Centers for Disease Control
National Institute for Occupational Safety and Health
Advisory Board on Radiation and Worker Health
Metals and Controls Corp. Work Group
Thursday, March 18, 2021

The meeting convened at 10:30 a.m., Eastern Daylight Time, via teleconference, Josie Beach, Chair, presiding.

Present:

Josie Beach, Chair
Henry Anderson, Member
David Kotelchuck, Member
Loretta R. Valerio, Member

Also Present:

Rashaun Roberts, Designated Federal Official
Nancy Adams, NIOSH Contractor
Bob Anigstein, SC&A
Bob Barton, SC&A
Grady Calhoun, DCAS
Duane Demore, SC&A
Michael Elliott
Rose Gogliotti, SC&A
William "Rusty" Lorenzen
John Mauro, SC&A
Pat McCloskey, ORAU Team
Michael Rafky, HHS
Lavon Rutherford, DCAS
Mutty Sharfi, ORAU Team
Tim Taulbee, DCAS

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## Proceedings

(10:30 a.m.)

## Roll Call/Welcome

Dr. Roberts: Okay. So my computer is showing 10:30 a.m. Eastern. So we're going to go ahead and get started. I believe that the court reporter is on. So I think we are good to go.

So good morning and welcome, everyone. I am Rashaun Roberts. I am the Designated Federal Official for the Advisory Board on Radiation and Worker Health. This is a meeting for the Metals and Controls Working Group.

Today we have a six-item meeting agenda, if you've seen it. And if you haven't seen it, you can find the agenda on the NIOSH website under Scheduled Meetings for today's date along with all of the meeting materials for today, which were disseminated to the Working Group in advance.

Now today I do want to let everyone know that I have an unexpected scheduling issue that could not be changed. So we will need to end promptly at 2 o'clock.

So I do want to officially welcome all of you to this video, slash, teleconference. So first off, let's address conflict of interest. And I will speak to that with respect to the members of the Board who sit on this particular Working Group. In order for them to serve on this group, they really cannot have conflicts of interest.

So with that said, let's go ahead and move into the roll call for the Working Group, starting with our Chair Beach.

(Roll call.)

Dr. Roberts: I'm not hearing anyone else at this point so thank you and welcome to you all again. Before we officially move into the meeting, I just

want to cover a couple of brief items.

So, of course, there is always the issue of technology. So in order to keep things moving smoothly and so that everybody's speaking can be heard, please be mindful of whether you are on mute.

If you are on the telephone, please press *6 to mute and *6 to take yourself off mute. For those on Zoom, the mute button is on the lower left-hand side of your screen. And I'd just like to ask people to periodically check the phone and/or computer to ensure that you are remaining on mute if you are not speaking.

And as I mentioned, the agenda for the meeting can be found on the NIOSH or DCAS website along with the presentations and background documents relevant to today's meeting so you can follow along if you're joining us by telephone only.

So with that, let's go ahead and get started. And I will go ahead and turn the meeting over to the Working Group Chair, Josie.

Chair Beach: Okay. Thank you, Rashaun. Just briefly I want to say that we've had a little bit of change in our agenda items. Rashaun and I talked about making sure the petitioner had time because of our shortened meeting time.

So we will go through LaVon's slides, maybe holding all questions if we can until after his presentation and then we'll go right into the petitioner's comments.

When the petitioner is finished, we'll circle back, and we'll go slide by slide. And then I think that will get us through close to the end of our agenda items just going through LaVon's slides.

We should take at least a 10 to 15 minute break halfway through the meeting. We are scheduled to be finished, my time, 11:00, 2:00 Eastern for most

of you.

So I want to give us at least 15 minutes at the end, like at 1:45 to do some planning for additional meetings or, depending on where we are, plans for the April Board meeting. Any comments or questions on that?

And, LaVon, I'm assuming you're going to share your screen for the slides? Is that correct?

Mr. Rutherford: Yeah. That's the plan, Josie.

Chair Beach: Okay. And I think the meeting materials are all NIOSH's. I don't believe SC&A gave us any materials. But I think they've got some items they are prepared to discuss. Is that correct?

Ms. Gogliotti: Yes.

Chair Beach: Rose, okay. So you didn't send anything out, correct? I was looking --

Ms. Gogliotti: Correct.

Chair Beach: Okay. I didn't think so. Alright. Everybody ready?

Mr. Rutherford: Yes.

Chair Beach: Okay. Thanks.

Mr. Rutherford: Alright. Can everybody see my slides?

(Chorus of yes.)

DCAS Follow-Up to the M&C WG and WG Discussion

Mr. Rutherford: Okay. Alright. Again, I'm LaVon Rutherford. I'm the DCAS Health Science Administrator and the Metals and Controls Health Physics lead. And I will be doing the presentation today.

We're going to talk about the -- we're going to respond to Work Group comments that were made

and questions that were brought up during the September 2020 Metals and Controls Work Group meeting.

We have documented our responses to the questions that were raised in a paper titled, Response to Comments for Metals, the Metals and Controls Work Group Meeting Held on September 2, 2020.

On January 12, we received an additional question that we had not prepared for. Our previous response paper was virtually complete at that time. And so we documented a response to that question in a separate memo titled, Response to Comments Related to Soil Disturbances at the Burial Ground.

So let's start with the first question concerning additional fires. Hold on one second. I've got all these people's faces covering my thing up.

Okay. The first Working Group Member expressed a concern that there additional fires or explosions beyond the aluminum dust explosion addressed by NIOSH in a previous response paper.

The NIOSH -- I've got an echo there. NIOSH reexamined the interview summaries. One worker indicated uranium would sometimes catch fire, and they described a fire on the roof of Building 10.

Another interviewee described a positive temperature coefficient powder explosion in the late 80s, early 90s that shook Building 10.

A third interviewee described dust explosions in Building 10's flank spray area. The individual also mentioned explosions in the electrical bus ducts in Building 4 as well as a couple of explosions in the electrical manholes in Buildings 10 and 4.

We also reviewed SRDB reports for additional information regarding fires and explosions.

So our position on this hasn't changed since our

previous. We felt that any fires or explosions that occurred, the sediment and release and ash that would be caused by that would ultimately reduce the specific activity that would be in your HVAC system filters where we're looking at the highest release point.

So we have not found any interviews or reports that indicate a potential for radiation exposure beyond those that are already modeled or bound by existing contamination resuspension exposure models.

So our second comment, the Work Group asked if the drain lines of Building 10 were used during the residual period and if using the drain lines would reduce the concentration over time due to the addition of non-radioactive material.

Also a Work Group Member asked about sample data from one pipe in the west end of Building 10 that was 1 million dpm per 100 centimeters squared.

Okay. NIOSH reviewed interviews and SRDB documents for information on whether the drain lines were used during the residual period. We really didn't find any reports that indicated that the drain lines were isolated or they were no longer in use. So we pretty much have to assume they were used during that residual period.

However, we do have a couple of key points we want to bring up. We want to point out that the suggestion that only non-radioactive material was added to the drain lines after the cessation of AWE operations in 1967 is not accurate for Building 10.

Dr. Roberts: LaVon?

Mr. Rutherford: Yeah, I'm getting an echo.

Dr. Roberts: I'm sorry to interrupt you. I got a message about people being on mute. John Mauro, Dave Kotelchuck, can you please make sure you've got your mute buttons on? If you're listening

through Zoom, the mute button is in the lower left-hand corner. Yeah. We just want to make sure we don't have any additional noise coming through. Thank you.

Mr. Rutherford: Okay.

Dr. Roberts: Sorry, LaVon.

Mr. Rutherford: That's alright. That's quite alright. I still am getting some background but. Okay.

Dr. Roberts: Okay. Thank you.

Mr. Rutherford: Okay. So the suggestion that only non-radioactive material was added to the drain lines after the cessation of AWE operations in 1967 is not accurate for Building 10.

The non-covered HFIR operations continued until 1981. When I mean non-covered, there are facilities and operations that are covered under the EEOICPA program and there are the radiological activities that are not covered, and this meaning that we would not have to reconstruct exposures from these types of activities.

So for HFIR operations, it is a non-covered work. However, it is a radiological activity, and it continued until 1981. So from 1967 to 1981, the only radiological work was from HFIR.

I also wanted to point out that during operations, you know, at least -- during the AWE operations, at least 80 percent of the work performed with radioactive materials was for the Naval Reactors Program. And, again that is a program that is not covered under our program. So exposures in the residual period for that activity would not need to be reconstructed.

I now recognize though that, you know, separating out and differentiating what's covered material and what's not covered material really can't be done. So we are including it. However, I just wanted to point

out again that there is a large source term that was potentially added from these non-covered activities.

Alright. To understand the non-uniform subsurface activity and determine if something abnormal was involved with the scaling of Metals and Controls' drain lines, NIOSH examined similar conditions at other facilities.

What we did is we looked at six sites that were identified that had documented drain line sediment sample results. And what we were looking for -- initially we were looking to see if we could get activities in the drain lines during operations and then activities downline, you know, when a residual period occurred that did not include -- you know, so you wouldn't have operations. So you could see if there was a reduction in sediment over time.

However, we could not -- we did not -- we couldn't get that information out of this drain line activity. We just did not have enough information to support making a definitive statement whether there was a reduction.

However, what we could say was that all of the cases were very similar, meaning such that you had a grouping of samples that were relatively low in concentration and then you had these couple of hot spots, you know, where the specific activity was at least an order of magnitude larger than most of the other samples.

So we felt that most of these sites that we had indicated in there were very consistent.

So, again, we believe there's not a significant difference in the mechanism of deposition and accumulation of sediment in pipe scale at Metals and Controls when compared to these other sites.

Now this doesn't directly answer the question of whether you'll have a reduction in sediment across that. But I did want to point out that the area that had the highest activity included a uranium rod.

This indicates that -- this area also was 90 percent clogged as well. So when we use the 95th percentile, it also includes that data and so, in the 95th percentile, it comes out at 1 percent of the specific activity of natural uranium.

Okay. Alright. Now for the sample about the 1 million dpm per 100 centimeters squared that we found, during the contamination concrete removal at the north side of the screen print area, the initiation point of the 4 inch vitreous clay mainline was encountered.

