw out the -- what Dr. Melius talked about. I know NIOSH picked up the first part of that discussion. But his whole discussion on Linde is very crucial to our discussions today.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: All right. So, any comments? Where -- where -- where are -- where are -- you guys have questions?

MEMBER KOTELCHUCK: I'm not sure my comments, kind of, fit into going through each one of these. There are lots of different comments. I'm not -- so, I don't have -- I'll have questions, I guess, as we go along. But I would rather eventually get into the broader discussion of policy here.

CHAIR BEACH: Okay. That -- that makes sense. And one of the things I want to point out, too, is, we have new sources, new issues that haven't been previously discussed. I think some of them were thrown out. However, with this new paper that was given to us in August, it -- it brings all the new source terms and the new pathways for -- for -- up for discussion.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: So, Dave, are you --

MEMBER KOTELCHUCK: I'm not quite sure. I'm not quite sure where -- where to start. At -- at -- we're -- if we're talking more broadly, or but if we're going through, I'm sort of suggesting that I -- I will have some questions, but --

CHAIR BEACH: Okay. My next set of comments are --

MEMBER KOTELCHUCK: -- the heart of the matter, which is -- a lot of it is the policy.

CHAIR BEACH: Correct, yeah. You don't --

MEMBER KOTELCHUCK: I'm fine -- I do, I guess -- I do consider the -- the question of surrogate data is one that really bothers me. And I really haven't been convinced that the -- using the Mound data as surrogate data is appropriate. And that I -- I share the feelings -- the finding in the previous paper and discussion.

MR. RUTHERFORD: Can I respond to that, Dr. Kotelchuck?

MEMBER KOTELCHUCK: Oh, sure.

MR. RUTHERFORD: Yeah, if -- if you remember, we also, you know, that -- that issue was brought up --

MEMBER KOTELCHUCK: Right.

MR. RUTHERFORD: -- and SC&A identified a number of resources for us to go back and look and help support our basis with that.

MEMBER KOTELCHUCK: Yeah.

MR. RUTHERFORD: So, that's what we intend to do, is to go back look at those sources and -- and incorporate them, as appropriate, and to -- to

basically remove the surrogate data issue.

MEMBER ANDERSON: (Indiscernible) --

MEMBER KOTELCHUCK: Yeah. Well, --

MEMBER ANDERSON: -- surrogates as well?

MEMBER KOTELCHUCK: Yes.

MEMBER ANDERSON: There's no source data from the site.

MR. RUTHERFORD: That's true --

MEMBER ANDERSON: So, (indiscernible) --

MR. RUTHERFORD: Everything -- everything -- that is very true, yes. It's definitely going to be surrogate data because -- but it's going to be based on studies that were done. The cited references that they provided are -- are references that are based on studies.

MEMBER KOTELCHUCK: Well, they are based on studies, but I will say -- I mean, I spent the better part of a summer during the time we were closed down reading all of those, and I just felt like I was reading -- well, this group finds that, this group finds that. What bothers me and what -- what is a problem that the first -- as I've said several times in earlier meetings -- the work that was done on the trench at Mound is a really well-done professional study. And it is appropriate for use as an outdoor -- as -- as dust loading for outdoor circumstances.

But what bothered me, and I guess this was crystallized, by the way, in the photo that Tim showed us, I guess, in the summer -- was it in September, I believe, of 2020. The picture -- there was a picture of the open -- the open -- the open track -- track -- channel -- the open trench that was -- this was a wide-open trench above ground, of course, going

through what was essentially, to my mind, a country lane. I mean, it was, you know, an unpaved dirt path outdoors in nature. And we were going to try to apply this to people working underground where they had to cut the concrete away before they can get in and then work underneath. And I just feel like it doesn't seem that that is appropriate, that the Mound is appropriate to cover the work that is being -- that it is being applied to underground at M&C.

And so, I do agree with the finding and the earlier paper by -- by Bob and Joe, that this is a finding and I -- and I feel like we can't use it. So -- we can't use it for under -- for subsurface work. And that starts, to me, the very serious problem, which means that we don't have data. We're really depending -- we don't have -- we don't have surrogate data. So, what we're doing is speaking at the beginning and at the end. We have data at the beginning, at the end of the operational period, and we have data, particularly talking about the underground work, at the end -- and we can discuss this -- and nothing -- to my mind, nothing usable in between.

And I -- that -- that starts me off in feeling is -- is -- that will really be lacking -- this is where we get into questions, in my mind, of plausibility and -- and sufficient accuracy. I will say, because I -- I've said it before -- I respect the very hard work that's been put in by the professional staff of the NIOSH and SC&A to try and develop different pathways. No criticism of that. The question is are we -- are we building something that is entirely modeled. And -- and I -- we've had now -- we've had cases where we have no data or from -- for -- for the people with no exposure, no individual exposure data, for the people being considered and for the site being

considered.

But in those cases, I had no problem with them because all of the individuals were doing more or less identical work, clear at -- what -- they had -- they had, if you will, stable work patterns that I could then use area data or some other data to -- to tell me about it. But here, everybody is doing something different.

And in the end, we're finally saying, well, we'll say since we don't know -- we don't have -- we don't have individual exposure data, and we don't really know how people work during this residual period, so we'll say everybody did the same thing. It's -- how should I -- I -- to me, this really presents plausibility issues. And that's sort of where I start.

And so -- and so I'm not so much interested in criticizing the six pathways. The question is do we have enough information to build -- to -- to make an assessment. And I just -- I'm -- I'm -- I feel as if -- honestly, at this point, we don't. And I know people have worked hard and -- and done a good job on what they can do. But we have to -- we're dealing with workers' claims, we're dealing with 300-plus people who have claims under this proposal or under this --

MR. RUTHERFORD: I -- I --

MEMBER KOTELCHUCK: -- because of the SEC.

MR. RUTHERFORD: I know Dr. Martinez has a question or a comment --

MEMBER KOTELCHUCK: Sure.

MR. RUTHERFORD: -- and -- and can Dr. Martinez, after I speak to this real quick, can you -- can you speak then? Thank you. Okay.

Yeah, I just want to say recognize for a resuspension factor or a dust loading, it's -- that is not something that normally a site takes measurements on. I mean, that's something that, you know -- I mean, when you're doing your -- your dose reconstruction, you're reconstructing the dose, this is something -- it's always going to be surrogate data in order -- in order to get that answer. And in this -- these types of -- of things, you know, we work together, and we determine what the appropriate resuspension factor is. So -- by referring to these -- these multiple resources, you know. This is not an issue of source term. This is an issue of what is the proper factor to put on this.

So, I -- I -- I don't feel -- first, personally, I don't feel that this is an SEC issue. I feel like this is a TBD issue. And I think we've even talked about that with SC&A in the past. I don't know that the Board's ever -- or the work group's ever agreed to that. But I think it's a TBD issue. And because we're going to deal with this at every -- we can deal with this at every site, resuspension factors and residual periods.

Residual periods, we know we have little to no personnel monitoring data, area monitoring data, which is expected because they're not doing radiological operations. So, we -- there are a number of things that we have to apply in dose modeling during these residual periods that we don't normally have to when we have personnel monitoring data, when we have the whole body -- you know, personnel monitoring data, area monitoring data, and such. So, I -- I -- I understand your issue. I just think it's more of a TBD issue than it is a -- a -- a SEC issue.

Dr. Martinez?

MEMBER MARTINEZ: Hey. I've mentioned I'm new to this working group and to the Board. And this is a -- you know, an ongoing project. I wondered if I could have -- maybe this is a question for Rashaun -- to see the previous round of papers? I think that would help me come up to speed a little bit better.

CHAIR BEACH: Yeah, Nicole, that should have been sent out to you.

MEMBER KOTELCHUCK: Yes.

MEMBER MARTINEZ: It might have been, and I missed it. But I also fairly recently switched from Savannah River when we realized I had a conflict to this working group.

CHAIR BEACH: Oh, I see.

MEMBER KOTELCHUCK: I see.

CHAIR BEACH: Yeah. So, and then, Rashaun, can you re-able my chat, because I am not able to see that Nicole had her hand up, and I'm not able to put my hand up at this point?

And the Mound -- I wanted to comment on the -- on the Mound versus Metals and Controls. I tend to agree it's not an SEC issue. However, it is a confined-space issue. And that needs to be figured in, and that is new information.

MR. RUTHERFORD: And I agree with that. And we -- we actually, in my presentation, I agreed to that. And we did recognize that as well in our response paper, but that is new information. And we do feel that that needs to be addressed in a revision in OTIB-70 along with those enhancement factors that SC&A previously identified.

CHAIR BEACH: Yeah, and it's -- it's -- it's definitely a global issue.

MEMBER KOTELCHUCK: It is.

CHAIR BEACH: I don't think it has to be solved within the Metals and Control work group. It has to be addressed. Definitely has to be addressed so that the -- but I -- I -- I'm saying it's not a current issue and it's not -- it's something that can be handled.

But I agree it does not meet the Board's criteria, Dave. I agree with you there.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: I've never thought it did. So, you have -- and NIOSH has agreed that they're going to look at that, and we -- we will revisit that at a later time frame.

MEMBER KOTELCHUCK: Uh-huh. Uh-huh.

CHAIR BEACH: And I misspoke. It is a current issue. It's just -- understand that there's work to be done.

MR. RUTHERFORD: Yes.

DR. ROBERTS: Excuse me, Josie, can one of the working group members try to raise their hand? I just want to make sure that that function is working.

MEMBER KOTELCHUCK: I'll raise my hand.

DR. ROBERTS: Okay.

CHAIR BEACH: No, my chat -- mine says chat disabled still.

DR. ROBERTS: Right. But you can see the hand gestures --

CHAIR BEACH: No, I cannot. I can't see anything.

DR. ROBERTS: You can't see it?

CHAIR BEACH: No.

MS. GOGLIOTTI: It shows up in the participant's section, not the meeting chat.

MEMBER ANDERSON: Can you see my hand up?

CHAIR BEACH: Oh, I see the participants. Okay. I wasn't looking at that, so.

MEMBER KOTELCHUCK: Good.

DR. ROBERTS: Great. Thanks.

CHAIR BEACH: Okay. So back on slide 10. If you could, bring that up.

Loretta, any comments so far, or Andy?

MEMBER ANDERSON: Yeah, I do. I have --

CHAIR BEACH: Okay. Go -- go ahead, Andy.

MEMBER ANDERSON: Yeah, my -- I mean, one of the things that I think causes some issues here and that's a lot of this is focusing on bounding, and certainly, that's our key role for -- for the modeling issues. And I think a lot of the review's saying, well, these models, the mathematics of them are appropriate, some of these choices made are appropriate, the application 95 percent, that's, you know, can be an appropriate bounding thing. And, again, when I say there's multiple models, each of those models has a 95 percent upper limit. And now you add them, and you end up with quite a different set of things.

And I think the issue really is accuracy and plausibility of where we're starting and where we're going to. I think there's no question what -- and I think that's Jim's (sic) comment is, you can always bound something. It's a matter of is that a relevant bound for the work and for an individual's dose

reconstruction.

MEMBER KOTELCHUCK: Yes. Yeah.

MR. RUTHERFORD: Dr. Anderson, I understand that concern, I do. But again, I want to point back to recognizing that for residual periods, that -- that we are not going to have personnel monitoring data for the most part. And so much of this stuff has to be done by modeling, whether it's OTIB-70, or TBD-6000. All of those have to be used. I've got -- somebody's calling me and -- hold on.

But yeah, whether it's OTIB-70, or TBD-6000, you know, those are things that we are going to have to use. You're -- you're always going to have huge uncertainties during the residual period. I think it's -- I think it's not fair for us to think that Metals and Controls was the only one that had to cut out a pipe, had to dig up the floor to cut out a clogged pipe. I think it's unfair for us to think that all -- a lot of these maintenance activities that are described weren't happening at other facilities. You know, I -- and, you know, sometimes we have to look at things differently at each facility. I think the unique thing -- one unique thing about Metals and Controls is having those interviews with those workers and having the discussions between the work group, SC&A, and us, developing the exposure scenarios that we all thought were the high-end exposures scenarios. So, there was more work done there, and I think that reduces the uncertainty.

MEMBER ANDERSON: Well, I mean, we just have to show that. That's the problem. I mean, there's a lot of, you know, expert opinion put in here about what is that and what isn't. And we got six workers. And again, when I look at what you've done, prior awards, clearly, your exposures at -- at --

when you made the -- or dose reconstructions for those 14 have reached the 50 percent, you felt that was an appropriate bounding thing. But I think if you were to go back to those now and use the values you're inserting here, it's going to -- those are going to probably be very much lower. I guess that's -- that's my concern. Are -- are we pushing this now with all of these uncertainties in it to -- to a different level that leads to plausibility or accuracy issues.

MR. RUTHERFORD: Well, I think -- as I said, I think we gained so much more knowledge in these interviews and the discussions that we were able to actually come up with better models and better judgments of dose. I -- I have not reviewed the -- the methodology we currently have in place for Metals and Controls to -- enough to remember what doses we were giving. But I -- I -- I think -- again, I believe that if they were higher in that report, then it -- it's -- we could -- the -- the models we've come up with here are more representative of the work that was being performed.

MEMBER ANDERSON: I mean, it's kind of -- the intrusiveness issue. I mean, here there seems to be, again, because maybe you put a lot more effort into doing multiple models. There seems to be a broader mix of types of opportunities for higher exposure in this class residual period than in some of the others. I mean, I agree that you don't have measurement in a lot of them, but the information we have that you used didn't suggest that there was anything comparable to here.

CHAIR BEACH: You have to be able to draw a line at some point.

MEMBER ANDERSON: Well, that's what I'm saying is this --

CHAIR BEACH: Yeah, I agree.

MEMBER ANDERSON: -- is this one of those that it isn't -- it doesn't fit the other sites that we gave SEC to, but this one isn't really comparable to those either, and you can't say that this had --

MEMBER KOTELCHUCK: Right.

MEMBER ANDERSON: -- definitely lesser exposure; it's only that the models and the data that we're choosing to put into it results in lower doses.

CHAIR BEACH: Agree. And LaVon, to your point that the more we talk to people, the more data we have, it also represents the more unusual circumstances of what Metals and Control is. And the potential is much greater than, I think, is acknowledged. You can look at all -- we only -- we only interviewed, what, 19 people? And we can -- we can take certain portions out of each one of those and prove our points.

I mean, I know you do it -- just like talking about the snap cutter. The snap cutter is a -- is a tool that goes around a pipe. It's open ended, so it -- it opens up the pipe for clean out. It doesn't seal the pipe. And then you were talking about the concrete cutter that they used contractors. Well, the contractor came in on one interview, and they cut two lines and then the M&C maintenance people jackhammered or used a sledge hammer to remove the concrete, so.

MR. RUTHERFORD: Yeah, but that was not in all cases. In some cases, they actually -- for larger pieces, they cut them out and then the contractor removed the concrete. That was indicated in -- in one of the --

CHAIR BEACH: Yeah.

MR. RUTHERFORD: -- main interviews.

CHAIR BEACH: Well, my point is -- is you can look at the interviews

and you can make -- you can create your own storyline.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: The bottom line is there were so many unknowns, so many uncertainties, and there still is, and we keep throwing models. And now we're at extreme conservatism. That's a new definition for Mound. I mean for M&C, excuse me.

MEMBER KOTELCHUCK: Yeah.

MR. RUTHERFORD: Dr. Taulbee wants to add something here, I know.

CHAIR BEACH: Okay.

DR. TAULBEE: I think Dr. Kotelchuck had his hand up first.

MEMBER KOTELCHUCK: Well, that's -- I -- I -- I cede to you, and then I'll go after you.

DR. TAULBEE: Okay.

MEMBER KOTELCHUCK: I think your contribution is important.

DR. TAULBEE: Thank you. I've just heard quite a bit of mention of the 14 claims that have been compensable during the residual period and speculation on that. And I encourage us not to speculate on the cause or the reason as to why from that standpoint. And, you know, if you want more details on those claims, we can certainly get that information to the work group from that standpoint so that we're not speculating, and we understand what we did for dose reconstruction for those. That's all I was gonna --

MEMBER ANDERSON: I think that would be very helpful.