This line exhibited surface contamination levels as high as 1 million dpm per 100 centimeters squared although it did not contain a visible accumulation of residue.

From this report, this is a 1979 Texas Instrument report, we also noticed that what they did during this time period, they used direct reading measurements, you know, surface scan measurements to look for areas of hot spots for removal.

And this appears to be a surface scan. I say that because in the description at the beginning of this paper, it talked about the direct scans. And you typically don't see swipe data that comes out exactly in the million dpm like that.

So, again, also the report indicated minor soil contamination was noted near the initiation point of the line and excavated. Soil concentrations were 71.6 and 9.8 picocuries per gram in soils near the initiation point and line removal termination point.

So when we modeled exposures to workers during excavation type operations, we believe it's appropriate to use mass-based samples to characterize the exposure environment, meaning, you know, if you look at that 1 million dpm per 100 centimeters squared, that is a surface contamination measurement. And for our resuspension model, we feel that it's better to use

the mass-based samples so if you look at soil being dispersed in air, for example, so activity per unit gram.

So typical soil sampling plans use mass-based samples to allow models to characterize subsurface work better than swipes of surface contamination.

Although there is a potential for isolated hot spots, there is no indication of systemic conditions at these hot spot levels. Therefore, we consider our 95th percentile to be bounding.

So our conclusion is we feel that we've provided a conservative estimate. The doses assigned during the residual period include doses received from more than 80% of the non-covered source term. Again, we can't separate those out, but it is a fact that there was a significant amount of work that was done that would not be covered under this program.

The same person is doing all the work to arrive at the bounding dose. For example, the same person does the 48 hours of welding when you know there was more than one person doing the welding. It's the same for all of these models. So everybody will get the same exposure level.

We used the 95th percentile contamination level. And we also applied a 212 microgram per cubic meter dust load for wet sediment.

We assume all airborne sediment is respirable, and we use the most claimant-favorable solubility type. And, again, I point out that sediment area with the highest activity concentration contained the uranium rod, and it was also up to 90 percent clogged, so it did not appear that there was a reduction in activity over time.

Okay. The third comment. I'll make sure I'm on -- alright. Alright. During the last Work Group meeting, the Work Group Chair asked me if I could provide the SRDB numbers for the alpha

contamination surveys taken at HFIR. And I indicated I would do that. However, I was wrong. We do not have the individual routine contamination surveys for HFIR.

But I will explain what we do have. We attempted to make the case that the Metals and Controls' monitoring assures that the 95th percentile soil contamination value is conservative based on routine surveys of Building 10 during the first 14 years of the residual period.

To make the case, we referenced the Metals and Controls Health and Safety Manual that was in place at the start of the residual radiation period.

We believe that this manual adequately describes Metals and Controls' established concern for contamination control, the Metals and Controls' Manual institutes survey requirements for routine work area contamination, personal shoes and clothing, any item leaving the work area and all production materials before entering the work area.

And you may wonder why they were looking at production materials before entering the work area. I would suspect making fuel, that they wanted to ensure that there were no contaminants that were being entered into the work area that could possibly get into that fuel.

The manual also required the constant review of these surveys by supervisors' investigations if control levels were exceeded.

So NIOSH is also aware that the NRC enforced these contamination surveys so that whenever Metals and Controls wanted to change administrative requirements, they sent a request to the NRC.

NRC inspections during the residual period provide NIOSH with independent assurance that radiological controls were monitored or maintained. NRC inspectors stated, each of the four operators interviewed demonstrated good knowledge of

nuclear safety requirements for the operation. They also demonstrated knowledge of the precautions they should take for their personal radiation protection.

They indicated the alpha survey instrument used at the exit from the fuel manufacturing area was operating properly. The inspector observed that the operating personnel surveyed themselves upon leaving the fuel manufacturing area. And the licensee also had a record of the training of an individual in health physics.

Okay. Now let's talk about the actual surveys we do have. Remember that AWE operations ended in 1967. And we have survey data from 1968 and 1969 after the operations had concluded and cleanup had occurred.

So we have two years of initial residual contamination period there. We also, if you look at Table 3 in our report, we identified typical contamination surveys for the HFIR project area. So we don't have the individual surveys, but we do have these typical values that were identified in this -- and I can't remember the actual report number, if it was 1979 year or not. But I'm going to try to switch over and pull that table up real quick. No, I might not be able to do it.

Dr. Taulbee: I think you have to stop sharing the current presentation first, Bomber, and then you can pull up the next one.

Mr. Rutherford: Okay. Alright. I don't see it on my list here. Oh well.

Chair Beach: Are you looking --

Mr. Rutherford: Yeah, I got it. Okay. So what I wanted you to look at is actually this Table 3, Typical Contamination Results for the Metals and Controls HFIR project.

If you can look at all the areas that are surveyed,

and the source document is the 1979 Texas Instrument document. And you can see that the fuel manufacturing area was surveyed routinely and the GMA, which is the general manufacturing area. You also have all of these different areas that were surveyed. And they gave typical results, both removable and fixed.

Also I wanted to point out, if we go down here, it also indicates the frequency of the FMA or, yes, the fuel manufacturer, or the GMA, which is also known as the FMA, or the clad fuel manufacturer. I'm sorry. But I wanted you to pull this.

Alright. This is the actual Building 10 layout from a 1982 NRC report that indicates -- that shows the floor plan. And it shows you the HFIR area. It shows you the clad fuel manufacturing area, which is also the GMA. So you can see the areas that were actually surveyed with this.

So we don't have the individual surveys, but we do have some data from those surveys. Oh, wow. Now I have to get back to where I was. There we go.

Okay. So, again, like I said, we don't have the individual surveys, but we do have some typical data from those surveys that we have seen on that report.

Alright. The next comment was for us to provide a consolidated list of exposures. And, you know, this petition evaluation and review by the Board has gone on for some time so things have changed considerably over time. We've had numerous discussions back and forth. And so I will go through and lay out what we've decided on.

So subsurface inside, we calculated the 95th percentile concentration, and we'll use it to bound uranium exposures. Again, to remind you this is 1 percent of the natural uranium specific activity by weight in the sediment.

And I think Dr. Mauro gave a good indication that if

you think about 1 percent of all the soils and stuff that are being -- around Building 10 and such, that if they all contain 1 percent you would have tons of uranium.

We can also bound the thorium exposure by assuming the subsurface sediments contain equivalent amounts of weight of thorium 232. This equates to 1,109 picocuries per gram.

Okay. Subsurface outside, the subsurface areas were characterized with 2,391 soil samples collected for remediation. Of these samples, 1,629 were analyzed for gross alpha, and the remaining 762 were analyzed for isotopic uranium and thorium.

Since frequent maintenance outside could have removed sediments with the highest concentration, we calculated 95th percentile uranium concentration. This equates to 117.86 picocuries per gram for uranium and 87.55 picocuries per gram for thorium.

Dust load factor for inside and outside subsurface work. We examined the excavation at the Mound site and determined it to a useful general model for dust loading during excavations of soils. And we plan to actually include this in our next revision of OTIB-70.

This model is directly applicable to Metals and Controls' outside area excavation and conservatively bounds Metals and Controls' inside Building 10 work. We believe it is conservative.

There were three areas monitored at Mound. The excavation itself, the staging area and the support area. The excavation area had the highest concentration at 213 micrograms per cubic meter.

We calculated an empirical value at the 95th percentile of 212 micrograms per cubic meter and will use that value. So we had originally indicated 220. Based on this additional data we got, we did the 95th percentile and came up with 212

micrograms per cubic meter.

Roof and overhead. NIOSH used the 285 grid average alpha contamination survey results taken in 1982 to characterize the Building 10 roof and overhead environment. These were direct probe measurements, fixed and removable. So the 95th percentile of the grid survey results in 89.9 dpm per 100 centimeters squared.

We can assume 10 percent of that measured activity was associated with removable activity and that's per TIB-70.

The roof and overhead areas required frequent maintenance during the residual period, including the years before the surveys used to characterize these areas. Therefore, we use the 95th percentile removable contamination level of 8.99 dpm per 100 centimeters squared.

Maintenance workers often performed aggressive operations that would disturb the heavy accumulated dust in the overhead. Therefore, NIOSH will apply a resuspension factor of 10 to the minus 4 for this work. And using the 95th percentile removal of contamination level, this equates to an air concentration of 109 dpm per cubic meter that maintenance workers were exposed to during roof and overhead work.

Welding operations. NIOSH is aware that good work practices require clean bare metal before welding, which can include wire brushing and grinding. We will assume 100 percent of the activity is resuspended, so that will be 489.94 dpm per 100 centimeters squared.

We believe that this weld preparation work to be a portion of the welding task capable of generating the highest airborne concentration. Therefore, NIOSH will increase the resuspension factor and apply a value of 10 to the minus 3rd to the 95th percentile total contamination level.

This equates to an air concentration of 8.99 dpm per cubic meter for 48 hours.

Okay. This is the HVAC model and a significant portion of this model was developed by SC&A.

The geometric mean was calculated for 7,765 gross alpha swipe data collected at the end of AWE operations in 1966 and 1968. Using this geometric mean surface contamination value and a 10 to the minus 5th resuspension factor, the gross alpha airborne concentration in Building 10 was determined to be .0123 dpm per cubic meter.

Typical dust loading during normal non-maintenance type operations in Building 10 was assumed to be 100 micrograms per cubic meter. So this equates to an estimated specific activity of the airborne dust at 1.23 E to the minus 4th dpm per microgram. We'll assume one hour of exposure because nuisance dust at 100 milligrams per cubic meter would be barely breathable. Therefore, this equates to a gross alpha air concentration of 12.3 dpm per cubic meter.

Remaining exposures for exposures incurred by workers through the balance of the year, NIOSH will assume -- will use the geometric mean of the 7,765 gross alpha swipe data collected at the end of AWE operations in '66 and '68. And using this geometric mean value and 10 to the minus 5th resuspension factor, the gross alpha air concentration in Building 10 was calculated to be .0123 dpm per cubic meter.

Source term depletion adjustments will be considered to determine the non-maintenance exposure rates through the residual period. Recognizing that this swipe data was taken at the very beginning of the residual period, which you would expect to have the highest values of surface contamination from the covered activity.

So our occupancy rate, NIOSH will assume an occupancy rate of two months per year for subsurface work. We will assume one month per

year for roof and overhead work. And for welding activities, we will assume 48 hours per year. And the HVAC exposure model, NIOSH assumed the buildup of particles on the filters continued for one year before filter replacement.

And for the remaining exposures, we will subtract the maintenance work from a 2,000 hour work year and assume 1,451 hours of exposure.

Ingestion. The method NIOSH used is like OCAS TIB-9 in that it accounts for any inadvertent hand-to-mouth exposures so that any employee in the plant, whether he had gloves on or not, are included.

Ingestion rates were determined using NUREG/CR-5512 at 50 milligrams per work day. It will be used for subsurface work. And a factor of 10 to the minus 4th meter squared per hour will be used for other scenarios that are based on surface contamination levels.

And our nuclide selection will use the most claimant-favorable mixture of thorium or uranium when estimating worker dose from gross alpha estimates.

Our external rates, the film badges that were collected at the end AWE operations were processed quarterly by Landauer. We used all the external gamma results from 1967 to determine the quarterly geometric mean dose rate and geometric standard deviation.

The quarterly geometric gamma dose rate was determined to be 12 millirem per quarter. And NIOSH will also use the Type 2 or skin exposure results from 1967 to determine the geometric mean dose rate, which turned out to be 36 millirem per quarter.

Worker categories. As we discussed at the January 9, 2020 Work Group meeting, we will assume -- we can't clearly separate out all maintenance workers

or we can't be assured that we have separated out all maintenance workers. So we will assume that all individuals that -- all claimants will get the same exposure in this. So if you are an administrative person, you are going to get the same exposure that the maintenance workers are going to get.

So in summary, Table 4 in our response paper summarizes the maximum annual dose estimates, and we've recreated that. I want to point out that these doses, the internal doses are a CED, committed effective dose. They would be converted to an organ-specific dose depending on cancer location for each claimant.

So if you look at these doses again, as we pointed out previously, when you look at even using the 95th percentile on the contamination surveys and the external exposures and such, I still have a very low exposure, a total of roughly 153 millirem. And if you look at today's current regulations, they do not require monitoring unless you have the potential to exceed 100 millirem. So this is just barely above that exposure potential.

So our last comment that we got was concerning potential disturbances at the burial ground. On January 12, NIOSH received an email and a document, Burial Site Operations. This appeared to be a document that was generated by a Work Group Member -- I'm not sure -- concerning items to be discussed at the next Work Group meeting.

One of the concerns was whether soil disturbances at the burial ground would compromise the date obtained for the burial ground and whether that would affect any of the models used to bound exposures at Metals and Controls.

DCAS/SC&A/WG Discussion of Disturbance of Burial Ground

Mr. Rutherford: So we addressed this, as I stated earlier, in a separate memo, Response to Comments Related to Soil Disturbances at the Burial Ground.

We reviewed this document. The document provided some background in operations at the burial ground. The document included a number of excerpts from Sowell in 1985 and a CPS Report in 1993.

Some of these are the Metals and Controls burial areas located between Buildings 11 and 12. Burials were made from 1958 to '61. The site was closed in '67.

Records indicate two known burials, one in 1958 of contaminated ductwork and one in 1961 of 28.4 millicuries of the enriched uranium non-combustible scrap.

The formal burial waste site was believed to have operated from approximately 1958 through '61. However, materials found during the 1992 excavation suggests that the first burial may have occurred in the early '50s.

A topographical study indicates that as much as 3 to 4 meters of dirt may have been removed from the burial area during the construction of Building 12.

So the conclusion in this paper was that debris buried in the burial site was not representative of the radioactive materials -- uranium and thorium -- handled throughout the AWE operational period but was a selective sample of those materials, largely from 1958 to '61 near the top of the burial area trench.

Somebody has their mute off. Furthermore, the ground covering of the burial site appears to have been disturbed during the construction of Building 12. And, again, I think this was a Work Group Member's conclusion.

Thank you, Court Reporter.

So our response, we developed six separate exposure models. The burial ground data was used for the outside subsurface exposure model. We used

594 lines of burial site data from the radiological survey of the Texas Instrument site, and we blended them with data from other outside areas into a 2,391-line spreadsheet used to determine exposure.

So the burial ground data contributes a small amount of the data to one of our six exposure models. We reviewed the entire outside subsurface model data to determine if the burial ground samples are significantly different from the rest of the samples.

And we found that all of the outside areas' data were consistent, making sense because the site grading in 1968 was responsible for much of the contamination on the other parts of the site.

So we had looked at two reports. One report indicated that the final grading at the conclusion of the Building 12 construction project in 1968 distributed a thin layer of contaminated material in the southeasterly direction from the source at the former burial site location.

Okay. So we got a grading at the completion of Building 12, which was right at the beginning of our residual period. And the same report indicated contaminated debris was uncovered during the installation of a buried compressed air line between Buildings 11 and 12 in 1980.

The second report also indicated that the Metals and Controls surveyed the area southeast of Building 12 and found slightly elevated levels of radioactivity.

Metals and Controls determined the contamination was likely from dirt removed from the burial site when the air line was installed underground in 1980. The air line debris area was investigated but did not require remediation because levels of radioactivity detected were below applicable NRC release criteria and that's a significant point to bring up later.

So our conclusion is that we reviewed transcripts, SRDB records and identified two documented burial area disturbances, the final site grading after Building 12 construction in 1968 and the installation of a buried compressed air line in 1980.

The site grading at the beginning of the residual period has no adverse effect on our survey data used by NIOSH in developing exposures because the source term remained unchanged.

And the 1980 air line disturbance falls into the category of what we had concluded as an outdoor subsurface maintenance activity, which our exposure model is designed to bound.

If you look at that Figure 1 in that report, it's a small footprint of area. And below, and as reported earlier, it was below the applicable NRC release criteria, which I believe was 30 picocuries per gram at the time.

The 30 picocuries per gram is approximately four times less than the 95th percentile contamination level we had applied in our exposure model.

So our exposure model uses 118 picocuries per gram and that activity, we are suggesting was at or below the 30 picocuries per gram, so we don't see any issue with our current model with those activities.

And I believe that's all I had. I apologize for the beginning. I dropped my papers.

Chair Beach: Yeah. That would make it a little rough to keep going when you drop everything.

Mr. Rutherford: Oh, you aren't kidding. I was scrambling trying to find everything.

Chair Beach: Yeah. It's not easy to do a presentation when nobody is commenting. So thank you for that.

Mr. Rutherford: Yes. I had hoped we could go

through each one and stop. But I guess we'll circle back so it will be fine.

Chair Beach: Yes, we will. Any questions or comments before we move on to the petitioners? Everybody is true to their word. We're getting -- so, Mike, I guess, do you have a presentation for us or comments, I should say?

Petitioners' Comments

Mr. Elliott: Yes. I have some oral comments that I would like to make.

So first I want to thank you, Josie, and thank all of you for the opportunity to speak on behalf of my fellow petitioners with regard to this petition.

In the following remarks, I will comment on just a few of the deficiencies in the latest NIOSH response paper. By doing so, I hope to demonstrate to the Board Members who serve on the Working Group that NIOSH's exposure models contain a significant number of flawed and biased assumptions and a lack of basis in any actual measurement and monitoring data for the particular Class of workers to whom this SEC petition applies, the M&C maintenance workers.

So let's first turn our attention to the NIOSH response paper dated January 1, 2021, entitled Response to Comment for the M&C Working Group Meeting Held on September 2, 2020, which Mr. Rutherford just summarized for us.

I will not comment on every NIOSH response, but just a couple to make my point. But please note that my lack of comment to any one issue does not mean I agree with any of NIOSH's responses.

In the NIOSH response to Working Group Comment 2, one of the points that NIOSH relies on to suggest that the 95th percentile concentration in soil was conservative is to restate something that Dr. Mauro of SC&A asserted during the last M&C Work Group

meeting on September 2, 2020, that the 95th percentile concentration in soil corresponds to 1 percent of natural uranium by weight in soil.

And given the volume of the soil, Dr. Mauro estimated that this corresponds to an inventory loss of he said tons of uranium. He also said thousands and thousands of pounds of uranium from the process, something Dr. Mauro suggests that the NRC would not allow to happen without shutting down the operation.

Dr. Mauro went even further by suggesting that "this is almost prima facie evidence that the fundamental strategy we're using is extremely conservative."

Presumably, the M&C operation was never shut down for this reason, but I personally don't know whether that's true or not. What I do know to be true is a conversation that my co-petitioner, Francis Vail, and I both remember having with M&C's NRC inspector in the 1980s, [identifying information redacted].

In that conversation -- and it could have been the early 90s. It was as we were, you know, starting to think about -- remember from 1982 until 1992, we were trying to figure out how to terminate M&C's special nuclear material license. So sometime in that decade there, mid-80s to early 90s we had a conversation with [identifying information redacted].

In that conversation, [identifying information redacted] expressed concern about historic inventory losses of licensed material at M&C. Jerry interrogated us on the subject and urged us to reconcile that discrepancy because he feared that if we didn't reconcile these losses, it might jeopardize M&C's license termination request.

On a related matter, and perhaps in response to [identifying information redacted]

interrogation, I distinctly remember discussing the matter with a fellow facilities employee, a gentleman by the name of [identifying information redacted], who was a facilities planner at the time of our conversation.

But back in the AWE operational time period, Jim was a process engineer in the nuclear program. When Jim told me that he had been tasked with reconciling the inventory losses of licensed material. After a thorough investigation, however, Jim was unable to reconcile the losses, and he told me he reported that to the NRC at that time.

So any suggestions by NIOSH and SC&A that there were no significant inventory losses of licensed material through the nuclear operations are clearly inaccurate.

In the NIOSH response to Working Group Comment 3, NIOSH is again suggesting that M&C conducted a robust program of routine alpha contamination surveyed during the HFIR program that extended through the first 14 years of the residual period, 1968 to 1981.

This is largely based on NIOSH's contention that the company was strictly adhering to the M&C Health and Safety Manual that was in place at the start of the residual period.

I have no reason to doubt that such a manual existed. But I am highly skeptical that M&C remained faithful to it after the AWE nuclear operations ceased and only HFIR operations remained active.