MEMBER KOTELCHUCK: Yeah, it would be. Yes.

MR. RUTHERFORD: Okay. I'll take that down as an action item.

MEMBER KOTELCHUCK: Okay.

MEMBER ANDERSON: That shouldn't take very long.

MEMBER KOTELCHUCK: No, it shouldn't.

MR. RUTHERFORD: That should not.

MEMBER ANDERSON: I mean, there may be a good explanation. I agree with that. But that was surprising to me. And given all of the conservative -- and still saying that even with the conservatism, you're adding here, the doses that are constructed become -- are still exceedingly low. It -- it seems hard to understand how you would get to some of these, but it'll be good to hear.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: Loretta, are you still with us? Any comments or questions?

MEMBER KOTELCHUCK: Oh, I had my hand up.

CHAIR BEACH: Oh, I apologize, Dave. Yes, you did. And I'm not --

MEMBER KOTELCHUCK: Well, I --

CHAIR BEACH: -- seeing you.

MEMBER KOTELCHUCK: Okay. No, --

CHAIR BEACH: So, please go ahead.

MEMBER KOTELCHUCK: Okay. What I wanted to -- just to add to the complexity of trying to understand what -- what sorts of doses or what founding doses are or M&C, and I don't know if it's unique to M&C, but the fact that the NRC released -- in 1983 released the -- the buildings, and in particular building 10 -- actually, I think was 3, 4, and 10. But 10 would -- is -- just looking at that. They released it from -- you know, from

restrictions.

And that work from then on, if not before, people -- how are we to cope with the fact that we had workers who had -- who believed that they were not working in a radioactive environment, who did not have training, those who entered in that 30-year period, in radiological safety, and they did not have the opportunity -- the they did not have the equipment. They testified time and again they -- they were supposed to shower but generally they didn't. They -- they -- they should have been given gloves, but often they didn't have them. They had Tyvek suits on sometimes and sometimes not.

What the workers -- it seemed -- I'm concerned that they did not have the knowledge that would allow them to do the ordinary common-sense things that people who did the remediation most certainly had. The remediation people knew they were working in an environment that was -- had radiological hazards, and they took proper precautions.

I'm sure that the workers in the operation period at M&C were -- they have a good program. There's evidence of it. There's testimony about that. But when there is no program and people don't -- they -- they don't have the chance to use their good common sense about being careful around radiation, just eating lunch and, you know, how much do they have to clean up. If you know you're in a radioactive environment, I think people take up much -- more precautions, as they should, as they need to. So, I don't know how to fold in the fact that people couldn't even take ordinary protections of their safety in an environment that, unfortunately, was designated as safe back in '83.

MR. RUTHERFORD: Can I respond to that a little bit --

MEMBER KOTELCHUCK: Sure.

MR. RUTHERFORD: -- in that I want to remind you if you -- you know, the facility at the end of AWE operations, it was cleaned and decontaminated. We don't have the survey data. So, I think the point is -- is for the normal worker, not the maintenance worker, but the normal worker that was walking around that facility, the surface areas and such, there would not have been a major exposure potential at all --

MEMBER KOTELCHUCK: Sure.

MR. RUTHERFORD: -- from that because the areas were cleaned. So, the -- the air -- the place that we're most concerned about and -- and is definitely the maintenance activities. And yes, you are correct. There were not -- there was no radiological protection controls in place. But again, my argument would be that -- that the -- we've taken a lot of conservatism in our -- in our approach. We have a source term that is -- we feel is a very good source term to use from 1995 back to 1968.

And I don't think these activities are really that much different than other AWEs. And I think when we update our -- that table and -- and -- and get them to you and the rest of the work group, I think you'll see that. And if I'm wrong, I'm wrong.

CHAIR BEACH: So, I have a --

MEMBER KOTELCHUCK: I will say that the claimants are all MR -- are all maintenance folks. Right, I mean, they're not --

CHAIR BEACH: Correct.

MEMBER KOTELCHUCK: -- not the other folks. They're only the

maintenance folks who do these unusual jobs. They do different jobs.

MR. RUTHERFORD: No. The claimants are everybody. Everybody that worked for the atomic weapons employer is eligible to file a claim at Metals and Controls. We --

MEMBER KOTELCHUCK: Right. But --

MR. RUTHERFORD: We took the position that we were going to apply these models to everyone to be claimant favorable because we could not -- we could not identify who exactly were the maintenance workers. So, we said okay, well, then we're gonna apply this to everyone.

CHAIR BEACH: Well, that -- this is Josie. I have a comment on that. Back -- back on the interview that was cited in your slide presentation, it -- it they -- they talked about the cleanliness and the safety and the -- of the D&D job, not this specific question that was at hand. And I'm hoping that our petitioner, the individual in plea, will go into the comment on -- on that remark since it was used in your white paper, and it again was used in your slide presentation. It cited the -- the quote, and it -- I think it misleads and doesn't really answer the question that we had. So when -- when that topic came up, I wanted to make sure and hopefully, the petitioners will take note of that.

MR. RUTHERFORD: All right.

CHAIR BEACH: Because I don't believe that this was a controlled environment and -- and you don't have the data, so you have to expand the -- the class, which is -- we've done that in other sites, so that's not really a concern. But what is a concern is the work that was done inside the building in an uncontrolled manner, and to Dave's point, with no protections, no -- no

knowledge that there was an issue.

MR. RUTHERFORD: And I agree with that, and -- and, you know, I tried to -- in the presentation today, I tried to, to indicate that we are not saying that the way the controls were definitely done during D&D were the same controls that were used during maintenance. We were trying to throw out a situation that -- that it wasn't necessarily this environment that the former health physicist indicated that -- you know, where it was a -- you know, he said aggressive as hell and so on. The use of -- the identification of the snap cutter was in -- and when I read it -- read that it was that use the snap cutter to cut out the portion of the clogged line. So that was -- it was not necessarily cleaned out. I may be wrong and -- and I'll go back and look at that. But that's the way I read it.

CHAIR BEACH: On the -- the other -- the other items, the -- the new information that is on the table, the drain line that had a million, it existed in the drain lines. And we've -- we've made note of that before. But there's never really been a discussion. This is -- this is a potential exposure pathway that has not been addressed. It's an elevated exposure. If a worker cut a pipe with that type of dose, it -- it would have been a big inhalation exposure.

MR. RUTHERFORD: That -- the actual details of -- of modeling that specific line, no, we have not. We have not done that. But actually the -- the hazard evaluation -- I think it was the hazard evaluation -- and Mutty can correct me if I'm wrong or Pat McCloskey -- actually provides an equation for -- for doing that, for that very specific exposure model.

CHAIR BEACH: Is this a new model?

MR. RUTHERFORD: It's -- it's -- it would be a -- a new model, meaning that the taking surface contamination data and converting that. I don't know if Mutty is still on the line.

MR. SHARFI: Yeah. I'm on. This is Mutty. So, it really wouldn't be a new model. All you're doing is a way to convert surface contamination to a specific activity so that you would have additional data points in your distribution. So, when we calculate you're converting 100 dpm per centimeter -- dpm per 100 centimeters squared into a picocuries per gram equivalent. And so that -- that was provided in one of the references that Joe -- Joe used in his response paper.

CHAIR BEACH: Right. Other work group members, anything else?

MEMBER VALERIO: Josie, this is Loretta.

CHAIR BEACH: Hi, Loretta. Go for it.

MEMBER VALERIO: LaVon, if you could, go back to slide 16.

MR. RUTHERFORD: Hold on. It may take me a second to get this operation back. It's -- oh, there it is, I think.

MEMBER KOTELCHUCK: Okay.

MR. RUTHERFORD: All right.

MEMBER VALERIO: Okay. So, my concern was similar to what Josie said about the maintenance workers cutting the line with a snap cutter. And I don't -- I just can't seem to wrap my head around how, you know, it's similar to the D&D work as being a sealed entity, because it would not have been sealed while they were doing this cut, while they were performing this cut. And the other comment that I had, I guess, is I'm not -- I'm confused as to why the contractor would be used to cut through the concrete but not

through the actual pipe. So, maybe you can explain that to me?

MR. RUTHERFORD: I -- the last -- I'll go to the first part. I -- I totally agree with you that -- that -- and I actually said this during my presentation, that -- that, you know, cutting with the snap cutter and removing that -- the – the -- the pipe is not the same in that -- I -- what I said was we don't know that they sealed it at both ends and more than likely they did not seal it at both ends. So, I -- I totally agree with you that removing the -- the pipe and the D&D is -- is a, you know, a -- different from the fact that it would be sealed. My point when -- in that discussion really was that the snap cutters are not an aggressive tool that is going to create the dust and -- and -- and the dusty environment that the health physicist identified. It doesn't -- it -- it definitely has the potential for exposure because you -- you're not sealing the end. I don't disagree with you at all on that.

The -- the -- it was noted during the interviews that cut prep -- that the concrete was primarily cut by an outside contractor. That's what -- that's where we got that information.

CHAIR BEACH: Anything else, Loretta?

MEMBER VALERIO: Yeah. So, in this scenario, would it have been, say, a plumber or pipefitter who would have actually been in the -- you know, underneath the -- in the subsurface cutting the pipe and then maybe a different maintenance worker, such as a laborer, removing it to then an outdoor area and sealing it? How would that have -- like, exactly how would that have worked? Do you know?

MR. RUTHERFORD: You know, I am not going to say officially on that,

because the knowledge I have is based on the interviews that -- that I read, you know. And I -- there may be somebody other than me that's more willing to -- to provide the details than me. I -- I can't.

MEMBER VALERIO: Okay. Thank you, LaVon. I'm just trying to figure out --

MR. RUTHERFORD: Sure.

MEMBER VALERIO: -- if there had been an airborne exposure to an elevated dose, and they're moving this equipment around, anyone in that building with a potential exposure would have been to those individuals.

MR. RUTHERFORD: Right.

CHAIR BEACH: Well, and I think -- this is Josie again. When you go through the -- the interview notes, everybody did everything. If you were an electrician and your boss said you're gonna go clean out the pipe, you're a plumber today. And you just did it. A lot of this stuff was done on back shifts. If you cut a line, it would be hard to think that they would have bagged it up. They didn't know there was any contamination or any issues there. They would have cleaned it out. It would have been in the trench, and so that they could have moved on with replacing the pipe and getting back online. So, that's -- that's part of that discussion with what workers did. The maintenance workers did everything inside, outside, on the roofs.

MEMBER VALERIO: So then, I have one more question for LaVon. So back, what was it, in 1968 when they completed the D&D work; is that correct?

MR. RUTHERFORD: When they shut down operations, and they removed -- they did the -- yeah. The early D&D period.

MEMBER VALERIO: So, several years later, there was another survey done that identified some contamination, correct?

MR. RUTHERFORD: Yes.

MEMBER VALERIO: And refresh my memory if that was indoors or outdoors? I didn't make a note if it was indoor or outdoor. I believe it was outdoors.

MR. RUTHERFORD: It was outdoor, but they -- they were directed to a do another -- after they identified the outdoor contamination, the -- they were directed to redo the -- resurvey the -- the inside a building 10.

MEMBER VALERIO: Okay. So, that was, what, approximately 15 years later after they completed the D&D?

MR. RUTHERFORD: Correct.

MEMBER VALERIO: Is that something that you've seen at other sites, like Mound and Linde?

MR. RUTHERFORD: I think --

MEMBER VALERIO: -- time frame?

MR. RUTHERFORD: I think that -- that, you know, first of all, the release criteria for -- for leasing a facility has changed over time. The methods that they were required to do in the earlier periods versus what they're required to do in the '80s and what they were required to do now. So, there is -- if you look at our residual contamination report, there is a number of facilities where -- that were -- that were released and ultimately, contamination was found. So, I don't think that's unusual. Did I -- did I answer that, Loretta?

MEMBER VALERIO: You did. You did. And I -- I've been trying to

read through all my old Metals and Controls --

MR. RUTHERFORD: Right.

MEMBER VALERIO: -- documents. And yeah, I may have another question, but I'll hold off for now. Thank you.

CHAIR BEACH: So, going back to Henry's comment, the sufficient accuracy and plausibility back application given reliance on extreme conservatism as -- as it's been newly defined, extreme conservatism, that -- I mean, that's the bottom line for us here. And I know I have a lot of notes on all the slides. But if -- to get back to it, that's -- the application of the conservative -- the conservatism to support bounding exposure values in dose reconstruction has been a standard approach for previous SECs, and in particular, previous AWE residual periods where source term or monitoring data is lacking.

It's the bounding value needs to be maximized to the extent that its largeness is the biggest attribute. The value may not be considered plausible. And in this case, it feels like that's where we're at. We just -- you just keep adding more models, adding more conservatism, adding more scenarios. When we started out, we had TBD-6000 and 70. Well, those two don't satisfy what was done at Metals and Control, because we know now, there was so much happening.

They refab'd that building every couple of years, which mean -- meant digging into the ground and putting new bases for new machines. I mean, we can go on and on of the things that they did that adds uncertainty, unknowns, and I believe that's where we are and why the work group has been struggling. And, unfortunately, didn't get to discuss a lot of this in our

last meeting, which is unfortunate, but here we are. So that -- I think LaVon, you were going to make -- say something.

MR. RUTHERFORD: I apologize. I -- I've lost my train of thought, so.

CHAIR BEACH: It's easy to do, trust me. There's a lot.

MR. RUTHERFORD: Dr. Taulbee had something.

CHAIR BEACH: Okay. Go ahead, Tim.

DR. TAULBEE: I was just gonna say that I'm hearing a lot about the, you know, the implausibility and, you know, extreme conservatism that you just mentioned. And one of the things to keep in mind, though, is that even though we're using these upper bounds, the 95th percentile, and we're using upper bounds of resuspension factors, that's why we're referring to this as extreme conservatism in these particular instances. We're still resulting, when we go through and calculate the dose, to a very low dose.

You know, when we did this at Linde, and we used the air monitoring that was going on at that time during the jackhammering, we came up with 5.3 rem per year. And in this particular case, we're coming up with 71 millirem per year. And to put that into context, if you go through and you look at the monitoring requirements for the current workforce, and that if their dose is less than 100 millirem per year, you don't have to have any personnel monitoring for them. So, when you're down in this very low dose range, we have a lot of uncertainty that can -- can take place for sure. But the dose is inconsequent -- I won't say consequential because there are people who can be compensated at these levels, but it's very low from that standpoint. This isn't something that results in a -- a, you know, kind of -- where a large portion of the population becomes compensable.

And that's what I think we're -- or the Board was concerned with back a number of years ago with Linde is that if you start assigning 5 rem to everybody per year, you're gonna end up compensating a large portion of the workforce, and so that makes it -- this dose we're assigning unreasonable or implausible from that standpoint.

In this particular case, we're talking about very low doses, even when we're applying these 95th percentiles. And I just wanted to remind the work group of that. Thank you.

CHAIR BEACH: Yeah, thanks, Tim. And, you know, while the potential exposures may be seen as low, the Board does not reach its SEC conclusions based solely on source term. The Act requires us to weigh whether the dose can be reconstructed with sufficient accuracy. So -- so, yes, we know it's a low dose, but it can't be our sole consideration for considering an SEC. We -- we have considered SECs and granted SECs at sites, like Pantex, for example. That was a low uranium. Mound intermittent rating -- radon. Bethel Steel was a uranium. So, it's not unheard of.

And then if you go back to -- you brought up the discussion with Dr. Melius. The other side of that is the implausibility of such a high dose that it -- it doesn't make sense. I'm sure he said it way more eloquently than I did. You guys captured the first part of that, and it's been brought up. The second part is equally as important and very much part of Metals and Controls discussion.

MEMBER ANDERSON: I think the other problem here is the guys who were doing the maintenance work, they were the ones who are most predominantly likely to have been exposed. And unfortunately -- I mean, if

we could, the simple thing here would be to say let's add the maintenance workers because they're the ones that are likely to have been doing this work. We don't know what each individual was doing. But to now have to give it to the whole workforce, I would agree that those who are just walking around in the plant that aren't doing any of this kind of work really are very low exposed, and --

MEMBER KOTELCHUCK: Yeah.