I don't know any employee, including the employees who were onsite during the HFIR operational period, with whom I'm still in contact, who have any recollection of such a health and safety program or manual.

Furthermore, NIOSH would have us believe that these routine alpha surveys extended beyond the

boundaries of the HFIR area and throughout all of Building 10.

Note that at the last Work Group meeting on September 2, 2020, NIOSH presented this argument for the first time as evidence that the exposure assumptions to the M&C maintenance workers are conservative since the alleged routine radiological surveys during the HFIR project would have detected any significant exposures to the general workforce.

As evidence for this, NIOSH recreated the table that they say is a summary table of alpha contamination surveys compiled as part of the HFIR Environmental Monitoring Program. And Mr. Rutherford showed us that table and says it came from a TI document dated 1979, which by the way is when we were, you know, winding down the operation and trying to terminate our license.

Now, mind you, NIOSH offers no other information about when this data was collected or in what context it was used or reported. But one of the entries on the table is an area referred to with the acronym GMA, which we are told in a footnote refers to the general manufacturing area.

In the next footnote, NIOSH tells us that GMA, general manufacturing area, is synonymous with the clad fuel manufacturing area, or the CFMA, where clad special nuclear material was permitted to be handled.

Let me just point out this is a huge assumption on NIOSH's part, which may or may not be true.

Then to cap off the argument that the alpha surveys were conducted throughout all of Building 10 during the first 14 years of the residual period, NIOSH inserted Figure 1 entitled, "Building 10 Floor Plan Layout 1982."

The drawing, which is indeed dated October 18, 1982, shows a layout of the building with the clad

fuel manufacturing area extending from one end to the other -- we just saw that in Mr. Rutherford's presentation -- in other words occupying most of the building.

I am compelled to point out that this floor plan layout that was clearly drawn in 1982 does not, however, represent the layout of the building in 1982. I suspect it was drawn in support of M&C's request to terminate Special Nuclear Material License Number 23 that coincided more or less with this time period.

As anyone who worked at M&C knows, except for the relatively small area that housed the HFIR project, Building 10 was repurposed shortly after the nuclear operation ceased for non-nuclear manufacturing.

In 2019, I conducted a personal interview with [identifying information redacted], one of the former Nuclear Program Contract Managers to get a sense of the transition after nuclear operations ceased, AWE operations ceased in 1967.

Dick emphasized two things. The repurposing was done quickly, and it was done without much attention or care to the decontamination process.

Then in a very short period of time, certainly by 1970, Building 10 had been completely repurposed for non-nuclear operations. The majority of the building was dedicated to the wire manufacturing department. But in addition to that, other manufacturing areas that occupied smaller areas within the building included PTC or otherwise known as positive temperature coefficient line, billet jackets, coinage.

In addition, there were support operations such as a machine shop, R&D labs, metrology and metallurgical labs, a maintenance supply storage area and, of course, the facilities and construction maintenance workshop and offices that the M&C maintenance workers called home.

In the footnote that I referenced above prior to Figure 1, NIOSH tells us that the general manufacturing area was synonymous with the clad fuel manufacturing area.

Clearly, NIOSH would like us to believe that the alpha surveys during the HFIR project must have extended throughout the entire building. Unfortunately, nothing could be further from the truth, and I find it somewhat disingenuous to suggest that alpha radiation surveys were being conducted outside the HFIR area that would have detected any significant contamination experienced by the general population, including the M&C maintenance workers.

To prove my point, I asked my [identifying information redacted]to comment on the suggestion that radiation surveys were conducted on a monthly basis throughout Building 10 between 1968 and 1981.

Please recall that [identifying information redacted] dates of employment started as early as 1969 and more importantly between 1973 and 1976, he worked exclusively in Building 10 as a Wire Department machine operator and helper. That's immediately adjacent to the HFIR area.

Then after 1976, he switched to the facilities organization, where he started out as a lubrication oiler, mostly working in Building 10. And later he advanced within the facilities organization to industrial pipefitter that also entailed significant amounts of time working in Building 10.

The following is an excerpt of an email that John shared with me on this subject. "I worked in Building 10 exclusively in the early 70s. I worked just outside of HFIR in the Wire Department on a variety of equipment, for example the copper aluminum binding lines, copper scrub lines, FX machine and 125 machine billet prep, et cetera. I do not recall even one instance of being monitored

nor do I recall ever seeing any other employees being monitored.

Routine radiological monitoring monthly or otherwise would, in my humble opinion, be a myth. I returned to TI in June of 1976. Within about three months, I started a job in the maintenance lubrication department and worked almost exclusively in Building 10 with a lubrication and oil storage area set up right behind the FX machine, abutting the HFIR east wall.

I entered the HFIR area approximately weekly to two times monthly to lubricate machinery. At some point, [identifying information redacted], and as far as I know the only person who did any radiological monitoring, questioned me about going in there, and there being HFIR. Why? For how long? Sometime following that, several weeks or a couple months, he told me it was determined monitoring was not necessary.

So once again, I was never monitored. I should mention also during the same time period I spent much time in the Building 10 wire department working in, behind and under machinery as well as on the Building 10 roof to do maintenance on equipment.

Working as a lubrication technician and later as a plumber/pipefitter into the early 80s, I never received any radiological monitoring."

So just before the call, I fired off an email to [identifying information redacted]. And I said, [identifying information redacted], besides personal monitoring, do you remember any swipe samples of the areas in which you were working? And he said, no, absolutely not.

So even if there was some type of radiological surveys outside the footprint of HFIR during the residual period, it certainly wasn't very effective.

One has only to reference the Westing report from

October of 1996 entitled, Remediation of Building Materials, Buildings 4, 5 and 10 to see how much contamination was missed throughout the interior of Building 10 during the earlier decontamination and routine radiological surveys either before, during or after the AWE operations and HFIR project.

Indeed, if you refer to the section of the Westing Building Materials Report that addresses special features, you will find several of the sumps and trenches in the same places -- in the same pieces of the wire department manufacturing equipment that [identifying information redacted] listed as equipment that he worked on.

Even within the HFIR manufacturing area, the routine radiological surveys must not have been very effective. I have previously testified on the last call or the one before about loose particulate metal fines that I observed around a drain plug in the floor of the former HFIR area during the 1990s nuclear decommissioning project.

These shiny metallic fines exhibited elevated radiation as, you know, measured by handheld sodium iodide detectors and G-M pancake probes. Those, I guess, are the direct measurements that Mr. Rutherford was referring to. These were used by our health physics technicians for the decommissioning project.

This contamination was right at the surface and readily visible to the naked eye. So how did that evade these, you know, routine radiological surveys that they were conducting?

So I for one don't know exactly what type of radiological monitoring may or may not have been performed during the HFIR project nor do I know whether it did or did not adhere to health and safety protocols written in a manual that existed at the end of the nuclear operational period, the AWE operational period, circa 1967.

But I can tell you one thing with absolute certainty,

NIOSH certainly doesn't know either. And if they were honest, they would say so. But instead, they create this entire fictitious narrative without any hint of uncertainty or doubt that supposedly describes site conditions that they have no firsthand knowledge of and suggests that this provides further evidence of the conservative nature of their exposure model assumptions.

I hope the Board Members see the hypocrisy of NIOSH's argument.

I think we need to take the same skeptical eye to everything NIOSH purports to be evidence of conservativeness in their exposure model assumptions from the use of the 95th percentile uranium concentrations in drain surveys, almost 8 times less than the highest actual concentration measured in 1995, which, by the way, was detected nearly 30 years, at least after deposition, and was not located in the footprint of the HFIR area. So it would have received no further contributions, you know, of HFIR -- source term from a HFIR operation.

If anything, it only decayed and was diluted by non-nuclear sediment. To the lack of isotopic thorium measurements in soils and sediment during the drain survey to all the other assumptions, or perhaps it would be more accurate to say guesses, that form the basis of the source term data, surrogate data, occupancy rates and modifications of existing technical bulletins that are incorporated into the numerous exposure models that NIOSH has developed, and after all this uncertainty, NIOSH still has the boldness to suggest that, "NIOSH believes that all of the models presented herein adequately bound exposures experienced by M&C workers during this new period."

I think I understand the origin of NIOSH's bold assertion and their unwillingness to acknowledge any uncertainty or to waver one bit from their long held position. It's pretty clear to me that NIOSH

formed a pre-conceived idea of the outcome of this petition evaluation even before they issued the first petition evaluation recommendation.

This was readily apparent in the NIOSH original Petition Evaluation Report in 2016 when they publicly stated their recommendation to deny the petition. Since then they have felt compelled to dig in even deeper to defend their original position and make assumptions and assertions to support their original position.

At this point, NIOSH is unable to be objective and consequently their assumptions and narratives must be seen in that light.

Unfortunately, SC&A, which theoretically could take a more objective role as arbiter, has instead chosen to assume more of a collaborative role helping NIOSH defend their original recommendation.

With the exception of one honest admission in May of 2018 by Dr. Mauro that, "it is a stretch" to say that there was sufficient measurement monitoring data to estimate a bounding dose to this Class of workers, SC&A has never really questioned NIOSH's position that it can estimate the bounding dose.

Rather, SC&A has contributed to completely fictitious fabrications of exposure model assumptions such as the HVAC inhalation rates and the like.

I find it hard to believe that when Congress inserted the SEC provision into the EEOICPA in 2000 that this is what they intended. I cannot believe that Congress intended for NIOSH to go to such lengths to literally fabricate data and exposure assumptions to deny SEC petitions to workers for whom there exists no measurement or monitoring data for that particular Class of workers.

The SEC petition for M&C maintenance workers in my opinion is exactly what Congress had in mind when they included this provision in the Act.

I hope the Board Members will take a broader view and consider what Congress intended with this provision. And having done so, I hope the Board Members serving on this M&C Working Group will recommend to the larger Advisory Board to exercise its statutory authority under the enabling statute to recommend addition of the M&C maintenance workers as a Class of workers recognized under the Special Exposure Cohort provision of the EEOICPA.

Thank you for your careful consideration of my testimony. And with that, I conclude my remarks today.

Chair Beach: Alright, Mike. Thank you so much. I appreciate you taking your time. I know you had to take the day off to be able to be with us here today, so thank you for that. Are there any other petitioners that you know of that would like to make comments?

Mr. Elliott: Well, my colleague, William "Rusty" Lorenzen is on the line. I don't know for sure if he has any comments. But he's the health physicist who has been certainly providing us some assistance with our petition. So if we could maybe just ask Rusty if he has anything to say.

Mr. Lorenzen: Thanks, Mike. I certainly have no more directed comments. But I think your statement really summarizes my directed comments to the fact that the evidence really isn't there in my eyes to support this.

I mean, it seems to me that the approach seems to be if we don't find the evidence, there's no exposure. It should be the other way around. It's not a client favorable approach.

You know, why is it that we can't exclude exposures occurred because we don't have sound, scientific evidence? It seems like we're working backwards.

And I certainly appreciate the fact that you mentioned the subsurface sample that was used to

justify the ability to determine internal exposures. Like you said, it wasn't the highest value found and the sample was not taken for the purpose of trying to determine exposures. So to use that as the only method for determining internal exposures seems unjustified to me.

And just to speak briefly about the burial ground gross alpha data, I feel that's biased low as areas identified by other radiological devices, because of their high activity, were not sampled for alpha contamination. We had other methods to do that. So all that data certainly is biased low.

And there were no alpha samples taken during my tenure there during the cleanup of areas that were high because there was no need to justify they were contaminated because we used other techniques to find the contamination. So that data is not all inclusive and to me is biased low.

And just one statement about that measurement technique, the gross alpha measurement technique that was used during the remediation efforts, were in no way scientifically validated for use for absolute contamination values for mixed isotopes, samples of uranium and thorium or just thorium.

These are measurements and the techniques used to derive only for the intent to determine the extent of excavation. They were not in any way justified for use or have any scientific validity for use beyond that, particularly to support or not support workers' exposures during the remediation period or the post-residual period.

Just a couple comments from me. But, Mike, I think you summed it up quite well. I totally agree with what you stated. Thank you.

Chair Beach: And thank you, Rusty, for your comments. We do appreciate them. And any other commenters from petitioners? Mike, is that all you think is on the line and would comment?

Mr. Elliott: Yes. I'm not aware of anyone else.

Chair Beach: Thank you. Okay. So, LaVon, as we move back through the slides, would you man the slides and forward them? Would that be okay to ask you to do that?

Mr. Rutherford: Why certainly. That would be fine. I can do that. Hold on.

Chair Beach: And as LaVon is getting those up, is it okay if we work until about 12:30 and then take a quick break? Is everybody in agreement with that? Just say no if you're not otherwise we'll assume everybody agrees to that.

Mr. Rutherford: Can everyone see my --

Chair Beach: Yes.

Mr. Rutherford: -- desktop?

Chair Beach: It's up.

Mr. Rutherford: Okay. Alright. There we go. Where would you like me to start?

Chair Beach: Well, there might be times when you're going to need to switch over to that table that you put up.

Mr. Rutherford Okay.

Chair Beach: But at this point, I would just start with the first slide, and we can go through them at that point.

Mr. Rutherford: Okay.

Chair Beach: Okay. And I don't want you to have to rehash each one of these slides other than if we have questions.

So starting with Worker Comments 1, probably on, yes, Slide 3. And so any comments to start with? It might be nice if you would just summarize the slide briefly, I guess, to get the conversation started, I

guess. It's a little difficult when you do it the way we did it, but.

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Mr. Rutherford: Yes. Yes. That's alright. I can summarize them. Okay. So we started out the first comment was on the exposure model -- does the exposure model bound bases for all fires? And there was a comment by one of the Work Group Members that expressed concerns there were additional fires that we hadn't taken into consideration.

And so we went through on this slide and discussed -- we went back and looked at interview summaries and identified where workers talked about fires or explosions and summarized it in these first two slides.

Chair Beach: Okay.

Mr. Rutherford: And then we also indicated we looked at SRDB reports. But we concluded that we felt that nothing that we had read gave us any reason to change our current position on fires. That a fire that would have occurred in Building 10 as was discussed earlier, the sediment and debris that would be generated by the fire would only dilute the specific activity concentration in the HVAC filter, such that it would mean that our model was even more claimant favorable.

Chair Beach: Okay. And I know that was my comment earlier on. I think that last bullet, your conclusion, my only comment on that was the maintenance workers -- and the reason I brought up the fires in the first place is because some of the locations where the fires were, in a manhole, I believe, one of the interviewees said --

Mr. Rutherford: Yes.

Chair Beach: -- you know, the roof. My concern with that was the contamination that may have been in those areas, and the workers had to go back into

them and clean up after the fire so.

Mr. Rutherford: And I understand that concern. However, we believe that the actual, the electrical manholes and the bus ducts and such like that would actually have less contamination in them than the main processing area. So we believe that there would be less exposure in those areas.

Chair Beach: Okay. Any other comments on this first?

Member Anderson: Yes. This is Andy. I mean, that's an assumption. I mean, is there any data to indicate that's true?

Mr. Rutherford: And that's --

Member Anderson: Like there wouldn't have been material that had settled down and gone down in the manholes when there was a fire would be rather explosively circulated at that time?

Mr. Rutherford: I don't know that we have actual contamination data. I will actually have to ask our ORAU counterpart, Pat McCloskey, if he knows of any contamination data specifically from the manholes.

Member Anderson: For any of the fires, were there any measurements made?

Mr. McCloskey: So the manholes -- hi. This is Pat McCloskey. The manholes were located -- had some fires located between Buildings 10 and 4. And that was not a location that showed up on any of the outdoor surveys as an area with high levels of contamination. In fact, none of the outdoor areas had high levels of contamination.

Although, Josie, the bus ducts in Building 4, Building 4 was not an area that we had much concern for, really. But Josie brought up a good point with the roofs. We do have survey data up there.

And we do not know that there was a response

performed to your point, to that roof, during the fire itself. And that contamination data for the roof is not significantly higher than -- it wasn't significantly higher compared to any of the other areas. So that's what I can say about survey data. I hope that answers your question.

Member Anderson: Okay.

Mr. Rutherford: Yes. So we don't have actual data from when they responded to the fire because they did not -- we aren't assuming that they did any surveys or anything. We don't have any surveys from that. The only reason we believe that it would have been lower is because of what Pat had indicated.

Chair Beach: Hey, LaVon. Remind me where is the remediation, the metals and recovery area? What area was that in?

Mr. Rutherford: Oh, geesh.

Chair Beach: Do you know?

Mr. Rutherford: No, actually I don't know.

Mr. McCloskey: The metals recovery area was just outside Building 5, the old day care center area.

Chair Beach: Okay. Because I know they found quite a bit of uranium out there in the soil. So I wasn't sure if that contributed.

Mr. McCloskey: That was considered in part of our outside area. That data was combined with all of the outside areas, including the waste area, and they're all listed in the White Paper.

Chair Beach: Yes. There was a report. It was dated March 20, 1997. I believe Mike Elliott -- oh it was to Mike Elliott, and it was talking about all the different sites after they finished their final surveys.

And I believe in '93 and '94, they did come up with 17,000 picocuries in that area. And I guess my only

comment would be that if there's no survey data, then how can NIOSH conclude that there's no potential for exposures? And I know you might not be able to answer that. So go ahead.

Mr. McCloskey: Well, I mean, we heard Mr. Elliott say before that they -- you know, after they started chasing the contamination around the site, they did a comprehensive look at the site and went into any area that they thought could have contamination to get their license released.

So I would believe that, you know, they tried to find contamination everywhere they could, including, you know, manholes, if necessary. We know they surveyed other buildings.

Chair Beach: So you would think, but we don't have any conclusive evidence of that at this point, correct?

Member Anderson: And no measurements.

Chair Beach: No measurements, there you go. No measurements.

Member Anderson: I mean, if they did a survey and we don't have any results that's not much different than if they never did a survey, and they should have.

Mr. McCloskey: Yes.

Ms. Gogliotti: Well, I think what we're losing track of is we're talking about fires at this point. And this is during the residual period. So this is not contributing any new radiological material to this one. It might be redistributing it slightly, but it's not adding to anything. Nothing was added to these fires.

Chair Beach: So, Rose, I understand what you're saying. But I also brought this up because the individual interviews said they had to go back in and cleanup the areas or rework areas because of the

fire so on the roof, in the manholes, wherever that was. So I think it's not just because of the fire but because of the actual cleanup afterward that the maintenance personnel would have had to have done so that wasn't --

Mr. Rutherford: But Rose makes a very good point in the fact that the source material hadn't changed. Operations had concluded in '67, and the source material for exposure concerns had not changed. And so we weren't adding any additional contamination or such during that operation.

Ms. Gogliotti: Josie, to clarify, are you suggesting that when they went back in they were removing source term and that's your concern that perhaps the later time period surveys -- what was there before because it was removed?

Chair Beach: Well, I don't think they ever did any surveys of those areas. So I guess my point mostly is the men working in that area, or women, they may have been exposed to that potential source, contamination source. And we wouldn't have any idea what that was because there was never any surveys done.

Dr. Mauro: This is John Mauro. I'd like to jump in a little bit also.

Chair Beach: Okay.

Dr. Mauro: Okay? Yes. When I read through LaVon's presentation and the issue of fires and explosions during the period and the potential that those could have generated aerosols with airborne uranium concentrations that were well above those that were estimated based on just the classic resuspension factor using the 1968-69 survey data so that could be something very important.

So the way I thought about it is if in fact there were pockets where the contamination level, let's say you mentioned manholes or their native fuel were a fairly highly concentrated uranium and they were

engaged, involved in these fires, what you would have created is a short-term period where the airborne concentrations during the course of the fire and perhaps shortly thereafter would have been elevated substantially above the concentrations that are used for the classic resuspension factor scenario.

So what I would like to just leave everyone with is unless there is affirmative information that yes there were locations where there were unusually large amounts of uranium residual during the residual period and they may have been involved in the fire, I would argue that there's this redistribution issue. Of course, that argues against that being an issue.

But there is the opposite that I would say would be a problem because during the course of the fire, the uranium would have become airborne. And if there were such pockets of elevated levels of uranium that differed substantially from the activity that was observed from the surveys, the dpm per centimeter squared surveys, yes, then that would be a real issue.