MEMBER ANDERSON: -- so using these models for them would be fine, but on the maintenance staff, I would say they're the ones that have the likelihood of -- the higher likelihood of exposure, but we can't identify who they are, that's -- that's problematic.

CHAIR BEACH: I -- it might not be too difficult. I guess, I can defer that -- we'd have to defer that to somebody that worked there. And that's not --

MEMBER ANDERSON: And I can see --

CHAIR BEACH: -- a bad idea. That's not a bad idea, --

MEMBER ANDERSON: Yeah, I could see a maintenance --

CHAIR BEACH: -- Andy.

MEMBER ANDERSON: Well, I don't know who, you know -- who or what the workforce there was and what proportion was maintenance. And I could understand you'd take all the maintenance workers that -- as you said an electrician was there, they may be told to go in and work on the pipes and they do that, so I would include all the maintenance guys, but other people who are doing other work on the equipment that was in the facility day in and day out there, and they're only walking around with what might

be surface dust that has accumulated, that's quite different than somebody who's now working underground.

CHAIR BEACH: Yeah, and -- and I have a whole list of the people that would be included. It's a pretty long list, but it's all maintenance folks.

MEMBER ANDERSON: Yeah.

CHAIR BEACH: So, definitely something to keep in the back of our mind, Henry. Any other comments or points that want to be brought up?

MEMBER KOTELCHUCK: I -- I -- I -- I feel like ultimately, it's really not -- I'm not sure it's really this working group that is going to decide. I'd -- I'd -- I would really like to get input from the Board as a whole on --

CHAIR BEACH: Well, you --

MEMBER KOTELCHUCK: -- the questions. I mean, I'm not sure -- the problem is we are supposed -- the working group is supposed to present to the Board.

CHAIR BEACH: Right.

MEMBER KOTELCHUCK: It's -- but the Board really will help us to define that -- what's -- what -- what is sort of acceptable, minimal level information that we have that we can make decisions on. I don't know quite how to do it.

CHAIR BEACH: Well, Dave, let me help you with that. So, this work group, when we are finished deliberating and we decide we can take a vote amongst ourselves aye for an SEC or no. And at that point, the recommendation goes before the full Board. So, the work group would, in a sense, give the Board our recommendation, which then it would be open for comments from other Board members. So, that's our job to start with.

MEMBER KOTELCHUCK: Okay. And whatever we recommend, they have a right to -- not only a right to consider, they -- I think they have more authority, if you will, because it would be the entire Board. And it would --

CHAIR BEACH: Well, yeah.

MEMBER KOTELCHUCK: -- include --

CHAIR BEACH: Well, yeah. It -- every -- everybody gets a say. The work group's job is to go through all the data, make a decision amongst --

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: -- the work group, and then forward that -- that decision.

MEMBER KOTELCHUCK: Yeah, yeah.

CHAIR BEACH: Any other questions or comments at this point? I know we're not finished yet, but --

MEMBER KOTELCHUCK: Right.

CHAIR BEACH: I'd kind of like to hear from the petitioner. I know it's a little bit out of sequence, but I feel like he could add to a lot of our questions and discussions. But I want to make sure the work group is -- doesn't have any other questions.

MEMBER KOTELCHUCK: I'd be happy to listen. Is it also time for a short break? Should we take --

CHAIR BEACH: Well, you know what, I think we can --

MEMBER KOTELCHUCK: -- petitioner will be.

CHAIR BEACH: Rashaun, what do you think, can we take a 15-minute break and then hear from the petitioner on this?

DR. ROBERTS: Sure. If you want to take a 15-minute break, that's

fine. How about if we reconvene at 1:30 p.m.

CHAIR BEACH: Okay, that's --

MEMBER KOTELCHUCK: Sure. That's good.

CHAIR BEACH: -- good.

MEMBER KOTELCHUCK: Thank you. Sounds good.

CHAIR BEACH: Thanks.

MEMBER KOTELCHUCK: See you all at 1:30.

(Whereupon, a break was taken from 1:12 p.m. until 1:30 p.m.)

DR. ROBERTS: Okay. I do have 1:30. Let me do a quick roll call to make sure that work group members are back. So, starting with Beach.

CHAIR BEACH: I'm here.

DR. ROBERTS: Anderson.

MEMBER ANDERSON: I'm here.

DR. ROBERTS: Kotelchuck. Dave, can you hear me?

MEMBER ANDERSON: Dave, you're on mute.

MEMBER KOTELCHUCK: I'm here, sorry.

DR. ROBERTS: Okay, great.

MEMBER KOTELCHUCK: And thanks to Tim. I was not on mute while I was chatting with my wife. I appreciate his alerting me to the fact that I was not on mute, so I -- so, I stayed on mute. Anyhow, you know.

DR. ROBERTS: Great. Martinez.

MEMBER MARTINEZ: I'm here.

DR. ROBERTS: Okay, great. And Valerio. Loretta, are you back yet? We do have a quorum, Josie, so if you want to wait for Loretta, that's fine, but we can proceed.

(Whereupon, multiple members began speaking simultaneously.)

MEMBER VALERIO: I'm back on.

DR. ROBERTS: Okay, great. Thank you.

CHAIR BEACH: Okay. Thank you. So, I would like to go ahead and jump through and -- and have the presenter (sic) comments now. Hopefully, everybody's okay with that, and Mike are you prepared? Let's give him a --

MR. ELLIOTT: Sorry, Josie. I just had trouble unmuting myself there, and I'll put my camera on. Hopefully, you can see me this time.

MS. HABIGHURST: Hey, Josie?

CHAIR BEACH: Yeah, who is this?

MS. HABIGHURST: Hi, sorry, this is Ashton. I just with -- OGC. I just want to make sure first that Petitioner's okay with going before the other presentations. I don't know if he wants to have the benefit of hearing those, and two, I just want to make sure that other members of the public who originally -- like and to ensure fairness really, to -- they might have thought that, you know, since the agenda says the petitioner period is later in the agenda, that they weren't going to attend until later. So, I just want to make sure everyone has an opportunity.

CHAIR BEACH: Make sense. And I was going to ask Mike if he was ready and felt comfortable presenting, so he can answer your question. I feel like because of the momentum and what we're talking about, it adds to the discussion. And I think Mike can probably tell us who he would expect to be on and if they're on. That's --

MS. HABIGHURST: Okay.

CHAIR BEACH: He typically keeps track of that. So, thank you for those -- I appreciate that. And Mike, can you answer those, and if you're not comfortable, we can certainly wait?

MR. ELLIOTT: Sure. Yes, I'm perfectly fine going out of order and -- and presenting now. And I will say that there is at least one other former M&C maintenance worker who's been on -- on the call by phone. And he's -- he's not one of the petitioners but, you know, he might want to perhaps make a statement if he can get his phone to unmute or whatever he needs to do. But yeah, I can certainly -- I'm ready to give the petitioners' comments at this time.

CHAIR BEACH: Thank you, go -- go ahead to start then, Mike.

PETITIONER COMMENTS

MR. ELLIOTT: All right, thank -- thank you, chairman -- chairman -- Chairperson Beach and to everybody else on the call. You know, we always appreciate this opportunity to speak at these work group meetings.

I'll start off by saying that the petitioners concur wholeheartedly with the two findings and two observations that were presented in the August 2022 SC -- SC&A a review of M&C work group issues. And we agree with the -- these findings and observations that evolved from careful consideration on three lines of inquiry that, you know, we heard Mr. Barton describe a moment ago.

So, I thought, why don't I start out -- I had some prepared comments, but I thought I would start off by answering a couple of questions that just came up at the end of the last conversation. I think Dr Anderson suggested

maybe if we narrow the -- the energy employees included in the -- in the class that, you know, it might be, for lack of a better term, more palatable to arrive at some agreement from a poly -- policy perspective. And I just want to say that, you know, when I submitted the original SEC petition in August of 2016 -- almost seven years. We've all aged bid since then -- I did actually more narrowly define the workers.

So, I never said all employees on site. I said, the class of employees in this petition includes facilities, construction, and maintenance service organization workers. Okay. So construction and maintenance, they did both. They did both construction and maintenance. They installed -- you know, Josie mentioned how, you know, every couple of years, there was new mills or, you know, repurposing of building 10. You know, really, from the time the AWE operations ceased in 1968, that was happening on a regular basis. So, these -- these were folks that were doing both construction and maintenance. They -- they did new construction, and they also maintained the services that would provide, you know, all the power, air, water, and other utilities that were needed by the manufacturing group.

We also include the class of production main -- machine operators who worked in these AWE areas, and the production repair and maintenance staff. These are maintenance folks that, you know, pretty much devoted most of their time working on the -- on the production equipment. And -- and -- and the -- way back, like, you know, prior to 1970, they -- those -- those -- those differences between the maintenance workers was not really as clear cut, but certainly by the -- by the '70s and '80s, that distinction started to be made.

All right. And that's really, you know, all we propose, as far as the class of employees. And, and I agree -- you know, I agree with LaVon and -- and the folks at NIOSH who have tried to parse that out. You know, well, how do we define these -- these workers and, and they decided, you know, it was -- it was pretty hard because, you know, like Josie said, we weren't a union shop, so people wore different hats at any -- almost any time. But I think it's possible. I think it could be still done to distinguish between, you know, the -- quote/unquote, maintenance workers that this petition -- the class of workers that this petition was intended to represent.

We also heard quite a bit of talk about one of my colleagues, one of my copetitioners and I don't know if I can refer him by name, but he was the individual that was working -- described the work to -- to remove -- he was an industrial pipefitter during the mid '70s, okay, working in building 10. And he's the one who described the work to unplug these clogged drains.

And I'd like to just read what he included in his affidavit back in 2016. He said: I worked on these lines many dozens of times as an industrial pipefitter. Sometimes for days, even up to a week-plus at a time. If unable to clear blockages, I would snake the lines, take out what is called the cleanout plug in a vertical drop, snake the line with a 50-foot or 100-foot snake, and do my best to clear the blockages. At times and snaking the lines, I would lose the bit on the end of a snake. In that situation, I had to remove the snake. I would then manually replace the auger bit or the cutters. I had a variety of bits to put on the end of a snake and try to clear the blockage. Given the nature of this auger replacement work, this was often done with bare hands and hand tools.

If I couldn't clear the blockage -- I think that's important, if he couldn't clear the blockage -- I would at times replace whole sections of pipe, usually 10-foot lengths, sometimes even up to 20-foot lengths, sometimes only four- or five-foot lengths. To do this, after having a floor saw cut by the contractors -- and I believe they used contractors to get to the question that one of the board member -- I think they used contractors, but they had the -- you know, the radial saws that cut through this -- through the -- through the concrete, which we didn't have in-house -- so, I would start -- I would -- after having the floor saw cut, I would sledge the concrete, remove the pieces of concrete, excavate all down -- all the soil down to the piping, usually about three feet below grade, then replace the piping. Depending on whether it was clay soil pipe or cast-iron pipe -- notice they've worked on both clay and cast-iron pipe -- I would use different techniques to remove the section of pipe that need to replaced. It often -- often involves snap cutting, but not always. And he describes how it is a very dusty, dirty job, often dirt blew in right up into my face. I wore no respirator or any of those special personal -- personal protective equipment. I simply wore regular work clothes.

So, I think that should dispel any notion that the work that these maintenance workers were doing is comparable to what the D&D workers were doing with, you know -- under -- with training and knowledge and under the control of a health physic's (ph) oversight. They had none. They didn't know what they -- what they were exposed to. Okay.

All right. I have a whole lot of -- probably 15 more -- more -- more -- more comments here than anybody on the -- on the call wants to hear, but

I'll see if I can, you know, try to get it down to the -- to the bare -- the bare bones minimum so I don't take up too much time.

So, as I say, we do support all the findings in that -- and observations that SC&A presented in its August 2022 review of the M&C work group issues. You know, concerning finding number one -- I won't repeat the findings because I'm sure you have access to those. But it further illustrates that the 1995 sediment survey results represented a snapshot in time near the end of a 29-year-long residual period. And all during the residual period maintenance work crews and construction workers, construction and maintenance workers, were regularly working in, on, and around the subsurface drains, some trenches, faults, and underground utilities. And it wasn't just the drains. It was, you know, all these other things. We had trenches. We had to install trenches. We had to, you know, dig out foundations for new mills and things like that in the soils, you know. So, it was all soils around -- around those -- those drains.

And all of this was done without any awareness of the radiological hazards or -- or, you know, being afforded any radiological measurements or monitoring to determine what conditions existed in subsurface. So, we can never know with any certainty what concentrations and what the, if you will, what the source term was disturbed by the -- by the maintenance activities.

And I would further add to this, the purpose of our characterization surveys during the -- you know, prior to the decommissioning was not to characterize the source term for estimating a bounding dose. I'm sure nobody would disagree with that, right? Who did that? It was to determine the limit of excavation to meet our decon -- decommissioning criteria, which

was very low. So, we really didn't care about the upper concentrations. We only wanted to -- we really wanted to know, with the greatest amount of accuracy, where -- you know, where clean was. We wanted to know -- really to be able to identify low concentrations to identify the margins of our excavation. We didn't really spend a lot of time looking at where the highest concentrations were.

That wasn't our purpose for these decommissioning characterization surveys. So, yeah, I completely -- I completely disagree with NIOSH that these 1995 or 1990s, vintage -- 1995 vintage surveys were adequate for that -- you know, that whole period that -- that predated the characterization survey. And there is no data. There is no data of the subsurface ever, not during the operational period and not at any earlier time in the residual -- the residual period. We had no -- no data on that subsurface contamination until -- it was -- in the building interiors anyway, until 1995. We had some data outdoors starting in 1984, but that's -- that's a different story.

All right. We also agreed with observation one. Now, interestingly, SC&A has since -- in the April 25th review of NIOSH's response, they have since accepted NIOSH's, you know, explanation of -- of -- of what they meant by -- by -- you know, in terms of using a survey data from, you know, the geometric mean and -- and the geometric sand deviation from the blended 1984 and '92 data. And they've -- they've since accepted that.

But, again, I don't agree with that, okay, because, you know, in part what -- what NIOSH suggested was well, look at -- you know, we have this airline debris, you know, as if that's the only -- as if that was the only

disturbance that we had in the burial site. Again, not true.

There were lots of disturbances in the burial site. Somewhere I have a - you know, I have a list of the -- the of -- the amount of utilities we had running through the burial site that -- that, you know, we had to work around when we're doing the decommissioning. I --- I know -- I'm trying to -- I can't find my list and my notes in front of me because I'm jumping around my slides here. But I know we had -- we had natural gas. We had at least two compressed airlines. We had chilled water. We had electrical conduits. I know I'm leaving stuff out. We had processed gas. You know, there was all kinds of stuff running through this.

And you can be sure that during that time, steam lines -- did I mention steam lines? During that time our maintenance workers are going in there and either, you know, installing that -- that -- those lines or they were repairing them. And every time they did that, they disturbed the former burial site, and there were exposures, and we have no idea what those exposures were.

When I started in 1983, there were half a dozen drums or so, okay. So, we -- you've heard about the 1980 airline, right. 1983, I'm starting, I'm brand new, right out of college. I go down to our wastewater treatment plant, there's a half dozen or more 55-gallon drums that have, you know, radioactive labels over them, and I was told that came from the burial site. So, I checked with my colleague, who may or may not be on the call -- I guess I won't mention his name, but he was a wastewater treatment operator. He was one of the people that was interviewed in 2017, October 2017, and he confirmed, yeah, sure enough. That soil came from the burial

site, and he remembers that it was generated when the facilities construction and maintenance team was installing a new steam line from the building 12 powerhouse to run steam over into our plating shop in building 11.

And, you know -- and he told me in no uncertain terms that that excavation occurred without any, you know, hint of -- of, you know, no one knew that or was told oh, there's a burial site, you got to watch out, you know, for radioactive materials. There was no health physics support. The health -- the one individual we had on site, a safety technician who was not a health physicist, had no -- no formal qualifications of a health physicist. He was -- he was, you know, maybe trained in how to -- how to use a Geiger-Muller counter and read the -- you know, read the -- the output of activity, the beta gamma activity, but that was it. He was not a health physics professional. All right. And he came over after they found this suspicious looking material and he said, oh, yeah, that's hot. And that's when they just loaded it up into drums, and they got NRC permission to send it down to Barnwell, South Carolina, decommissioning.