The doses could not be reconstructed because that would say that well, we don't know what that was. We know that it had the real potential to be a very high localized concentration for a short period of time. And if it turns out it's plausible that those exposures could substantially increase the doses as compared to what we are doing, well, you got yourself a problem.

So I guess my perspective was after listening to the conversation I just heard that there in fact really weren't any pockets where the level of contamination in dpm per centimeter squared or inventory in terms of grams of uranium that was residual and left behind, that didn't exist.

As long as you can say that with a degree of confidence based on a literature review, I think this becomes a non-issue. But if it looks like there's

affirmative evidence that, no, there really were some places where it was really high, and high I mean approaching the concentration of natural uranium, then it is an issue and certainly should be at play in SEC decision-making. I hope that helps.

Chair Beach: Okay. Thanks, John. Oh, go ahead.

Dr. Taulbee: This is Tim. One thing that I want to, you know, point out here is as Rose had indicated as well, we haven't added any material here. We do have surveys at the end of the operations. I believe it's '68, '69. Team correct me if I'm wrong here, but we have surveys at that time period.

And I believe what I was hearing Pat saying is that there didn't appear to be any of these pockets of contamination where this survey data was significantly higher in some locations versus others.

So from that standpoint, you know, even if there is a fire in one of these locations, based upon that survey, that's what's being resuspended here. There's nothing new being added.

Member Anderson: But the manholes that Pat commented here, they were never surveyed. So we don't know if there were materials that accumulated there.

Ms. Gogliotti: Well, there are certainly materials that accumulated. But since they weren't directly handling radiological materials in the manholes as far as we know, we wouldn't expect there to be a high contamination level there.

Dr. Taulbee: Exactly. That's my reaction, too. I mean, in the electrical manholes, you're not going to be handling uranium at that point.

Dr. Mauro: This is John again. I have one more perspective that goes towards this issue but also another issue that Mr. Elliott brought up. And you'll see how they're related.

Mr. Elliott pointed it out that the surveys that were -- the swipe surveys that characterize the surface contamination, we have all been operating that was a fairly comprehensive survey. And originally, you may not remember, when NIOSH did the reconstruction of the doses, the nuclear resuspension of this widespread low level contamination, they used the upper 95th percentile level and on that basis came up with an upper end inhalation dose from this resuspension. Okay?

So, now, what I see here is that what happened after that is SC&A did an independent analysis. And our position was well, if you have a comprehensive characterization surface contamination, you don't go with the upper 95th percentile. And this is classic. We've done this many, many, many times.

And you want to know, okay, we know we've got residuals, this widespread contamination on surfaces and that there could be resuspension during the residual period to people who are at various locations at various times where sometimes it might be high and sometimes it might be low.

SC&A's position has always been, and I believe by way of previous experience, you go with the median concentration, not the upper 95th percentile because it's just not plausible that people would always be exposed to resuspension for over a period of many years to the upper 95th percentile level because they're not located at that location all of the time.

Now that being said, if in fact it turns out that Mr. Elliott is correct that the surveys that were performed did not really cover every area. There may be areas of interest that were not covered.

Then I say to myself maybe if that is true, I'm not saying it's correct or not, maybe you go back to the 95th percentile as opposed to the average because that was the original profile NIOSH used. It was SC&A that came in and said back off. That's not how we do it. We always go with the average when it

comes to this resuspension issue.

Now what we have here now is an interesting convergence of the explosion issue. So what we're saying is, oh, okay. Well, wait a minute there were some fires and explosions. And perhaps they occurred in places where the levels might have been a little higher than the average. And, you know, if they were more or less in -- and the contamination level was more or less within the range of the data, the swipe data that was collected. There was a fire that involved that, well, it's a nonissue.

But if it turns out that the fires could have occurred in locations where for some reason one believes that the levels were in fact elevated for some reason and did not represent the average, well, now we have a scenario where perhaps working with the 95th percentile would give us some insight. And maybe taking the two together now, I'm really taking the two separate issues together, one is the concern about buyers and the other is the concern about do the surveys that were performed, are they complete and a good representation of the entire area?

I would argue that if there are questions about those that we go back to the 25, we got back to the 95th percentile. You know, that is yet to be resolved, of course, whether or not Mr. Elliott's characterization of the limitations of the swipe surveys. If that's true then, I would argue that in a way the issues involved wants us to determine, yes, there's some validity here. Yes, we really didn't characterize it as fully as we should have or could have that the characterization wasn't -- well, maybe you move back to the 95th percentile of contamination level as being the baseline to operate from. And thereby you sort of kill two birds with one stone. You deal with the issue of the fires and you also at the same time deal with the issue of, well, the survey data, the swipe data, what, was in fact not complete. You might have missed areas that could be important.

So all I'm offering now is a perspective on strategies to deal with this issue if in fact it turns out that everyone agrees, yes, there could have been localized areas where there might have been some elevation of contamination that is not well represented by the average or median value that was adopted for use for this particular scenario. I hope that's helpful.

Member Kotelchuck: John, I thought that -- John Mauro.

Dr. Mauro: Yes?

Member Kotelchuck: I thought that Mr. Elliott said that there weren't alpha measurements done in Building 10 at all except in the HFIR area, which he argued was A, not covered, and B, separated off physically from the rest of the building. And he really -- I thought he was really arguing we don't have subsurface alpha or alpha in Building 10. Am I misunderstanding him or --

Ms. Gogliotti: We do have alpha samples at the end of the operational period.

Member Kotelchuck: Yes. Okay. And by the way, since I'm asking, we're really confident that those measurements were made after the cleanup had occurred. I mean, M&C tried to do a cleanup at the end of the operational period of course. I don't know what period of time they spent on that, but the data that we have really is from -- is post-cleanup, right? Well, I'm just asking to confirm that that's the case.

Ms. Gogliotti: Those are pre-cleanup.

Chair Beach: So you're talking about the swipe samples that were taken in '64, '68. I think there was one document that said '69 on it. You're talking about those swipe samples, is that correct --

Member Kotelchuck: Yes.

Chair Beach: -- that are in the SRDB?

Member Kotelchuck: Yes.

Chair Beach: Is that correct, Rose?

Ms. Gogliotti: Yes. We have swipe samples at the end of the operational period --

Chair Beach: So most --

Ms. Gogliotti: -- before it was cleaned up. So it didn't get higher than that ever.

Chair Beach: So are you talking about the same ones, like the lunch room, the locker room, the machine shop.

Ms. Gogliotti: No. Those are HFIR surveys. We have --

Chair Beach: Okay.

Member Kotelchuck: Okay.

Chair Beach: Which ones are you talking about then just so I know the difference.

Ms. Gogliotti: The ones that were used in the original ER. There's swipe samples, I believe, in the late 60s.

Chair Beach: Yes. And those are reported in the HVAC swipe samples also in that slide.

Ms. Gogliotti: Yes. I believe those are the same.

Chair Beach: Those are the same. Okay. Because a lot of those basically -- most of them are '64 to '66. There's very few of them that I could find that were in the later or the '68, '69 time frame. And it would be a leap to say that some of the ones that are illegible that you can't read could possibly be a 9.

Okay. So those are the samples you're talking about.

Member Kotelchuck: Okay. Okay.

Chair Beach: Okay. Any other comments on Comment 1?

Member Anderson: Yes, just one more. I mean, throughout this there's a lot of use of the 95th percentile as being, you know, an exceedingly important number.

And for me the issue really is how comprehensive and representative is the data upon which that's used to generate the 95th percentile if that data is -- we're not very confident in that, that it's comprehensive or truly representative. And the 95th percentile has the same uncertainty to it. So that's just a comment.

The second one here is you're talking here that the existing resuspension exposure models that are being used bound any of the fire reserve explosions commented here. Would those models include data from measurements of such events? Was it really an exposure model that was supposed to include -- including these kind of adverse short-term events that occurred? I can't see that in the writeups about these as to --

Mr. Rutherford: Let me respond to that.

Member Anderson: Were they dependent upon those kind of exposures?

Mr. Rutherford: Yes. It is intended to bound exposures. We are not going to have data from the existing fires when they occurred, not activity concentrations, not anything of that nature. That's not going to be there.

So what you have to do is decide whether your models will support bounding the exposures from those events. And we believe they do because of the surveys that were done early on in 1968 and the early surveys at post-operations.

And, Josie, even some of the surveys that were done during operations, again, those are surveys that are supported that, you know, we have a source term at the end of operations that we're identifying in 1968 to start our residual period.

And we use that data to develop that source term. So that source term did not grow as we discussed over time. And we believe that that survey data is comprehensive enough.

I mean, we can go back and look at it and lay everything out and lay all the locations that were surveyed, all the different spots and everybody can look at that if they'd like.

Chair Beach: Okay. Thanks, LaVon, and as we move through this I'm sure that will all get discussed again.

Mr. Rutherford: Okay.

Chair Beach: Because it will come up in several of these comments, I'm sure. Are we okay to move on? I'm not hearing closing at this point.

Member Anderson: Yes.

Chair Beach: Okay. On to Slide Number 2, this is the reduction in sediment in the drain lines and could it have continued after operations?

And I think this goes on for several slides. This was something that Bob discussed. And thanks for doing that extra work, too, LaVon. I'm looking at the other sites. I know this was kind of a complex issue.

Mr. Rutherford: Yes. Again, this is -- basically what we did was we went back and looked at the number of sites that had residual periods. And we looked for data to support that we had during operations streamlined data and then if we had drain line data post-operation or during the residual period, so that we could see if there was a reduction in the sediment over time.

We just didn't have the data to actually make a clear conclusion on that. But the one conclusion we did make was that all these sites are very similar and such that you have a large number of activity concentrations that are in the same ballpark of each other, and then you have hot spots that are an order of magnitude higher than the other ones. And so yes, we did look at that.

Chair Beach: Okay. Any comments on this? There are several slides on this and so on this very first slide, I don't really have a comment. Anyone else?

Member Kotelchuck: No.

Mr. Rutherford: I got us off, didn't I?

Chair Beach: Yes. We're on five right now.

Mr. Rutherford: Okay. Thank you. Alright. So let me go to six.

Chair Beach: Six.

Mr. Rutherford: Okay. And then on this slide what I indicated was that there was a lot of other radiological work that occurred during the AWE operational period that was not covered work. And I also pointed out that the only operations that occurred in the residual period -- radiological operations which were not covered was HFIR.

And I was pointing out there that you could have had contributions to the drain lines from the HFIR operations from '67 to '81. And that could have added to the source term and that's not covered work.

Chair Beach: Yes. That really complicates the issue on trying to figure out exactly what is covered and what is not. And I know it's, like you said, you can't really tell between the two.

Mr. Rutherford: No. No. No, you cannot tell. And we always during -- in situations where we have uranium work that includes covered work, and then

there's non-covered work that also includes uranium work because we can't separate it out. And if we cannot come up with a definitive way of separating it out, we just include it all.

So in this case, the point was to point out that, you know, the source term that we're using here, you know, was not only contributed to by the AWE covered operations, but it was contributed by a lot of other operations that were not covered under this program. So we believe that adds to the conservatism of our model.

Member Anderson: Just a question to that is: do you have evidence that the non-covered activities would have contributed higher exposure?

Mr. Rutherford: We have no evidence that they contributed higher exposure. We have no evidence that they definitely contributed less. But we know they contributed a portion of it at some point. And so it would be -- you cannot sit here and think that every bit of that source term that we're using is from the AWE operations, when as reported in that 1979 document that 80 percent of the radiological work that was occurring during the AWE operational period was non-covered work in a naval nuclear program.

So yes, I don't know the portion that source term contributed definitively because you don't. I mean we don't know the specific operations and such. But we do know that they contributed some. And I see that Tim is wanting to talk here.

Dr. Taulbee: Just to add into what you're saying there, Bomber. If you look at the original question, could a reduction in the sediment of drain lines from continued use after operations?

So the AWE operations shut down in 1967. And the question was: well could there have been dilutions? So the samples that we're using in the sediments in the latter years had been diluted.

That was the original question here. And what LaVon is trying to point out here is that if it was purely just a dilution scenario then, you know, that could be possible.

But in this particular case, we also have additional source term from an uncovered operation of HFIR that could be adding to it. So it just further backs up what LaVon is saying is that this is a bounding or a conservative estimate here.

We're not trying to separate out the two. Okay? We're not trying to do that at all. What we're saying here is there shouldn't be any significant reduction. That's just one piece.

The other piece that he goes into and discusses is that they actually found in one of the drain lines some uranium fuel rod. So if that's the case, then it was not ever removed so there wouldn't be a reduction here in that sediment around that area. That's the original question.

Mr. Rutherford: Yes.

Chair Beach: Yes, you're right --

Ms. Gogliotti: Because --

Chair Beach: Oh, who was talking?

Ms. Gogliotti: That was me. If I could just clarify one thing. Yes, the HFIR was probably contributing some to the pipes. But I think it's misleading to say it was contributing to all the pipes equally. From the pipes maps, we do know which pipes ran under the HFIR and which ones ran under other parts of the facility.

And the ones that did run under the HFIR, other than that 1 million dpm sample that we'll get to, those weren't that particularly hot under one area of the building. The fuel manufacturing areas were where most of the radiological material was found. And that's where the fuel pipe was found.

Chair Beach: And that was close to Area 7, right?

Ms. Gogliotti: Yes. Area 7 is beyond and that would be the screen print room, and that is absolutely HFIR if you look at the maps.

Chair Beach: Right, right. I agree with that. Going back through the source documents, I looked at the request for reimbursement. And you can't tell, even in Metals and Controls, when they were trying to get reimbursement, they couldn't even say what their contracts were for. So even during the AEC period, it was confusing because the contracts weren't very clear either, I believe. So no way to differentiate for sure.

Mr. Rutherford: Yes, I agree with that. I would point out that there were other covered sources, you know, that should not be included.

Chair Beach: And just to be clear, that wasn't the only fuel rod that was found. There was actually another one reported, and interviewee was carrying it around in his back pocket showing people. I think that was found out in the burial grounds. But I'm not 100 percent sure at this point. There was more than one rod found, not that it has much to do with this but since it was brought up.

Member Kotelchuck: If I may, I --

Chair Beach: Yes. Please do.

Member Kotelchuck: It's not addressing this question about the reduction in sediment in drain lines. But to me the issue is was the 1995 operation, did that characterize the 30 years of exposure that people had in the subsurface work because they were continually both snaking the lines but also replacing them.

And I wondered, and the petitioners raised it, could there have been another period? Was that a high period, a low period? Was it a typical period? A representative period when those measurements

were taken? They were taken at one period, relative to 30 years, a point period.

And we're going to the 95th percentile of what was found then. But what was found in 1995, is that characteristic? The exposure was going on for 30 years. Was the measurement characteristic of the entire period?

And all we can say is well we're taking the 95th percentile, which certainly suggests that, okay, we're trying to take into account that the exposure occurred. The exposure at that time was a reasonable exposure at that point.

And then we're extending it also by saying, well we did that work. Not only did we take 95 percent, but the person did that work every day for 30 years, which is certainly trying to be claimant favorable. But again, was that period in 1995 characteristic of the operations in the 30 year period? And that still bothers me. I don't know -- it isn't addressed in this question, but it lays behind my concerns.

Mr. Rutherford: I'd like to respond a little bit to that.

Member Kotelchuck: Sure.

Mr. Rutherford: If you think about, you know, and I went back and I looked at SC&A's, you know, report they put out in March last year that summarized where we were. And I think that they did a great job of laying out the distribution of the samples and such, and showing the 95th percentile and the discussion on the fact that that 95th percentile is 1 percent of the natural -- of the specific activity of natural uranium.

And if you think about that, 1 percent of the specific activity, we're assuming every time they take a dig and it rose up in the air, they're throwing out that activity concentration. That's used as part of our scenario for air.

I mean that is a stretch. It is a real stretch. I mean

and it's clearly. I cannot see how you cannot come up with that being bounded. It's clearly bounded.

I just I mean I realize the 1995 data is not data from 1968. It's not. That's why we use the 95th percentile in that situation. And it took into consideration some really high activity concentrations that were in that soil sample to produce that 95th percent confidence level. And so I feel very comfortable with that.

Member Kotelchuck: Right. Well it is a powerful statement, the 1 percent. Mr. Elliott certainly criticized that. And I haven't had a chance to -- I heard him. But I haven't had a chance to study what he said. And I'll see that in the transcript. He was arguing, I gather, that source term got lost perhaps or they weren't accounting for the full source term that disappeared, if you will, in that period.

But you're right about the 1 percent. I mean that 1 percent figure is important and persuasive. And in a sense, let's see if it holds up against that specific criticism by people who were there and had in many cases managerial responsibilities. Okay.

Chair Beach: Well and we're using the 53,225 picocuries is where you started and got your 95th percentile. That's correct, isn't it, LaVon?

Mr. Rutherford: What we used was we used all the data, not just that 53,000.

Chair Beach: Okay.

Mr. Rutherford: What we was used was all the data and then we drew the 95th percentile out of all the data.

(Simultaneous speaking.)

Chair Beach: But that was your high point?

Mr. Rutherford: Yes.

Chair Beach: Okay.

Mr. Rutherford: Yes.

Ms. Gogliotti: And that was exactly where they found the fuel pin.

Chair Beach: What was that?

Ms. Gogliotti: That 53,000 number was where they found the fuel pin. It was directly surrounding the fuel pin.

Chair Beach: Are you sure? I believe that was a million at that point.

Ms. Gogliotti: No, no. The million number comes from --

Mr. Rutherford: Those were completely different units. Yes.

Ms. Gogliotti: The million number came from the screen program in the HFIR.

Chair Beach: Okay.

Ms. Gogliotti: The fuel pin was found underneath the fuel manufacturing area.

Chair Beach: Okay. And that just goes back to our initial argument was the work that was done in that 30 year period and was that the high end, or was some of that dispersed based on the maintenance cleanup activities. I'm not arguing that was the higher point, but --

Mr. Rutherford: Well I'll tell you what. You can also look at some of the data from the six other sites. And that 53,000 was as high or higher than most everyone and then I think maybe even as high as Mallinckrodt's.

And that tells you that it wasn't going to get much higher than that. And it was also -- 53,000 is roughly 10 percent of the specific activity, I mean --

Member Kotelchuck: Mm-hmm.

Mr. Rutherford: -- and so take that into consideration.

Member Kotelchuck: Okay.

Ms. Gogliotti: And the NIOSH model also assumes that not only the stuff inside the pipes was contaminated at that level, but also the soil surrounding it, not just inside the pipes.

Member Kotelchuck: Yes.

Ms. Gogliotti: Everything. And the soil we know is wet. And the material in the pipes presumably should have been wet also, which means that it should not have been leaked into the air at the same concentration as if you had a dry dusty soil.

Mr. Rutherford: Yes.

Chair Beach: Okay. Yes, sorry, sorry. What's that?

Mr. Rutherford: I was wondering if we should move on or what was --

Chair Beach: Yes, no, my husband walked in, so I muted myself so he could tell me what he was doing. Okay. So yes, move on please to the next slide.

Mr. Rutherford: Okay. Alright. Why is my thing not -- oh, there it went. Okay. Again, this next slide was discussed on those six sites that we identified the documented drain line sediment. And we indicated that although we could not tell a specific -- couldn't give a real answer to the question of whether the actual sediment dropped over time, we did notice a consistent pattern that you had a distribution of samples around the same, you know, magnitude. And then you had some hot spots of specific activity so. Was there any questions on this slide?

Chair Beach: None here. Any others?

Member Kotelchuck: I assume the six sites, and again this is getting back to basic stuff, but I assume these six sites were sites where people were following the rules of trying to -- of knowing that they're working with radioactive materials and taking appropriate action.

And one of the central features here is that the people here didn't know they were working with radioactive material and didn't do the kinds of things that would ordinarily be done by, I assume, any working person who knows that they're working with radiation.

Mr. Rutherford: Well and I think I think --

(Simultaneous speaking.)

Mr. Rutherford: Dr. Kotelchuck, what I --

Member Kotelchuck: Yes.