There's another gentleman on the call today, and he did give me permission to use his name. He's one of the people calling in, Darryl Hamlin (ph). He was a facilities electrician from 1977 until, you know, in the -- into the 2000s. I -- I apologize. I forget his -- his end date. But anyway, he was there from 1977. And one of the jobs he did was to pull communication cable through the manholes through a new building we built north of the burial site, the credit union. So, he had to pull cables. There was a credit union office in building 1 on the far extreme -- like a half mile away on the

western edge of the site. He pulled cable through every single building, building 1, building 2, 3, 4, 10, and through the burial site. And then -- and then brought it up to the new building that had been built north of the burial site, so the cranium.

And he said, that was a really dirty job. They -- they -- they were constantly coming out of the manholes covered in dirt. He said it was dusty. Again, they were never notified. Okay. This would have been late '80s. They were never notified that there was a burial site. I mean, it's almost -- it's almost laughable the way NIOSH seems to suggest that we had, you know, great regard or I forget how they termed it, you know, attention to, you know, what the hazards were. You guys clearly haven't worked at a manufacturing site. Okay. It doesn't work that way. You tell a worker, go do this, go do that, and you get the minimum amount of information. And that's the way it was.

And our safety -- our safety -- they have all these -- these, you know, statements about how great our safety was. Well, really -- you know, really, everybody I talked to says that in the '80s and prior to the '80s, we did not have a consistently applied safety culture. And what really happened was, in the late '80s, a maintenance worker fell from a -- an electric furnace in building 4 and died. So, it was a tragic accident. And that changed everything.

And then we started to adopt a safety culture. We -- we -- we adopted the DuPont Safety Training Operations Program, you know, audit program. You know, we started having incident reviews with -- with upper management whenever there was an accident, but prior to that, it was hit or

miss. It was, you know, whatever the -- the -- sort of the individual supervisor's propensity was toward, you know, protecting people. And certainly, health physics (sic) was nonexistent, not in...

You know, Darryl Hamlin (ph) told me in no uncertain terms, he had no idea that he was pulling wires through a former burial site or that building 10 had -- I mean, we know about the residual contamination in the subsurface in building 10 then. So, he knew nothing. All he -- all he knew was that he was, you know, doing his job and getting covered with dirt. He told me -- oh, yeah, by the way, they didn't wear respirators back then, you know, even on dusty jobs. That was -- that wasn't considered, quote/unquote, manly. I apologize for the gender reference there, but, you know, they -- most of these workers were men, and there was kind of a macho mentality, shall we say.

So, again, I -- we completely concur -- I -- the petitioners concur with observation one. I can tell you all about why the airline debris reference that NIOSH cites is -- is really factually untrue. And -- and their own -- it's funny, because NIOSH presents this thing that says, you know, on the airline debris project they say well, on the one hand, you know, the -- the decommissioning -- my project. I was -- I was the project manager for the decommissioning project. I was responsible for surveying the -- the -- the feature area where the -- we believed, although we didn't know for sure -- anecdotally, we were told that airline debris was buried along this very long, narrow, steeply sloped feature area on the southeast side of building 12. So, we went looking for it. We punch some holes here and there. And we thought we may have found it.

But if you read the next line, NIOSH says the NRC report from '81-'81 said -- oh, yeah -- TI -- TI at the time, MC took all that -- that debris from the airline -- from the airline excavation and actually shipped it down to Barnwell, so, of course, you wouldn't find any elevated concentrations. But more importantly, and I -- and I've reported on this in the past, soil surveys rarely ever found high concentrations of contamination, not always, but rarely -- rarely. And what we found certainly working in the -- in any of the waste management areas was that there was a very thin, fine, dark layer at, what we presume was, the historic ground surface.

It was this dark layer, which had concentrations of radioactivity orders of magnitude higher than all the --all the soils above or below, okay. And we never -- almost never intercepted that particular -- that way you had to be really lucky. It was like looking for a needle in a haystack. Hardly ever impacted that or collected a sample from that layer using the split spoon sampling method.

You know, I've since learned since I -- you know, in the last 10-15 years, that the better way to characterize a -- an industrial fill or a burial site is to use test pits, right. Test pits are much, much more effective way to ident -- we should have done that right from the get-go, but we didn't. We didn't know that back then. And so inevitably, what happened was, we'd start digging, and sure enough, our excavations would far exceed what we estimated based on, you know, the split spoon samples with our -- with our soil borings, especially in the waste management area, the burial site.

Okay. So, I would say that I think SC&A accepted NIOSH's explanation for observation one prematurely. And -- and we -- we would

say we completely support their observation number one.

For finding number two, the dust-loading factor of M&C subsequent activities not satisfying the Board's surrogate data policy, you know, I would -- I would just say that, you know, again, look -- look -- look to -- look to -- look to the -- the -- what I just read to you, the -- the affidavit from my copetitioner on what he encountered, okay -- and -- and the -- the intimacy of the work he was doing with his bare hands using manual tools, plumbing tools. This is not a D&D. This is -- this is not comparable to D&D activities.

All right.

SC&A observation two, we concur with that as well with -- with SC&A's position that the -- the M&C safety and health manual and NRC inspection results, operator training, all that stuff, programmatic considerations, is not necessarily substance -- does not necessarily substantiate the conservatism of the 95th percentile soil contamination guide. I realize we heard them say oh, no, that's not what we intended, we just -- I don't know. I don't know what NIOSH means by throwing that in except I think to -- really what I think they're trying to do is confuse the Board members into thinking oh, TI I had this really, you know, Cracker Jack safety program and that, you know, these -- these people were -- were definitely, you know, very -- very careful in -- in making sure that people's safety came first.

Well, eventually that came -- that came to pass. I would say, you know, sometime in the mid '90s and the early 2000s, we became much more systematic about a safety program, but it didn't exist during this residual period. And it kind of bothers me that NIOSH keeps raising -- I -- I've -- I've -- I -- I -- I brought that up in my testimony in March of 2021

that I thought this was disingenuous and deceptive for NIOSH to keep referring back to, like, this 1964 M& -- M&C safety and health plan that none of us -- none of the people I know, not -- not the working supervisors I know, not myself, and I was -- I was in the environmental safety and health department -- none of us knew about this -- this document, so I can assure you we weren't following it.

The, you know -- the -- the NRC inspections -- you know, if the NRC inspections were so good, then why did they allow our license to sit there for so many years after the operation ceased to the point where Congress as signer put M&C on the -- on the -- on the -- on the -- on the -- the site, you know, the signer -- what was it called -- the decommissioning management plan, SDMP, you know, and put pressure on -- on NRC to finally, you know, terminate our license as it should have been done years before, at least in maybe, you know, in -- in -- in -- in parts.

So, you know, I think that I NIOSH has to stop referring to these -- these programmatic, you know -- what should we call them -- administrative controls and things and -- and -- and work procedures that really -- again, if you've ever worked in a manufacturing operation, you'd know that a lot of this documentation -- it looks good on the shelf, but how it acts gets translated into the workplace depends on, you know, the culture of -- of the -- of the organization. It depends on the -- the individual supervisor. And it's, in this case, what NIOSH keeps bringing up has no resemblance to what was actually going on.

You know, they brought up a few examples of employees interviews, like -- like Josie said a few minutes ago, you -- I don't have access to all the

worker interviews from 2017. I know my own and I know the -- you know, my copetitioners. I know what they said, but I don't know what everybody said, but I can tell you, like Josie said, you can parse through those, and you can pretty much make any story you want. Let's not forget that this, you know, dozen say -- a dozen or so, maybe I heard someone say a dozen or so employees that were interviewed.

They're working from memory for work activities that occurred 30 to 40 years ago, and we have no primary documentation, like, you know, maintenance records or anything on which to base our recollection. We're trying to remember. I can assure you that the working supervisors have no idea exactly how much time they spent on each of these tasks. And we have no physical evidence to suggest exactly how much time was spent on each work task or exactly, you know -- you know, where -- where -- where it occurred and -- and how often. We don't have that information.

Even the recollection of the one employee who recalled some type of radiological survey prior to cutting out a section on the floor to install a new mill in building 10. I note that that worker specifically said that what they wanted to make sure of was that there wasn't any residual at the floor line before they started to cut the floor. I put emphasis on that last phrase, at the floor line before they started to cut the floor. He doesn't say anything about any surveys once the floor was cut to see what was in the subsurface soils, nothing. Okay. So, actually, I think this reinforces the position that the petitioners have taken from the start that there was no radiological measurements or monitoring of the areas that the M&C maintenance workers -- construction and maintenance workers came in intimate contact

with, AWE residual contamination, during the subsurface construction and maintenance activities.

So, all we know, for a fact is that the -- like I just said, no measurement or marking data for the class of workers coming under this petition for any of the work they performed during the residual period, that these workers came in direct and intimate contact with elevated levels of residual radioactive contamination that had been -- that -- that had been released in an uncontrolled manner, the -- the contamination had been released in an uncontrolled manner into drains, some trenches, vaults, pits, in the building interiors, and the external waste management areas during the -- during the AW operational period. So, the residual -- obviously, the residual contamination was left over from the operational period.

And there is no formal contemporaneous written records of the nature, extent, and duration of construction and maintenance work activities that M&C maintenance workers performed in contaminated areas during any part of the AWE residual period. All we have is the distant memories of maintenance workers who were interviewed decades after the period in question. And we've heard LaVon Rutherford say time again, it's those work interviews that gave them, you know, this amazing, omniscient ability to recreate and reconstruct models for every possible, you know, plausible exposure that occurred during a 30-year period for which we have no data.

So, I realize, you know, the board members are in a difficult position here and perhaps this unprecedented dilemma to overturn the recommendation of NIOSH, but I truly believe that's the right thing to do under these circumstances. I firmly believe that the MC maintenance

workers represent a class of workers for whom Congress intended to apply the SEC provision, where there was sufficient -- insufficient measurement and monitoring data available to estimate a bounding dose with sufficient -- sufficient precision and accuracy for any member of the class. And I respectfully request that the board members of this working group recommend to the full Advisory Board to exercise your statutory authority under the EEOICPA regulations and recognize this class of workers as a special exposure cohort.

With that, I express my gratitude for this opportunity to speak, and I will conclude my remarks there.

CHAIR BEACH: Thank you, Mike. We appreciate you jumping in early. I think we needed to keep the flow, so I appreciate that. Any work group members' comments, questions before we move on?

MEMBER KOTELCHUCK: Mr. Elliott, --

DR. ROBERTS: Dave?

MEMBER KOTELCHUCK: Yes?

DR. ROBERTS: And also, Josie, this is treated more like a public comment --

CHAIR BEACH: Oh.

DR. ROBERTS: -- period, so if the work group would like to discuss among themselves, --

CHAIR BEACH: Oh, okay. Thank you. I -- yeah, I get -- I get confused on that, so strike that question. And, I guess, what I'd like to do now is return to the more fundamental SEC question before us. As cited in SC&A's finding one, whether the 1995 sediment survey result is sufficiently

accurate and can be plausibly back applied to the M&C residual period over the 27 years in question, we have agreed that there was a diversity of intrusive maintenance activities during this time without actual information beyond interviews on these activities, source terms, exposures, and work conditions. So, there is an adequate and plausible basis for -- so, is there a plausible basis for doing so? So, I'm putting that before the work group members for discussion, and then possibly a determination on moving this forward.

So, Dave, if you have anything or Andy, Loretta, Nicole?

MEMBER KOTELCHUCK: Well, I -- I certainly lean toward an SEC myself, but I would really like input from the Board, because this is a broader policy question. And so, I -- I would like to have a Board discussion.

CHAIR BEACH: Well, yes, Dave, and that -- that's what we would do. We -- it has to be -- it has to be voted on with the four members of the work group, and then it can proceed to the full Board, otherwise, it stays within the work group.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: And Henry, I saw your name light up. Did you have a comment?

MEMBER ANDERSON: No, I was just coughing.

CHAIR BEACH: Oh, okay.

MEMBER KOTELCHUCK: I --

CHAIR BEACH: So, Dave, we need to put it for a vote. And then, of course, we'll move on with the rest of the agenda and the rest of the items.

But I think this is before us now before we get into the nuts and bolts of the other -- the other slide presentations. So, I guess if there's no comments, then I'm going to ask Rashaun to -- that we vote on --

MEMBER KOTELCHUCK: If we're -- if we're awaiting -- if we're awaiting some more reports -- excuse me -- the one, there was one other one, I believe, right, the slides from --

CHAIR BEACH: No, those -- those are more -- as Bob pointed out earlier, those are more the TBD stuff. So, --

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: -- really, what is before us is finding number one that I just referred to, whether the -- let me say it again here. Whether the 1995 sediment survey results sufficiently and accurately -- if they can be plausibly applied back over the 27 years, that's the finding. So, the source-term data, is it something that we can use? So --

MEMBER KOTELCHUCK: I --

MEMBER ANDERSON: So, then --

CHAIR BEACH: -- that -- that's the question.

MEMBER KOTELCHUCK: I would --

CHAIR BEACH: -- and that's what we've been talking about.

MEMBER KOTELCHUCK: Is this -- is this the -- is this the good -- I mean, I would be supportive, but particularly to get it to Board.

CHAIR BEACH: This -- this is -- this is taking it out of the work group and into the Board's hands, Dave, yes, for the broad discussion that we're talking about.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: We are not making the decision that it's an SEC. We are deciding amongst the work group that finding one is enough to put it before the Board.

MEMBER KOTELCHUCK: Okay. Well, I would -- yeah, I would certainly put it before the Board. If the Board does not agree, it will come back to the working group and come back to this body, right?

CHAIR BEACH: Correct. Yes.

MEMBER KOTELCHUCK: Okay.

DR. ROBERTS: Josie, I think Nicole might have had her hand raised.

CHAIR BEACH: Okay. Go ahead, Nicole.

MEMBER MARTINEZ: Okay, thank you. I think my question was mostly answered by the discussion that Josie and Dave just had, and that's like voting yes basically, is elevating this so that -- for the full-Board discussion, correct?

CHAIR BEACH: And yes, Nicole, that's correct. And --

MEMBER MARTINEZ: Okay, great.

CHAIR BEACH: -- and a work group recommendation to the full Board. So, --

MEMBER MARTINEZ: Okay.

CHAIR BEACH: Okay.

MEMBER MARTINEZ: Thank you.

CHAIR BEACH: Thank you.

DR. ROBERTS: And I -- I would just like to advise also that, you know, there -- there also needs to be a technical basis there. So, just to --

CHAIR BEACH: Well, that is -- that is the technical basis, basically,

that they can't take doses from '95 and use them for the -- someone probably could say it more eloquently than me. I'm basically looking at the finding, and the finding is the basis. And that -- that can be flushed out. So, the back application of the high 1995 sediment survey result to bound inside subsurface activities is not adequately supported by information for Metals and Control worker activities from the earlier residual period.

MEMBER ANDERSON: (Indiscernible.)

DR. TAULBEE: May I speak?

CHAIR BEACH: Sure.

DR. TAULBEE: Okay. Oh, sorry. I hit the wrong button. Okay. When -- when Rashaun was mentioning, you know, the basis, I guess, from the agency's standpoint, we'd like to hear more or we -- I would like to know more discussion of why us using the 95th percentile you don't feel is bounding going back in time, especially when you consider that the -- that soil around that time period that we were using, when they went into the pipe, they found a metal uranium rod, meaning that it had been there for that entire time period. This is, in our opinion, a bounding dose from that time period. So, from reading finding one, there's concern that it's been -- you know, the data from the 1990s is diluted and that it was higher in earlier time periods. And I'd like to hear the discussion or thoughts of the work group of why you feel like the soil around the pipe where a fuel rod was found is not bounding.

MEMBER KOTELCHUCK: The -- as I understand it, the number that was used for trying to make estimates of what people were exposed to was, in fact, the -- I believe it was the geometric mean of 68 -- 6000. It was --

that number was not used as the basis for -- for calculating the dose. It was the -- I believe, either the geometric mean of the data, right? The -- no, no. You used the 95th percentile. You used the 95th percentile, not the maximum. And, in fact, there was -- the question is -- there's no question that -- to my mind, there's no question that there was extreme conservatism on the part of the NIOSH staff in making this. The question is, is it bounding? And I -- I would think of bounding might be the -- the maximum -- the maximum value that was measured, not the 95th percentile, which was approximately close to 10 times lower, if I'm not mistaken. And if I am mistaken, please, correct --

MR. RUTHERFORD: You're muted, Tim.

DR. TAULBEE: Thanks, Bomber -- LaVon.

You are correct. We are using the 95th percentile. Although if the work group were, you know, to opine that we've -- they felt we should be using that maximum, that would be something that we considered. That's -- this is the first that we've heard that from that standpoint, to my knowledge anyway. But please keep in mind, we use the 95th percentile of all the soils, and we assumed that they worked in that -- every time they've dug into the store -- soil every year for this 29 time -- 29 years -- 27 years. And so, this is why we feel this is a conservative bounding approach here. So, I -- I feel like, you know, we need some more discussion or not discussion -- or, you know, something as to why you are not feeling that this is a bounding approach from the 1990s going backwards. And frankly, I just haven't heard that yet. That's -- that's my only comment. Thank you.

CHAIR BEACH: And Tim, you brought up the fuel rod. That was found

in one of the vertical drain lines in one location in a network of thousands of square feet of piping. So, to hold -- hold that as the top end, that -- that doesn't really compute for me that --

DR. TAULBEE: How could it be worse?

CHAIR BEACH: Well, you have the pipe with a million, so it could be worse, and we don't know because we never took any samples until '95.

MR. RUTHERFORD: Well, I will say -- this is -- this is LaVon. It can't be higher than a fuel rod. I -- I -- I mean, don't care what the surface contamination on that pipe was. It's not going to behave any higher than that fuel rod.

MEMBER KOTELCHUCK: That's -- that makes sense.

MEMBER ANDERSON: (Indiscernible) you keep using, Tim, the bounding -- I mean, bounding, that's just a mathematical application. The question is, is that -- when you say it couldn't be higher than that, that raises the issue of the plausibility of is that a plausible exposure? So, you know, if what you want to have is the -- the highest possible dose you could use, then you could say, well, use the highest measurement you had, and then go from there. But all of those are -- you know, is the accuracy of reconstructing your exposure.

DR. TAULBEE: We believe that that dose is plausible for a maintenance worker who goes in and is doing this work, and then pulls that fuel rod out, that that's their exposure. So, it is plausible for these maintenance workers to receive that. And that dose comes out to, when you combine all these together, to 71 millirem per year.

MEMBER ANDERSON: For just a single exposure?

DR. TAULBEE: No, no, this is per year, because we're assuming they're doing this every year. And so, every year, they pulled out one of those fuel rods out of one of these drain pipe -- out of one of these pipe drains. So, this is this is why we're saying -- using the term "extreme conservatism." And I -- in hindsight, I wish we hadn't used the word extreme. But this is our conservatism here. And so, we're assuming this is happening every year, over this time period.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: Well, I guess I'm wondering how is this different from Linde? The conditions and exposures may be different from what -- what NIOSH says they were, and there's no direct information for the time period these maintenance activities upon which to decide this matter. So, I mean, there was so much going on. And if you just are throwing a big number at it, like in Linde's case, there's -- there's no difference in my mind.

DR. TAULBEE: In the Linde scenario, we had air samples of a -- of an extreme application of contaminated flooring that was being jackhammered, and so there's a lot of resuspension happening. And then we were going to apply that to everyone who worked on site. Okay. And that's when the Board felt that the 5 point -- well, 5300 millirem per year was implausible for workers that were not doing that type of work. Okay.

In this particular case, the dose is calculated to be much, much, much lower down at 71 millirem. And so, workers who are not exposed to this would effectively receive zero in reality, but the difference between zero and 71 millirem is rather small compared to zero and 5300 millirem per year. That's --

CHAIR BEACH: Yeah, but Tim, --

DR. TAULBEE: That's the difference that we see.

CHAIR BEACH: But the -- but I see the plausibility remains the same. That doesn't change it. This -- it's not possible to dose reconstruct -- the dose reconstruction approaches and stretches the regulatory allowance in this case. I mean, the extreme conservatism, back to that. And I understand these are low doses. But there's too many unknowns, too many factors, what maintenance workers were doing, that we just don't know. And we can't know.

MEMBER ANDERSON: And there's -- the other is how much sampling was done. And so, one of the times in one year at one time, they found one rod. You don't know. Could it have been in the earlier years, they were pulling out more rods you don't know about, or they were cutting the pipe and throwing the whole thing away.

DR. TAULBEE: This is clear from the interviews, Dr. Anderson, that we went through, and we asked the workers how often was this work done, and, you know, how long were they doing this type of work. And for each of those scenarios, that's how we came up with the two months per year and at these exposure levels. And so that's -- was all built into the model of, you know, assuming effectively one per year. And do we know that occurred every year, it's unlikely did -- likely, it did not. But that's our assumption. And I see Dr. Martinez is --

MEMBER ANDERSON: That's your assumption (indiscernible) give what we -- go ahead, Nicole.

MEMBER MARTINEZ: Thank you. I just, like I said, I'm getting up to

speed. So, I just wanted to clarify, I think, Josie's point about the -- the portion of this the not adequately supported. The -- the argument is for this finding is really the uncertainty associated with it?

CHAIR BEACH: Correct.

MEMBER KOTELCHUCK: With everything. With -- with --

MEMBER MARTINEZ: So, it's really rooted in the level of uncertainty?

MEMBER KOTELCHUCK: I wish --

CHAIR BEACH: There is plausibility and sufficient accuracy.

MEMBER MARTINEZ: Okay. But not the bounding, per se, it's the uncertain -- the uncertainty?

CHAIR BEACH: Correct.

DR. TAULBEE: Actually, that is not correct.

(Whereupon, multiple attendees speak simultaneously.)

MEMBER MARTINEZ: Yeah, Tim, that question was for everyone, so.

DR. TAULBEE: Yeah. You know, for an SEC designation, there's two criteria for it, and the first part of the criteria is whether or not NIOSH can establish a bounding dose for the exposure for the worker. Okay. So, that is the first criteria. And the second component of that -- oh, by the way, it's bounding dose under plausible circumstances, that's where that comes into play. Okay. And in this particular case, we feel that maintenance workers have the potential for experiencing one of these exposures in the removal of that slug or that fuel element, and this is what their exposure condition is. So, we feel that it is plausible from that standpoint.

The discussion, to me, has been going on into the realm of is that bounding dose implausibly high, if you will, for other workers or other

scenarios at the time. And NIOSH's opinion, we don't feel that 71 millirem per year is an implausibly high number that would warrant granting an SEC, such that anybody who worked at the site, their cancer would be automatically to -- have been determined to have been caused by their exposure at the site, and therefore awarded compensation, if that makes sense to you.

MEMBER MARTINEZ: It does, --

MEMBER ANDERSON: (Indiscernible) implausible --

MEMBER MARTINEZ: -- thanks.

MEMBER ANDERSON: -- whoa.

MEMBER MARTINEZ: Go ahead, Henry. I don't think --

MEMBER ANDERSON: I was going to say it could be implausibly low. Not implause --

DR. TAULBEE: If it's implausibly low, then it's not bounding.

MEMBER KOTELCHUCK: That's right.

CHAIR BEACH: All right.

MEMBER ANDERSON: It could be implausible. It could be low with the --

CHAIR BEACH: All right.

MEMBER ANDERSON: -- sampling information over the whole period of time that you have a -- is it a chance occurrence, or would it have been another occurrence? And that one of the issues, is the lack of the data other than -- than this. I think we -- we can disagree on that, and it's -- it's all about where -- where do you make a cut point with what data you have. In Linde, as you say, you had a lot more other data. Here we really don't have

any other data. Nicole, you got another question? Okay.

CHAIR BEACH: Yeah, Henry, I think you get back to the basis. It's the sufficient accuracy and plausibility. And it's -- it's what the work group thinks. I mean, I understand what NIOSH thinks, and I understand what SC&A thinks. And we appreciate all the input. But honestly, it comes down to does the work group feel that that covers the situation? So, it's really back to the basics of the sufficient accuracy and the plausibility, and the Board needs to weigh that in this case with the information that we have. That's not going to change because they have the data from '95. But they don't have anything from '68 to '95.

And there's -- there's how many clean outs? I mean, we've -- we heard from Mike it happened on a daily, weekly, monthly -- they cut through the middle of the plant. For six months, it was open, and they were putting in the bracket. So, I mean, there's so many things we've already discussed and talked about that I feel like the Board needs to make that decision -- the -- the work group here and decide if it's plausible or not and move it forward.

MS. HABIGHURST: So, Josie, this is Ashton, again, from OGC. I just want to clarify that, basically, we need to -- if you want to put this aspect to a vote right now, --

CHAIR BEACH: Yes.

MS. HABIGHURST: -- you need to articulate for the record what is the scientific and technical basis for why you think the data isn't good enough. And that's an important legal aspect here, because if this were to turn out to be an SEC, and, you know, someone doesn't qualify for the SEC, you know,

we have people who don't, and then they get a partial dose reconstruction, it could eventually lead to litigation down the road, if there's not, like, a very clear, articulated scientific and technical basis.

CHAIR BEACH: Understand, and I'm probably not the best person to do the articulation. However, this -- this -- what I'm thinking is -- it's -- it's a referral from our work group to the full Board on the SEC issue. So, we're not specifically saying it's going to be an SEC, we're voting to move it out of the work group to the full Board, based on what we feel the plausibility is or isn't in this case.

The -- the question -- I mean, we -- we've agreed that the early -- the work, the diversity and the intrusive nature of maintenance activities during this time without actual information beyond the interviews -- that's all we have is those interviews -- and that's only a small portion. And I'm saying this to the work group, including you, Ashton -- Ashton -- on the activities that were performed. And like LaVon said, we -- we keep hearing more and more and more, and I bet you, if we went back and did more interviews, there would even be more work that was done that we don't even know about. So, the -- the activities, the source terms, the exposures, the work conditions, are those, do we have enough adequate information, and is it plausible for this basis? And that's -- I guess that's the question. If somebody else wants to wordsmith that, or if SC&A has a better way of putting that than I do, that -- that's where I'm at.

MEMBER KOTELCHUCK: Okay. I think -- I mean, I think there -- while I agree with your conclusion, I -- I don't -- I have not tried to wordsmith it, but it seems -- and I -- I think we probably have to wordsmith

it.

CHAIR BEACH: Of course.

MEMBER KOTELCHUCK: We can't simply make a recommendation. We can't say let's have the board make a decision. Basically, it would appear as if everything hangs on that rod, the -- the measurement on the rods in '95 -- the rod, which seems to me -- doesn't satisfy me, but I -- I think -- I mean, I think maybe we need to think about how to wordsmith it. And I --

CHAIR BEACH: Well, and -- sorry, Dave. I didn't -- I was gonna --

MEMBER KOTELCHUCK: No, that's okay. No, and I feel like I can't -- that's fair enough. And I feel like we have to do it if we want to refer it to the Board.

CHAIR BEACH: So, we have insufficient information and data to support the proposed bounding dose, basically.

MEMBER KOTELCHUCK: Yeah. But -- but we have to -- we have to make the scientific argument as to why we feel this way. I feel like I share your feeling that there are so many unknowns. If somebody --

CHAIR BEACH: The other --

MEMBER ANDERSON: They combined all of the data from several periods. And the question is then, is that representative of exposures that may have been --

MEMBER KOTELCHUCK: Yeah.

MEMBER ANDERSON: So then -- and then you have -- when you get down to the lower level, because there were a lot more tests that are being combined into that. And the question is, is that a relevant to include with

the finding of the one -- the one high measurement with the -- with the rod.

MEMBER KOTELCHUCK: Yeah. And that's --

MEMBER ANDERSON: -- we all do, --

MEMBER KOTELCHUCK: -- true.

MEMBER ANDERSON: -- is we need to -- if -- if, Josie, we want to come up with a recommendation, I don't think we can do it on the fly, as we're sitting here right now. So, I think if we want to do that, we can go back and summarize it. I think there's a variety of issues that have been raised that we need to condense into a statement for it. And I would also like to see -- review of NIOSH of the cases that have been awarded, and how those doses were calculated. What was the basis for that? Now, we're --

CHAIR BEACH: Yeah. We have. Yeah, I feel like we have that information, Henry, but.

MEMBER ANDERSON: I don't know. Maybe we do. I don't.

MEMBER KOTELCHUCK: We certainly -- by the way -- oh, I'm sorry, Nicole, you had your hand --

MEMBER MARTINEZ: That's okay. Thank you. I was gonna say that I agree with Henry in terms of I think this probably can't be articulated on the fly. And one of the reasons for that is I'm -- I'm not convinced yet. I know -- I think that Josie and -- and David, these probably are, but I'm not convinced yet by finding one. So, I think it would be particularly important to -- to articulate the technical basis for -- for me, as well. And I mean, I can also look -- look more into that, but just I'm -- I'm not convinced yet that finding one.

MEMBER KOTELCHUCK: Well, look --

CHAIR BEACH: Loretta, we haven't heard from you. What -- what is your thoughts? Sorry, Dave, I jumped on you.

MEMBER KOTELCHUCK: Oh, no. That's fine.

MEMBER VALERIO: Well, there's -- I listen to what Tim said about, you know, the -- the small dose or the, you know, being a -- plausible or implausible. And then I listened to Dave, and I listened to Henry and, of course, I listened to you. My -- my biggest concern is, you know, the same as everyone else is there are so many uncertainties over so many years. I don't know that anyone has actually -- I don't recall. And maybe you can correct me on this, Josie -- if SC&A or any of the work group members have actually reviewed any of the dose reconstructions for Metals and Controls that were actually awarded so that we would know, you know, how they -- what they based their -- their decision on. I don't think I've seen any.

CHAIR BEACH: I think we just asked for that at the last meeting, and it came out pretty late. In reading through the transcripts, I asked LaVon if that had been done. And I don't think it gets into that level of detail as LaVon has mentioned a couple of times.

MEMBER KOTELCHUCK: Well, I -- yeah, I do -- LaVon mentioned that there have been some recent interviews, which is good. I've read the earlier interviews from 2017. I've read all of them, and I have some excerpts from them. And I haven't seen the more recent ones. Now, could well be that we don't have access to them through the --

MR. RUTHERFORD: Ooh, shit.

MEMBER KOTELCHUCK: -- that was -- not have access through --

through our -- our CDC website.

MR. RUTHERFORD: Dr. Kotelchuck, I -- if you heard me say that, I was mistaken. There was no new interviews that were recently done. I want to make sure --

MEMBER KOTELCHUCK: Oh, okay. That's fine. Because I've read all the other interviews.

MR. RUTHERFORD: Yes.

MEMBER KOTELCHUCK: I do think that I don't think they've been, in my opinion, properly interpreted. And -- and some of them -- like, there was one that was quoted in your report from worker number one, and I went down through the person that -- that said, you know, then they snipped it and then put the concrete down without talking about snaking and working through that. And they -- the -- that person had some other things to say, which contradicted -- which contradicted the -- the spirit of what he said. He was, in fact -- as we went down -- for worker number one went down further into his testimony, he felt like, you know, the people that were doing D&D were doing different work than he did and under different circumstances.

And that also was a question. Is the measurement by if our -- are the measurements taken by the D&D people, in fact, giving them -- and the exposures they got from that, are they -- are they given by -- excuse me. The -- the exposures that the people had gotten -- that the -- the radiation that people measured, would -- would they have had different exposures, depending on the way they handled the work and the way the workers handled the work, which was not, of course, to throw it away or eliminate it

or box it up or shield it up?

So, okay, good. Well, first, the -- I don't know if we can still get back to the original interviews for other people. I had -- I -- I read them long ago. I took notes on them. But I'm open to -- to try to, I think, make -- work up a more sound basis for not, in fact, trusting the accuracy of the -- of -- of -- of the estimates that were made by NIOSH.

CHAIR BEACH: So, Dave, can I ask a question of Bob Barton?

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: So, they're asking for a technical -- tech -- a tech -- a technical in order for the work group to vote on this, a definition. And I don't have the ability to really do that. I thought I had it, but is that something that you could throw out at this point?

MR. BARTON: I think -- I think Joe actually summarized the issue pretty well, in that all the buzzwords today had been plausibility, sufficient accuracy, and bounding. And the Board has -- has granted an SEC in the past, because they didn't think that the bounding approach was plausible. And I think that's the question and it's a policy decision, so that SC&A really can't comment on it. It's up to you-all to decide. But the issue is, when you have all these extreme conservatism and built into the modeling, does that meet plausibility requirement? Every -- possibly could be bounding. But the question is, I guess, where does the line get drawn? And NIOSH pointed out -- and I don't want to put words in their mouth -- that that happened at Linde, but the dose magnitude is a little bit different. But, I guess, the question is when does throwing the kitchen sink at it become inappropriate in the Board's view?

MEMBER KOTELCHUCK: Right.

CHAIR BEACH: -- Bob.

MEMBER KOTELCHUCK: Yeah. I think it becomes incumbent on the members of the subcommittee.

CHAIR BEACH: Well, of the -- of the work group, yes. I mean, we --

MEMBER KOTELCHUCK: Of the work group.

CHAIR BEACH: It is our call on the judgment and -- and plausibility. It's the work group's call. And so, I guess, I'd like to take a soft -- maybe a soft view -- vote and work on the recommendation to move forward to present at the full Board. And, I believe, that that word -- or that wording can be used or come together with -- through email on the recommendation. So, I guess, I'm -- I just want to know where the other work group members stand. And I know, Nicole, it's hard for you, and you may want to abstain from a vote.

MEMBER MARTINEZ: Yeah, Josie, I was actually gonna say that. Since I'm not convinced, but I don't have -- I haven't fully come up to speed, --

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: Yeah.

MEMBER MARTINEZ: -- I abstain. Yeah.

CHAIR BEACH: But -- but having the opportunity to discuss it amongst all the Board members, this is a plausibility, and it's a judgment call, and it's not really the work group's purview to make a decision on that. But it's our -- it's, it's our duty to bring it out of the work group to the attention of the full Board, because I think this is important. So, I guess, I

want to know where other work group members are in that stance. And if we need to do more work, we'll do more work. But if we're at a point -- we haven't really gotten any new information other than Joe's -- or SC&A's paper.

So, I guess, let me come back to the work group. What -- what are you -- what are you guys thinking? Can -- can we take a soft vote nine -- Rashaun, on this and then --

MEMBER VALERIO: Josie?

CHAIR BEACH: -- work out the details? Yes?

MEMBER VALERIO: Josie, I'm sorry. It's Loretta. I have a quick question for you before Rashaun answers that.

So, last night, I did read through -- through some of the -- those old interviews that -- you know, that they've mentioned. And what I took from some of the interviews was that the workers, again, they were not monitored, but they were -- they -- they were doing the work based on faith, being told, you know, hey, it's safe, but there were no monitoring records. And to me, part of the recommendation to the Board would be, maybe, a lack of monitoring. I may be wrong, but that's -- you know, that's my thought process.

CHAIR BEACH: Well, definitely, yes. There is no monitoring, of course. And, you know, this is not a technical issue really. I know Ashton said it was, but this is a policy decision that really needs the full Board's input. I'm not saying we're going to say, Yeah, let's write -- make a recommendation, and it's going to all of a sudden be an SEC. No. It's going to go to the full Board, and then we're going to have that discussion within

the full Board. So, honestly, I feel like we should take a vote. I -- I think I'm ready to. Is anybody else?

MS. HABIGHURST: I'm sorry to interrupt, Josie. I just -- I guess I don't really understand. I just -- I would think that the -- the purpose of the work group would be to flesh out these issues and then make -- vote on a recommendation on whether or not to add it to the SEC. So, --

CHAIR BEACH: Yes. And I --

MS. HABIGHURST: -- to me, it seems like we're now taking -- we're just voting on a subset of an issue to take to the Board. And then event -- then it will go back to you guys to determine what your recommendation would be. I don't know if that's --

MEMBER KOTELCHUCK: Oh, no.

CHAIR BEACH: Sorry, I didn't mean to mislead you. That's not what I mean. And Dave, I'll -- I'll speak after since you're trying to speak.

MEMBER KOTELCHUCK: No, I mean, just -- I would like to get word from the Board as to whether others agree with me that I don't -- I really would set up an SEC class for this. But the -- and would ask the Board's -- consult with the Board, because the Board will make that decision. But I'm not ready to say no, for sure, this is it. And, you know, I would really value conversation with the Board. So, the issue --

CHAIR BEACH: Well, yeah.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: Yeah. And you're right, Dave, we -- we do. And Ashton, thank you for helping clarify that. This is an SEC vote amongst the work group. It's not a technical issue -- issue. It's a policy issue, so we

would have to flesh out the recommendation. But the premise is on the finding one, and however, that is word -- worded, that we don't think that the back extrapolation of data from '95 covers the 27-year period prior to '95. So -- so, Dave, I know you've mentioned a couple of times you agree with the SEC and -- and are ready to vote. I haven't heard really -- I heard from Loretta. Andy, where are you at?

MEMBER ANDERSON: I guess, I would-- I would like us to try to put together what -- I mean, we've had a lot of discussion here and previously and in the reports. We need to come up with what are the criterion we want to take to the Board that basically is going to say, we don't think this extrapolation as well as to the way that the models have been put together are sufficiently accurate and plausible to do individual dose reconstructions. I think that's --

CHAIR BEACH: Yeah.

MEMBER ANDERSON: I think we need to -- we need to we need to try to get that put together enough. What are -- what are the key, you know, page and a half maybe, of points we think need to be made that support that this approach that NIOSH is using is not sufficient to -- to do the dose reconstructions with the criteria that are needed for dose reconstruction.

But I -- you know, so I think we need -- I guess, I'm of a mind I think we can maybe put that together and then when we take it to the Board, then they may say yep, we agree that this is another one of those cases where we've run into this. And we've got experience already on the other three, which are all a little bit different, we've all come to the conclusion that you have to take each site separately and make that determination. In this

one, it's how reliable is that '95 data and the approach that NIOSH is using to come up with a median value and then a 95 percent confidence around that, and then assign that exposure to everybody, and is that sufficient for --

CHAIR BEACH: And --

MEMBER ANDERSON: -- what need in this. And this then goes into the background for future sites of -- I think this has less data, more complex site than the others do. So, it does put it on the outer edge of can you really confidently do dose reconstructions using six different models and making all these various --

MEMBER KOTELCHUCK: Right.

MEMBER ANDERSON: -- assumptions. That's really where we're at. And I think this is different than the others. On the side of -- it may be on the other side of saying, it becomes an SEC. But I think we need to put that together, and we're really defining what is the minimum amount of information you need in order to do -- through modeling and on -- this is multiple models for every type of little exposures that's coming up.

CHAIR BEACH: Yep.

MEMBER ANDERSON: -- the approach, we're now going to go to. You look at a site, you look at all of the unusual exposures that may have occurred, then you come up with a model that will estimate what that exposure would be, you then make the assumption that they did this on average of two months, because you talked to a few people. But we really don't know how this applies to all of the individual workers. And I --

CHAIR BEACH: Yeah. That's sounds --

MEMBER ANDERSON: And I think, to me, it's different. And as I said,

I would like to see what NIOSH was comfortable with in these 14 cases that only worked there. And maybe there were others -- they worked at other sites and that's what accommodated it -- accounted for it.

CHAIR BEACH: Yeah.

MEMBER ANDERSON: But I think it would be useful to see the method that was used, and if it became -- the decision is that well, that method really was wildly overestimating exposures, which for those who were awarded, fine, that's good for them. But now we have advanced the science and the methodologies, such that you can do a dose reconstruction with basically the smallest amount of information that we currently have. And --

CHAIR BEACH: Right.

MEMBER ANDERSON: -- so I think if we decide one way or the other, this then becomes another precedent-setting decision. And I would like to work on how do we want to -- what are the key issues here that seems to be -- and I would agree, I'm concerned about it.

CHAIR BEACH: Right. You know, and Henry, --

MEMBER ANDERSON: (Indiscernible) make a decision that'll -- I think we can do it.

CHAIR BEACH: Okay. So, you feel like we can make a decision and then work on the verbiage offline -- the SEC -- I mean, --

MEMBER ANDERSON: Well, why don't we --

CHAIR BEACH: -- the recommendation?

MEMBER ANDERSON: -- like is there more information we would like to have in a --

CHAIR BEACH: Well, that -- that was --

MEMBER ANDERSON: -- world -- way that we solved this in the past is NIOSH said, we could create a model for that. So -- so, they went through it, and six times we said, here's our concerns, and oh, we can model that, and they did. And then we look at -- the model, per se, is okay, but the outcome of it, I think, now, it's where we're at of here, does that meet the sufficiency for what the needs are? And --

CHAIR BEACH: Yeah.

MEMBER ANDERSON: -- that does become a policy decision where we need to back that policy, what -- so, when the next one comes along has it got more data? If it's only five years out of date?

CHAIR BEACH: Definitely.

MEMBER ANDERSON: You know, there's all -- all of these kind of you -- we're saying this one isn't similar to the three that we already awarded. If we could have said yeah, look at that, it's the -- the same kind of issues and the -- you know, it's a burial site and same kind of stuff was buried in it as other sites, and we can take all the data from the other sites and oh, this is very similar to it, so we're confident that there weren't any other -- there weren't more hot spots identified. Specifically, there wasn't the in-depth search for hot spots. And we don't really know what all the work was done during -- during those years. The assumption it wasn't the same people. It wasn't -- you know, there were higher levels of stuff that was coming out of that at the time.

CHAIR BEACH: Right.

MEMBER ANDERSON: But with what we have, then the question is, is that representative of what actually was occurring on a day-to-day basis

there. And, you know, there isn't that much data. So, that's kind of what I would like to say. Let's -- let's give it a try.

CHAIR BEACH: Okay.

MEMBER ANDERSON: We may not be able to convince --

CHAIR BEACH: Yeah. I still --

MEMBER ANDERSON: (Indiscernible) --

CHAIR BEACH: Henry, I, I feel like you've gone global on this issue, so I want to bring -- you really have, because I know you've been thinking about the SEC work group. And -- and this topic needs to be vetted out. I think if we can just bring it back to Metals and Control and what we have here. I -- I think what you said originally, we can -- we can bring the points for our recommendation based on the lack of information, the workers engaged in the maintenance -- maintenance activities. I mean, I think that's something that we can do very simply via email is -- do you agree with that?

MEMBER ANDERSON: I think so. I think we each go back and make a list of what we see is the key (indiscernible) points.

CHAIR BEACH: Yeah.

MEMBER ANDERSON: I think we've generally identified them, but we really have not honed in on well, can we adequately -- are we -- over all of the years and all of the data and all of the interviews to review, you know, if it comes -- where do we -- NIOSH has done that, from their perspective, we pick out this -- I mean, they're building a case for the position they're taking as they can do dose reconstruction, and I wouldn't expect them to -- that's why I'm saying I'd like to see if dose reconstructions that they funded. And

I think with a current methodology, those probably wouldn't have made it. But until they look it over and give us a breakdown on those relatively small number of cases, we won't know that. So, it'd be -- you know, that's kind of the -- we got two choices, do it the old way where it went for the first 500 or whatever, or we come up now with this new method.

CHAIR BEACH: Okay, so --

DR. TAULBEE: Dr. Anderson, we will get you that information.

MEMBER ANDERSON: Yeah. I know you will. Yeah. And I think you can do it pretty quickly.

DR. TAULBEE: Yes.

MEMBER ANDERSON: And -- and since it's a small number, I wouldn't be surprised that there was something.

UNIDENTIFIED SPEAKER: Yeah.

MEMBER ANDERSON: -- part we're doing now.

CHAIR BEACH: Yeah. In the hopes of moving forward and on to the rest of our -- our agenda, Rashaun, can you -- can we take a vote on the SEC issue that --

DR. ROBERTS: Okay. So, I was trying to -- to interject a little bit earlier, and follow on to Ashton -- Ashton's comment that it really is the -- the job of the work group, you know, not only to provide a clear SEC definition but also a clear technical basis when you're bringing, you know, an SEC or whatever, to the full Board.

CHAIR BEACH: Right.

DR. ROBERTS: And it sounds like, you know, there's still some questions that -- and some more work that needs to be done and maybe

some more discussion that would need to be done beforehand. What I would recommend, perhaps, is that the working group put together an update or presentation, you know, to the Board and get some discussion around that rather than --

CHAIR BEACH: So -- I'm sorry, I'm gonna -- I'm gonna interrupt you just a minute, Rashaun. Because, really, for us to present to the Board it has -- it needs to come with a recommendation. If we don't have a recommendation, then we're going to go in circles again. So, pardon me for jumping in, but I feel like the -- the work group needs to either, one, make a recommendation and then move forward with a presentation so the Board understands where we are, or we need to schedule another work group meeting.

DR. ROBERTS: Yeah. And I would -- I would go with maybe another work group meeting.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: And so, I guess, I'm curious at where -- I don't know where the other work group members fall. We have all the information that NIOSH can give us other than creating more models, more, you know, extreme conservatism. So, I'm curious, of where the other work group members --

MEMBER KOTELCHUCK: (Indiscernible) --

CHAIR BEACH: -- and vote.

MEMBER KOTELCHUCK: Josie, if you --

CHAIR BEACH: Yes?

MEMBER KOTELCHUCK: I mean, you can take a straw vote among the

members. But that's --

CHAIR BEACH: Well, then --

MEMBER KOTELCHUCK: -- a straw vote. That's not --

CHAIR BEACH: Okay.

MEMBER KOTELCHUCK: -- to the board.

CHAIR BEACH: Okay.

MEMBER KOTELCHUCK: -- question of how people are leaning, and then we hold -- we will need to work on making that more formalized in the way that Henry and -- and others may be thinking, and then make a recommendation and go to the Board -- make a final vote of the working group. So, I think it suggests what Rashaun said that we'll have to have another meeting. And I think --

CHAIR BEACH: So, Rashaun, --

MEMBER KOTELCHUCK: -- struggle.

CHAIR BEACH: BEACH: Okay. Can we do that, Rashaun, find out where we're all at?

DR. ROBERTS: I'm sorry, in terms of what? Having another work group meeting or --

CHAIR BEACH: No. Of the SEC vote.

DR. ROBERTS: You --

MEMBER KOTELCHUCK: The question is whether to have a straw vote where people are leaning, but then, you know, if there's -- and then -- and then, actually, put things together -- put together a recommendation that satisfies the requests that Ashton put out to us. And it has to be more than just, we support this.

CHAIR BEACH: No, I'm --

MEMBER KOTELCHUCK: And that will develop and have another board meeting to -- to do -- to do it.

DR. ROBERTS: I mean, can it be done? I guess, I'm a little hesitant about having some kind of vote around it. I mean, can't you just discuss where you are falling at this point? People can --

CHAIR BEACH: Yeah.

DR. ROBERTS: -- just one by one talk about that.

MEMBER KOTELCHUCK: Sure.

MS. HABIGHURST: Rashaun, I agree with what you're saying as well. Because I'm not sure I understand the goal of doing a straw vote right now, and I think until, you know, they can get together and -- and really articulate their criteria and their recommendation and the technical basis for that recommendation, I'm not sure I see the -- the whole goal of doing a straw vote now. And I think I also agree with doing another work group meeting. And then by that point, hopefully Dr. Martinez can also play in after she's had some time to review everything.

MEMBER KOTELCHUCK: Okay. Okay.

CHAIR BEACH: So, at this point, the SEC topic is one of sufficient accuracy -- accuracy and plausibility of back-extrapolating data from 1995 to 1968, and using that, and do we find that plausible?

MEMBER KOTELCHUCK: Right.

CHAIR BEACH: I mean, Dave, and I guess, Loretta, Andy, where are you guys at? Do you -- do we need more information, or is our recommendation that this should be an SEC for Metals and Control from

1968 on through '95-'97-time frame?

MEMBER ANDERSON: Well, again, I would -- I mean, I'm leaning in that -- we need to develop the -- a firm basis for --

CHAIR BEACH: Okay.

MEMBER ANDERSON: -- for moving -- for that to -- I mean, if I said no, I think I haven't heard that we've been thrashing it forever, and it's -- I'm not prepared to say, well, NIOSH can do the dose reconstruction, and this is sufficient. I'm not at that point. So, I would say I'm leaning toward the other. I would like to hear back on the status of what transpired for the ones that were only working during the -- this period and were compensated for their claims. You know, their whether it's -- they have a lot of skin cancers that maybe -- but I think I would like to hear about that and then see what -- how -- what were the criteria that NIOSH used and what were the dose exposure that they used that got to them to over 50 percent --

CHAIR BEACH: Okay.

MEMBER ANDERSON: -- and I think that would give us some idea of the changes NIOSH has made now with -- with this new approach. We'll see if that is helpful or not.

CHAIR BEACH: Okay. Well, that sounds like --

MEMBER ANDERSON: I think we need -- I think we need to spend some time between now and another meeting --

CHAIR BEACH: Okay.

MEMBER ANDERSON: -- to put together how would we build that -- the case to say that needs to be -- this should be an SEC.

CHAIR BEACH: Okay. That makes sense, but let's not wait a whole

year. Let's make a --

MEMBER ANDERSON: Oh, no. I -- I -- I think, --

CHAIR BEACH: Let's -- let's --

MEMBER ANDERSON: -- Tim will get that data to us pretty quickly.

CHAIR BEACH: Okay. So then --

MEMBER ANDERSON: -- then we can --

CHAIR BEACH: -- at the conclusion of our agenda, then I think we should set another work group meeting and move forward. This -- back in the old days, Rashaun, I know, you probably don't know this, but these would have been a two-day meeting, and we would have met face-to-face in Cincinnati, and COVID kind of change that. And we would have hashed over this in a couple-day-period. So I -- I think because Henry is unclear and has -- wants to look at more, I think we need to just go ahead and table this within the work group and get the information and make sure we're clear on what we all need to move forward with a recommendation.

MEMBER VALERIO: Josie, it's Loretta. I have a question.

CHAIR BEACH: Sure.

MEMBER VALERIO: So, the information that -- that Henry asked for, the dose reconstructions during that time frame, I'm assuming, will be sent to Rashaun, and she'll forward that to all of us?

CHAIR BEACH: Yes.

DR. ROBERTS: Correct.

MEMBER KOTELCHUCK: Oh, okay. And I think the work -- all of us who were members of working group, if we want to come up with a recommendation. The NIOSH folks are clear. They think they have it.

MR. CALHOUN: Can I -- can I -- I think that maybe we can actually -- I'm not real, real smart about our virtual volumes and stuff, but we may be able to actually get those 14 cases into a place you can look at.

CHAIR BEACH: Yeah.

MEMBER KOTELCHUCK: Oh, man.

CHAIR BEACH: Not everybody can look at the virtual volumes at this point, though. But that would be a start.

MEMBER KOTELCHUCK: Sure. Sure.

MR. CALHOUN: And can get --

CHAIR BEACH: -- email them --

MR. CALHOUN: We can get --

CHAIR BEACH: Maybe we can email them.

MR. CALHOUN: We can give, you know, you know, descriptions of each if that would be better to start with. But, you know, just letting you know.

MEMBER KOTELCHUCK: Okay.

MEMBER ANDERSON: It's kind of what went into your calculations.

MR. CALHOUN: Okay, that's what we'll do.

MEMBER ANDERSON: So, it's -- it's how many years and what time, what did they do, and how did your arrive -- I mean, how it was -- how it was arrived at.

MR. CALHOUN: All right. We can -- we can do that.

MEMBER ANDERSON: And then the other thing is, for me, I would be more comfortable narrowing it to the construction and maintenance workers.

MR. CALHOUN: Well, if we do that, --

(Whereupon, members of the work group began speaking simultaneously.)

MR. CALHOUN: -- approach for the other people, and if you guys are comfortable with that, you know, I mean.

MEMBER ANDERSON: Well, if you're gonna --

MR. CALHOUN: Because you can't say it doesn't work for one set of workers and then we use it for another set.

MEMBER ANDERSON: Well, it has to do with --

MEMBER KOTELCHUCK: The workers have to --

MEMBER ANDERSON: -- basing the exposure on the data you have for maintenance workers. You really don't have any data for nonmaintenance workers.

MEMBER KOTELCHUCK: Right.

MEMBER ANDERSON: At least that's how I see it. The whole basis of your dose reconstruction is based on the -- you know, the higher measurements you found with the maintenance guys.

MEMBER KOTELCHUCK: Right.

MEMBER ANDERSON: I mean, I think that's what it is.

MR. CALHOUN: Again, I mean, it gets --

MEMBER ANDERSON: So, that's (indiscernible) relevant to maintenance employees. And we just heard that that's really what the original request was for. And now, the question is, if you can't do that, then -- then we are left with, it's gonna be a, you know, one size fits all.

MEMBER KOTELCHUCK: Yeah.

MR. CALHOUN: I'll get you that. I'll get you that breakdown

requested.

MEMBER ANDERSON: Great. Thank you. Probably won't be helpful, but we'll see.

MEMBER KOTELCHUCK: All right.

MS. GOGLIOTTI: And I can help anyone that needs help getting into the portal. Just send me an email.

MEMBER KOTELCHUCK: Oh, okay. Good.

CHAIR BEACH: Yeah, Rose. Thank you. You're always helpful in that way. Appreciate it.

Okay, does anybody need a break, or can we move on with the rest of the presentations?

MEMBER ANDERSON: Let's move on.

MEMBER KOTELCHUCK: Yeah, agreed.

MEMBER VALERIO: Agreed.

CHAIR BEACH: Thank you, good. Heavy discussion. Lots to think about. And I think NIOSH -- oh, no, SC&A, you'll be -- you're ready to go, so I think we can just move ahead.

CARRYOVER ITEMS FROM MARCH 2021 M&C WG MEETING AND SC&A Presentation on Remaining Issues With Exposure Pathway Modeling

MR. BARTON: Okay, great, that's one -- that's a tough act to follow. So, we're basically giving an update on the exposure pathway modeling as it stands now. A lot of these items have already been discussed today and a lot in the past, so I'm gonna really try to go fast through these given the, sort of, late hour. But first, let me thank Rose for all her hard work on this.

She really headed up the exposure modeling pathway, analyses, and development from our end, with some help from people like John Maur, Bob Vanenstein (ph), Lynn Anspaugh. I'm sure I'm missing somebody, but those were really the primary players.

Okay. So, these were the action items from last time out. We're gonna revisit the assumed subsurface ratio for potential thorium contamination. What's currently proposed is really a one-to-one with uranium. So, NIOSH would have essentially used whatever contaminant would provide a higher dose based on the uranium concentration. And that -- basically, assuming that uranium was thorium. It was a higher dose to the target organs.

The second one. We take a look at the burial ground and revisit how it was used. And there are also questions about how ingestion is accounted for, particularly how hand-to-mouth-type exposures are dealt with, which we heard some commentary earlier from the petitioner.

So, the subsurface indoor approach, the model we use is the 95th percentile of that 1995 data, which has been discussed significantly today. Those were analyzed for ice -- isotopic uranium. The dust loading was, again, assumed to be equal to the 95th percentile of the Mound excavation data. Again, a lot of discussion on that. It's assumed to take place over two months per year. And also of note, the samples from less contaminated lines which were designated priority two and three weren't really considered in reaching the short -- short-term concentration.

Specific to thorium, there are no actual thorium measurements in building 10, at least that we're aware of. So, the assumption is made, like I

said, that there were equal or equivalent amounts of uranium and thorium. Keep in mind, the uranium operations far exceeded the thorium, so there's really no evidence that would ever be the case. However, in the absence of specific information, we really can't say it wasn't that high. So, the approach is Claimant favorable. It seems the phrase of the day is extremely conservative.

The work group's concern, at least before this meeting, regarding subsurface was that there was a potential dilution of that source term over time, which is really pretty much impossible to quantify, at this point. There'd be effective coagulants, which we mentioned in the first presentation. That hasn't really been discussed up to this point. And by that, I mean in the development of exposure pathways. We obviously discussed it earlier today. However, the question is whether we can plausibly bound the exposure.

So, some things to consider are that there is only a small fraction of the pipe contaminated. And, again, we're talking about 95th percentile activity. And so, the examples are Linde, obviously, a lot of discussion on that, and also Chapman Valve, which I think LaVon also mentioned in his presentation.

So, that leads us into finding one, which says that SC&A finds that NIOSH's proposed external dose rate assumptions are inconsistent with the contamination levels assumed for the subsurface of building 10. SC&A's independent calculations suggested dose rates on the modeling pathway are expected to be substantially greater. The 2017 ER proposed using the 95th percentile dosimetry values, with adjustments for missed dose of about 200

millirem per year, or about 16 or 17 millirem per month. SC&A believes it is more appropriate to assign elevated subsurface exposures inside building time using the 95th percentile of the dosimetry with occupancy adjustments.

The concerns about dust loading. Again, we had a lot of talk on this in October of 2020. NIOSH had interviewed a subject-matter expert concerning the excavation activities at Mound and the potential to use that data as a surrogate for Metal and Controls. Again, strictly talking to the actual dust loading, not necessarily the source term. A re-interview occurred with the work group, NIOSH, and SC&A, with the subject-matter expert.

This gets to the heart of the Board's surrogate data criteria. So, the first one is hierarchy of data, which refers to, basically, the order preference, for lack of a better term, for different data sources. Obviously, you'd like to have bioassay data to use or actual air monitoring results on the site, but you don't have that, which is why model -- modeling route was ultimately taken. And also, the radiation and air sampling data would be not acceptable for use, which is why we're looking more towards the pathway analysis using the Mound dust loading and the aforementioned source term. As far as time frame, the Mound excavations were in the 1990s, but really looking at the way that excavations work, it wouldn't really have changed anything in a meaningful way.

And the question is plausible, in consultation with our own expert on dust loading, that's Dr. Lynn Anspaugh, who basically wrote the book on resuspension. At best, it can be said that the value is likely within the range. However, the range can be large and there may be enhancement as

discussed in LaVon's presentation.

And finally, the site process similarities. Basically, the message here that you'd say it can probably fit within a range of dust loadings, but there will always be site-specific factors that will affect actual conditions, so it's a matter of professional judgment whether a chosen value represents a plausible bound or not.

So, another pathway there, the subsurface work that occurred outdoors. So, here we have actual isotopic values for uranium and thorium, and also some gross alpha. Again, it's proposed to use the 95th percentile value. Also, again, the 95th percentile of the dust loading based on the Mound study. And it's based on about 2300-plus samples that were taken during the '80s and '90s.

So, the main work group concerns, and I'll just read this in. Debris buried in the burial site was not representative of radioactive materials U and thorium and handled throughout the AWE operational period of 1952 to '67 but was a selected sample of those materials largely found from 1958 to 1961. So, the data did not represent the entirety of operations; however, they would represent materials that would be expected to be there during the residual period. Also, it should be noted that the -- again, the isotopic ratio of thorium and uranium isn't used for an indoor pathway. And, again, on the indoor one, it's assumed a one-to-one ratio of uranium to thorium for the subsurface model indoors.

There were some additional concerns for the 1968 soil grading, which followed the construction of building 12. But keep in mind, this is early in the residual period, and anything spread around in 1968 would really be the

same as experienced during the rest of the residual period. So, it could potentially be considered representative of the types and quantities of the contamination experienced by the site maintenance workers.

You also have a 1980 soil disturbance. Basically, an NRC inspection found can -- contamination and was dug up and shipped out in 55-gallon drums. They were 11 in total, and this project was overseen by a health physicist. Everything that was left was being -- below the NRC release criteria at that time. And again, something to note. We considered the site of the burial ground compared to this trench. It would be rather unlikely that significantly changed the later surveys.

This gets to observation one concerning occupancy for the subsurface models. Basically, NIOSH had proposed an occupancy rate of two months per year for subsurface work, so it would be either indoor or outdoor. And so, the observation is that SC&A reviewed the claimant interviews and did not believe that there is sufficient evidence to limit any individual's subsurface exposure to a single subsurface scenario. That is either outdoor or indoor. The interviews indicate that irrespective of an individual's job title, they may have been -- may have asked to complete many or any task on site. And SC&A believes that means an individual could have participated in both the indoor and outdoor subsurface scenarios within a given year.

We'll move on to the roof and overhead exposure pathway, again, 95th percentile removable contamination. They use a resuspension factor of 10 to the minus five, which is pretty standard for just regular work. The standard breathing rate of 1.2 cubic meters per hour and assumed that work occurred one month per year. It's based on 285 alpha series by Texas

Instruments in 1982, and they were done as part of a license termination.

Concerning the positive temperature coefficient powder exploded. This occurred later in the '80s, so any subsequent cleanup activity wouldn't necessary -- necessarily affect the starting number, which was in 1982.

There was some current concerns about weathering and the roof and overhead exposure pathway. Forty of those 285 measurements that I mentioned on the previous slide were from the actual roof, and they were found around the exhaust pipes that had no prior cleaning. Texas Instruments had stated that around the exhaust from the fuel monitoring area, it was essentially background. Some information here about how the data was used. And the point is that there's certainly reason to assume some form of source delete -- depletion during those working years. So, the roof model -- model might not be necessarily bounding, but in any case, the doses were less than a millirem based on the 1982 data. As we know, the one millirem is sort of the threshold below which the program generally doesn't pursue it further. So, actuality, doses of less than one millirem are often applied in actual dose reconstruction.

Another, the pathways of the welding activities on contaminated material, again 95th percentile source term, a resuspension factor of 10 to the minus 3, which might be considered reflective of essentially upset conditions or extreme agitation of a contaminated material. And we'll get to more on that in the next slide. It assumes 48 hours of exposure per year and uses that same 1982 alpha survey data that we talked about at -- on the previous slide.

This gets into finding two. SC&A had raised the concern that even

though 10 to the minus 3 is a resuspended factor and generally a high number, it may not actually represent the dust generated by grinding and things like wire brushing. This concern is echoed back by the work group in September 2020. It doesn't appear to us at this point that the issue has really been resolved; however, we feel it's like -- likely in the category of a TBD issue.

Yet another pathway is HVAC maintenance. So, you ever started source term based on swipe data taken near the end of the actual operational period. It again uses the resuspended factor of 10 to the minus 5. And this will result in that particular airborne contamination value you see on the slide. The occupancy or exposure time would be an -- about an hour per year. And, again, they use the standard 1.2 cubic meters per hour as the breathing rate. I think it's important to note that this represents the removable component of it examination that's there at the end of operations. I also noted that the non-HFIR areas were cleaned and released, so, it obviously reduced any cam -- contamination experienced during the residual period, which is another layer of, to quote, extreme conservatism.

And so, the last pathway is remaining exposure. This is essentially the really nonmaintenance-type activities. This would sometimes just be referred to as ambient dose, so it's definitely the remainder of the year when the workers weren't during -- doing the various other activities that we -- we just described.

The source term is based on data in 1966 and 1968. Same as the previous slide, again, toward the end of operations. The source term was

depleted based on the standard approaches for residual period contained OTIB-70. Basically, this would be applied, again, for the remainder of the year that is not covered by the other pathways.

So, here is a summary of the model doses which has been mentioned many times so far on this call. It shows what the data sources are for the various pathways. And, again, they add up to about just over seventy-eight -- or (indiscernible). So, the one other action item that we were given, as I noted at the beginning of the presentation there, is ingestion. And this is just sort of the three basic or typical modes of ingestion dose. And I'm saying typical here because there were certainly some petitioner comments that may be relevant to this. But anyway, the first was, you inhale the material and basically it gets stuck and swallowed, eventually making it to the gastrointestinal tract. The second is you have airborne contamination that landed on a sandwich and then you eat the sandwich. And the third is get contamination in your hands or parts of the body and then subsequently ingest it. This would be a mode that would be reflected by the -- replacing of these snake drill bits.

So, again, the issue that the work group had was basically that third one, hand to mouth, so eating, drinking, and smoking, that sort of thing. The pathway is somewhat accounted for in OTIB-9 as a method for DR, however, I certainly can't speak to the specific scenario mentioned with replacing the snake drill bits.

So, again, a reference slide for convenience, but that's the update on the exposure pathways.

CHAIR BEACH: Thanks, Bob. I had a little trouble unmuting. Any

questions or comments for Bob, work group members?

MEMBER VALERIO: I don't have any, Josie. This is Loretta.

CHAIR BEACH: Okay, thanks.

MEMBER KOTELCHUCK: Yeah.

CHAIR BEACH: I'm hearing none, I think -- I think you were trying to talk, Dave, but I'm not sure.

MEMBER KOTELCHUCK: No, I don't -- I...

CHAIR BEACH: Okay. Do we want to move on with NIOSH's presentation, or do you have another one, Bob? Or no, that's your only one, that's combined, okay.

MR. BARTON: That's correct. That presentation is --

CHAIR BEACH: That's combined, yes. I guess we're ready to hear from NIOSH then.

NIOSH PRESENTATION/RESPONSE AND WG DISCUSSION

Carryover Items from March 2021 M&C WG Meeting and Presentation on remaining issues with exposure pathway modeling: SCA-TR-2021-SEC004, Metals and Controls Corp. Exposure Pathway Evaluation

MR. RUTHERFORD: Okay. Well. You guys will probably be happy to know this one is much shorter than the last one. And let me -- oh. Make sure I got the right one.

All right this is -- this is going to be pretty quick because we pretty much agree with most of everything that SC&A said in this. I think there's been a lot of discussion already with the surrogate data information, and so we won't -- we won't hit a lot of that. So, our presentation is the introduction, the responses. We're going to respond to Metals and Controls

exposure pathway evaluation and SC&A's commentary on NIOSH's approach to qualifying outdoor and indoor airborne dust loading, and then our conclusion.

SCA-TR-2021-SEC005 "SC&A Commentary on NIOSH's Approach to Quantifying Outdoor and Indoor Airborne Dust Loadings"

MR. RUTHERFORD: Just a little background. On October 25, 2021, NIOSH received the SC&A report on the exposures pathway evaluation which provides SC&A's evaluation of the six exposure pathways. Our response paper was issued on January 12th, and the response paper addressed the comments, observations, findings from that review.

As for the secondary paper, commentaries on NIOSH's approach to quantifying outdoor and indoor airborne dust loadings, I think that does -- that discussion has -- took place already, and I don't think we need to go back to it. We already talked about the fact that NIOSH plans to add one -- we feel that this is TBD issue and that we will go back and review the references that were offered up and incorporate those references and -- in an effort to get rid of this surrogate data issue.

So, our response paper was issued on January 12, 2022. The response paper addresses comments from that review. NIOSH's response to SC&A's exposure pathway evaluation and dust loading commentary. Finding, as Bob had mentioned, SC&A finds that NIOSH's proposed external dose rate assumptions are inconsistent with contamination levels assumed for the subsurface building 10. SC&A's independent calculations suggest dose rates from a modeled pathway are expected to be substantial -- substantially greater. NIOSH's 2017 ER proposed using the 95th percentile

dosimetry value of 200 millirem per year or 16.7 millirems per month. SC&A's believes it's more appropriate to assign elevated subsurface exposures inside building 10 using the 95th percentile of the dosimetry with occupancy adjustments. So, we -- we -- we went in, and we looked at SC&A's proposal, and SC&A took the Federal Reg. Guide No. 12 and used the actual concentrations instead of 95th percentile concentration to come up with estimated dose rates. And then so they recommend using that for indoor but using occupancy factors. It didn't appear that they were recommending that for outdoor use at all. So, our conclusion is we think that we should use the actual soil contamination data indoor and outdoor or -- you know, so we would use the soil contamination, use Federal Reg. Guide 12 and the -- using the model provided there, and use that for both indoor and outdoor, or we should stick with what we have with the dosimetry data. We actually feel that the model suggested by SC&A makes sense. We can use the dose coefficients for exposure to soil contaminated to an infinite depth tabulated in Federal Reg. Guide 12 and the same soil contamination values used in our subsurface internal exposure model to assign dose. If NIOSH changes the model, we will use this method to model both outdoor surface in and -- or model outdoor subsurface exposures to remain constant.

Okay. The second observation is indoor and outdoor subsurface scenarios. SC&A reviewed the claimant interview and does not believe that there's sufficient evidence to limit any individual subsurface exposure to a single subsurface scenario. The interviews indicated irrespective of an individual's job title, they may have been asked to complete any task on site. SC&A believes that means an individual could have participated in both

indoor and outdoor surg -- surface scenarios within the same year. So, our understanding on this observation is that SC&A recommends increasing the total subsurface exposure duration by combining indoor and outdoor to four months. And although this is -- assumption is what we think is inconsistent with the interviews indicating two months total, NIOSH will consider the change. This change would amount to four months of subsurface exposure and then the remaining would be the remaining exposures, the remaining eight months.

SC&A's finding two was concerning the resuspension factor welding prep. SC&A raised a concern in 2019 and 2020 reviews of welding and thorium activities that a resuspension factor of 10 to minus 3 may not be adequate to represent the dust generated by grinding and wire brushing to prepare a surface for welding. Work group members echoed this concern during the second September of 20 -- or second Metals and Controls work group meeting. SC&A agreed -- agrees that this is a TBD issue rather than an SEC issue. NIOSH still believes that 10 to minus 3 resuspension factor is representative and bounding for work activities and conditions at Metals and Controls. We don't really feel that we've heard any -- enough evidence to support adjusting that any higher. Work activities are distribution of actions on which the majority of resuspension factors in table 3-1 of OTIB-70 are sizably smaller than the proposed 10 to minus three resuspension factor.

So, SC&A's conclusion with the modifications suggested in the finding and observations, SC&A believes internal and external doses from each maintenance exposure pathway can be bounded. SC&A recommended NIOSH develop guidance for dose reconstructors. NIOSH plans to turn the

current DR methodology to a TBD. I think we've reported that out already. The guidance is -- some of this guidance that we've developed during this review and during all this discussion will be incorporated into that TBD.

That's all I have.

CHAIR BEACH: Thank you, that was a good report. Nice and con -- short and concise after what we've been talking about. Come -- comments or questions for LaVon? All right. I think we're gonna digest all this, LaVon, and...

MR. RUTHERFORD: Okay.

CHAIR BEACH: Come back to it.

WORK GROUP DISCUSSION OF PATH FORWARD

CHAIR BEACH: So, work group discussion on path forward. I don't think, Rashaun, that we'd be ready for a -- anything in August unless we can -- we can have another work group meeting in the next couple of months. Are we ready to try to schedule something?

MEMBER KOTELCHUCK: Yes.

CHAIR BEACH: Okay. Dave says yes.

MEMBER VALERIO: Yes.

CHAIR BEACH: Okay.

MEMBER MARTINEZ: Yes.

CHAIR BEACH: Perfect. And Rashaun, is it possible to get some of the back documents to Nicole so she has those --

MEMBER MARTINEZ: I think --

CHAIR BEACH: -- (indiscernible) --

MEMBER MARTINEZ: -- sent them to me already.

CHAIR BEACH: Oh, perfect.

MEMBER MARTINEZ: Yeah.

CHAIR BEACH: Okay, good job. Thank you. Of course, you did.

DR. ROBERTS: So, what time frame are you thinking about?

CHAIR BEACH: I'm thinking June, end of June, or -- or the first of July.

I only think there was a couple of actions. I think Grady took one and LaVon took one. And we can discuss if there's any other actions that need to be done prior to the meeting, but I think they're all relatively quick.

MR. CALHOUN: I know I can't make the last week of July. I'm -- I'm on a joint outreach task group meeting.

CHAIR BEACH: No, I was saying that the end of June or the first of July.

MR. CALHOUN: Oh, that's what I meant. The end of June, I'm sorry, 26th --

CHAIR BEACH: Okay.

MR. CALHOUN: -- through the 30th.

MEMBER KOTELCHUCK: Yeah, 26th. Anything toward the last week -- the last -- the end of the week of July 4th? Not July 4th, of course.

MEMBER MARTINEZ: I'm actually out that week at an ICRP meeting in France.

CHAIR BEACH: What -- what week is that, Nicole?

MEMBER MARTINEZ: The week of July -- that has July 4th in it, the 3rd --

CHAIR BEACH: Okay.

MEMBER MARTINEZ: -- through the 7th.

MEMBER KOTELCHUCK: Right, right.

CHAIR BEACH: Can we shoot for July the week of the 10th?

MEMBER KOTELCHUCK: Yeah, sounds good.

MEMBER MARTINEZ: That works for me. Yeah.

CHAIR BEACH: Like the --

MS. GOGLIOTTI: I'm on --

CHAIR BEACH: -- week of the 12th --

MS. GOGLIOTTI: -- vacation, but you guys are welcome to meet without me, I guess.

CHAIR BEACH: What Rose? Oh, you're on vacation?

MS. GOGLIOTTI: Yes, that week.

MEMBER ANDERSON: How about the 13th? I have -- I'm busy on the 12th.

CHAIR BEACH: I -- I'm free on the 13th. Anybody else?

MEMBER MARTINEZ: I'm free on the 13th.

MEMBER KOTELCHUCK: The 13th?

MEMBER ANDERSON: Thursday --

CHAIR BEACH: July 13th.

MEMBER KOTELCHUCK: Yeah, yeah, I can be.

DR. ROBERTS: Does that mean --

CHAIR BEACH: Loretta?

MEMBER VALERIO: That works for me right now.

MEMBER KOTELCHUCK: Can I make a quick check on my schedule

with my wife?

CHAIR BEACH: Of course.

MEMBER KOTELCHUCK: -- here one of our granddaughter's birthdays, I think -- I think I can work out the 13th. Let me just see.

CHAIR BEACH: LaVon, could you tell us what your action item was again while we're waiting for Dave?

MR. RUTHERFORD: Yeah, I -- I was saying -- thinking my action was the same action item you gave Grady, and that was --

CHAIR BEACH: Grady.

MR. RUTHERFORD: -- 14 --

CHAIR BEACH: Well, see, I'm helping you out.

MR. RUTHERFORD: I know. I was I was sitting there thinking you said that there was -- I had a separate one, I was like oh crap, you know, but --

MR. CALHOUN: You know --

CHAIR BEACH: Just remember --

MR. CALHOUN: -- how that one's good to go, though.

MR. RUTHERFORD: I will be --

CHAIR BEACH: (Indiscernible) --

MR. RUTHERFORD: I will be the one getting the information. I know that. I understood that.

CHAIR BEACH: Are you sure it's gonna be you or Pat? Or anyway, I knew that you had said you were writing something down, but I didn't -- I didn't write it down, so.

MEMBER KOTELCHUCK: Things haven't changed. 13th works for me.

CHAIR BEACH: Okay. Rashaun, are we okay to go with that? Are you --

DR. ROBERTS: Yeah. Yeah, I think so.

CHAIR BEACH: So, the same time frame?

DR. ROBERTS: Yes.

MEMBER KOTELCHUCK: 11:00 a.m.

DR. ROBERTS: Yep.

CHAIR BEACH: And I'll work out an agenda --

MEMBER KOTELCHUCK: Right.

CHAIR BEACH: -- and get back to you.

DR. ROBERTS: Great.

MEMBER KOTELCHUCK: Okay. Good. Good.

DR. ROBERTS: Okay, got it down.

CHAIR BEACH: And, again, Rashaun, I'm sorry I interrupted you during our deliberations.

DR. ROBERTS: No, not at all.

CHAIR BEACH: I'll try not to do that in the future.

DR. ROBERTS: No worries, no worries. Okay. So, Thursday, July 13th at 11:00 a.m. Eastern. Great.

MEMBER ANDERSON: And (indiscernible) we'll need some lead time from NIOSH on whatever you're going to send us, so.

CHAIR BEACH: Yeah, I -- I think the one thing you asked for should be relatively quickly.

MEMBER ANDERSON: Good.

CHAIR BEACH: Or what are you thinking, Grady? When are you going

to assign that to LaVon, and how soon can you get it to us, LaVon?

MEMBER ANDERSON: Next week, right?

MR. RUTHERFORD: Well, I will be on a trip to Los Alamos on Monday --

MR. CALHOUN: Well, we can get something out today as -- not today. We'll get a request out today.

MR. RUTHERFORD: Right.

MR. CALHOUN: And ultimately, I'll probably have ORAU do it, and then we just got to make sure -- you know, if we go into the detail that Dr. Anderson wanted regarding years worked and things like that, we -- we may have to put it in the virtual volume so that --

CHAIR BEACH: Yeah.

MR. CALHOUN: -- you know, there's nothing -- I mean, we're not going to put names or, you know, things like that in it --

CHAIR BEACH: Right.

MR. CALHOUN: -- but it's still gonna have to be protected, so.

CHAIR BEACH: And Rose said she could help if anybody needs help getting into that, so if you just let us know where it's at in the virtual volumes, I think we'll be okay.

MR. CALHOUN: Okay. All righty. And I'll make sure that somebody in our team knows. It may be Lori, you know, because I'm gone next week, too, but I'll make sure that I put out the word today.

MEMBER ANDERSON: And do we -- do we want any comment from NIOSH on whether the -- with the issue of just having the maintenance construction workers?

CHAIR BEACH: I think that's a NIOSH call for sure. I mean, I think they decide what the class will be based on what they can do; is that correct?

MR. RUTHERFORD: Well, let me add to that. I think, you know, what we could do is -- typically in the past when we -- when we are recommending a class, we actually form -- ask the Department of Labor can they implement a class. And so even if even -- if we think that -- I mean, if we think that we could limit the class, we -- first we have to ask Department of Labor can you implement that class as -- as -- as we've written it. And if they -- if they can't define just maintenance workers -- if they -- if they can't pull them out, then we may have to broaden in the class. So, what we can -- we can work with Department of Labor and ask the question.

CHAIR BEACH: Okay.

MEMBER ANDERSON: That's a -- well, yeah, I mean, it's -- if you can't do that, because I would see us -- if we do make a recommendation, we might recommend that. But it was nice to know that you're not going to come back with no, you've already evaluated that and can't be done, then we'll work around that.

MR. RUTHERFORD: Okay.

CHAIR BEACH: And then the work group members, do we need to come up with our -- our definition, SEC definition, or...?

MEMBER KOTELCHUCK: I was wondering. Yes, we have to.

CHAIR BEACH: Yes.

MEMBER KOTELCHUCK: We have to work on that. That's the --

CHAIR BEACH: So -- so --

MEMBER KOTELCHUCK: -- that the -- on our agenda.

CHAIR BEACH: -- do that via email, --

MEMBER KOTELCHUCK: Right.

CHAIR BEACH: -- work group members. Okay. So, I'll send out a straw draft as soon as I can, and then we'll -- we'll work from that and then move forward up to the next work group meeting.

MEMBER KOTELCHUCK: Right.

CHAIR BEACH: Rashaun, anything else before we adjourn?

DR. ROBERTS: No. Nothing comes to mind.

CHAIR BEACH: LaVon, can you hang on the phone after we adjourn? I have a question for you about Idaho.

MR. RUTHERFORD: Oh, man.

CHAIR BEACH: Well, since I have you.

MR. RUTHERFORD: Okay.

CHAIR BEACH: Okay. So, all in favor, I guess, of adjourning?

MEMBER KOTELCHUCK: Sure.

MEMBER ANDERSON: Sure.

MEMBER MARTINEZ: Sure.

MEMBER VALERIO: Sure.

(Whereupon, multiple members spoke simultaneously.)

CHAIR BEACH: Good discussion. Tough discussion.

(Whereupon, the meeting was adjourned at 3:40 p.m. EDT.)