Mr. Rutherford: -- spoke of just earlier speaks to that. Even if the sites were following radiological controls and such, if you look at their distribution, the data that we provided in that table, and I can pull that up if you would like, if you look at the hot spot activity, you know, their hot spot activities are not much higher or higher than Metals and Controls. I mean --

Member Kotelchuck: Yes.

Mr. Rutherford: -- so --

Member Kotelchuck: Yes.

Mr. Rutherford: -- I don't think it matters on that point because it looks like the same amount of activity was going down their drains as well as that Metals and Controls or very close to it anyway.

Member Kotelchuck: Okay. Okay. Alright.

Chair Beach: But Mallinckrodt had the highest at 56,000.

Mr. Rutherford: Yes.

Chair Beach: That was seven samples.

Member Kotelchuck: Okay. Right. That's true. Alright.

Chair Beach: You just have to go back, I think to Metals and Controls. Is that typical and representative because we only have those samples in that later time period?

Member Anderson: It just adds uncertainty, yes.

Chair Beach: Yes.

Mr. Rutherford: I think one of the things we could do that we didn't do -- I think actually -- do you mind if we stop here and let me pull up that document, the report?

Chair Beach: No, go ahead.

Member Kotelchuck: Sure.

Mr. Rutherford: Because I think there's -- I've got to make sure that -- okay.

Mr. Barton: While you're pulling that up, this is Bob Barton. I feel like I should probably comment since I kind of broached this subject originally.

The whole concept is if you're continuing to use that drain line, is it diluting the concentration of those measurements, not necessarily removing them. Of course, it would be impossible with replacing of piping and snaking and that sort of thing.

And the answer, and I think it is on LaVon's next slide, is that, you know, they did a great approach at going to those six sites and seeing do we have any evidence of drain line material in the operational period, and then again in the residual period at the same time how much did it possibly dilute? And then you could develop a factor to be used.

And this is an issue that I don't think this applies to M&C but is really a programmatic thing that we need to think about when we're using something like a pipe skill sample.

And the answer was we didn't have that data to be able to do a direct comparison. And we really don't even have much information about how that particular pipe was used after operations. Was it used -- you know, that extra material that's not covered, was it capped?

And so without that information you can't even really come up with a hypothetical on how that sediment might have been distributed over time over that 30 year period.

So what we're left with is can we create a framework using the assumptions and points that it represents in my presentation such as, alright, we're going to use the 95th percentile as it appeared in 1995. We're going to turn that concentration is all in the subsurface soil not just in that hot spot within the pipe. A substantial portion of radioactive material at the site was actually not covered.

You know, all these things, when put together, is it convincing that the exposure is bounding? And that really comes down to a judgment call in this case. Is it built in enough to overcome uncertainty about if that sample was diluted from essentially clean sediment plates there over the course of 30 years? And that's really what it comes down to. And it is a judgment call.

We don't have the information to put a number on it to really calculate what the dilution might have been if it occurred at all. So I just wanted to throw that in there.

And the reason we broached it is not only for Metals and Controls, but I believe that this will come up in the future at other sites. And it has obviously already come up at at least six other sites when

using these measurements and how you account for that.

I think that's why there are these conservatisms that is clear and favorable assumptions, or at least appear to be clear and favorable assumptions, built in around that measured concentration just to account for the uncertainty because we simply don't have good knowledge to quantitatively know how much that sediment might have diluted.

Now we can upper bound on it certainly because we know it can be more than a specific activity of what they handle. Of course, that would be a very unrealistic assumption. But you know, you put an upper bound on it, and the question again is you think it might have been diluted. To what extent we really don't know. And do the handle of other assumptions and the fact that a lot of it was non-covered material essentially obviate that uncertainty so that we can be convinced that we're bounding the exposure?

Mr. Rutherford: Yes. I agree with Bob that we don't know for certain. And I agree with his summation there that, you know -- and we believe, we do -- and we, NIOSH, do believe that using that 95th percentile and recognizing that one of those samples was 90 percent clogged and it, you know, included a fuel pin and that our highest activity was 53,000 -- or Metals and Controls' highest activity was 53,000 picocuries per gram.

And when you compare that and you look at Mallinckrodt at 56,000, who produced way more material and every bit of their operations were covered under this program, and they were roughly, if I remember, Mallinckrodt's covered period shut down in '68 or '69, somewhere around that time period. So that was nine years of post-operations. And we have that sample.

So you know, the point is that that 53,000 is a large number, and it's included in our distribution. And there are other high numbers that are right at the

95th percentile that we included, and recognizing that 95th percentile is 1 percent of the specific activity in natural uranium and assuming that is released each time you are doing this subsurface work. It seems pretty -- you know, I think we can get around not having the exact information.

Chair Beach: Okay. Henry, were you going to say something?

Member Anderson: I got cut off.

Chair Beach: Oh, you're back. Good.

Member Anderson: I'm back. I don't know what happened. But I resolved it without knowing what I did.

Chair Beach: Yes. I don't know if you missed Bob and LaVon's comments.

Member Anderson: Some of them.

Chair Beach: Yes, some of them.

Mr. Rutherford: I'm not sure I can reproduce them.

Member Anderson: That's okay. It will be -- I can review it.

Member Kotelchuck: You'll have a transcript.

Member Anderson: I can read that part of it. I don't need to read the whole thing, yes.

Chair Beach: Okay. So page 6 of the Report and the different sites, I guess I wonder what any of these sites, LaVon, was there any maintenance work being done in the pipes like at Metals and Controls where they were refabbing and so they were down into those subareas quite a bit?

Mr. Rutherford: I cannot confirm that, you know, I -- yes.

Chair Beach: I think that keeps going back to what maintenance personnel did at Metals and Controls

makes it unusual, even possibly from these other sites, so --

Member Kotelchuck: Pardon. Which paper is this table in?

Chair Beach: It's in the --

Mr. Rutherford: It's from the -- yes, go ahead. Go ahead.

Chair Beach: It's in the January 21, 2021 report, which was hard to find, LaVon. I'm going to tell you that.

Mr. Rutherford: Really?

Chair Beach: Well I mean I found it, but it was down several layers into the O: drive and not everybody is as fluent in the O: drive. And I was going to bring that up at the beginning, and I thought maybe that should have been sent to the Work Group and not having us have to go find it in the O: drive.

Because remember I had a hard time finding it I because I didn't expect it to be buried. I think it was down four levels or so into reports. I mean you had to really be able to track it.

Mr. Rutherford: I had the specific link. If you put that link directly in, you should have gone directly to it.

Chair Beach: Yes.

Mr. Rutherford: I don't know what happened there. I apologize for that.

Member Anderson: I tried that, and it didn't work.

Chair Beach: I tried it, too, so --

Member Anderson: Nice link, but it looked good, but -- I think we all --

Dr. Taulbee: These are also posted on our website.

Mr. Rutherford: Yes. But I got them the report early.

Chair Beach: Yes.

Mr. Rutherford: I got that to the Work Group and SC&A.

Chair Beach: Yes. And if we waited for it to be posted, Tim, we would have been behind on it. So anyway, that's just a little information that the link doesn't always work, and in this case it didn't. So maybe if it could just, the report be emailed to our CDC accounts.

Mr. Rutherford: Yes.

Chair Beach: Anyway. Okay. So Slide 9.

Mr. Rutherford: Yes. Let me stop sharing on this and go back to that.

Chair Beach: Thank you for doing this, LaVon. I know it's tough going back and forth.

Mr. Rutherford: That's okay.

Member Anderson: Good practice.

Member Valerio: LaVon, this is Loretta. I have a question for you.

Mr. Rutherford: Okay.

Member Valerio: Can you hear me alright?

Mr. Rutherford: Yes.

Member Valerio: So the operations period ceased in 1968, correct?

Mr. Rutherford: End of '67.

Member Valerio: And I was looking -- okay. Well '67. I was looking at some notes back from 2017, and this may not apply to the Metals and Controls specifically. It was, I believe, a stewardship report

that said that site operations, our work with nuclear materials was gradually reduced beginning in 1968 and terminated in 1974. Is that area just not covered at all under the residual period?

Mr. Rutherford: The only covered work that we have is as defined by the Department of Energy in this situation. It is up through 1967. Now if we uncover information that supports that the covered work should be extended, we would provide that information to DOE and DOL, and they could make the final determination as to whether it should be extended. So I assume that is not applicable at Metals and Controls for this situation.

Chair Beach: Loretta, I wasn't clear what report you were referring to. What was it?

Member Valerio: It was a stewardship report. And I have a reference ID number. I'll send that to you, Josie, in fact I'll go back through all of the SRDB and see if I can find it and send that directly to you.

Chair Beach: Oh, that's great.

(Simultaneous speaking.)

Member Valerio: It was in my notes from 2017. I'm sorry?

Mr. Rutherford: Would you send that to me too as well?

Member Valerio: Yes. I'll go back, and I'll try to find it. I've had problems getting into the O: drive as well and tracking things down. But I'll go back, and I'll try to find it.

Chair Beach: Okay. Yes, and if you just --

Member Valerio: But I do have it in my notes.

Chair Beach: If you just send it to Rashaun, she can distribute it.

Mr. Rutherford: Yes.

Member Valerio: Okay.

Chair Beach: Thank you.

Mr. Rutherford: Okay.

Chair Beach: Okay. Slide 9.

Mr. Rutherford: Slide 9. Okay. This was the issue that was concerning the sample that was 1 million dpm per 100 centimeters squared that we went back and looked for, and we identified the location of it. It was during contaminated concrete removal at the north site of the screen print room, Area 7.

And it indicates the initiation point of a 4 inch vitreous clay main line was encountered. And this line exhibited surface contamination as high as a million dpm per 100 centimeters squared, and then it said although it did not contain a visible accumulation of residue. And then it goes on to identify the soil concentrations in that immediate area.

Chair Beach: Okay. And that's one we feel like wasn't disturbed potentially?

Ms. Gogliotti: Sample, this is the one that we were talking about earlier? This is the sample, altered, whatever you want to call it.

Chair Beach: And it's in Area 7. Okay. I don't have anything more on that.

Mr. Rutherford: Okay. And this we discussed the -- this is what we discussed how we used that model and the reason why that million dpm per 100 centimeters squared sample was not used.

Chair Beach: Okay. And for me that third bullet, although there is potential for isolated hot spots, there is no indication of systematic conditions at these levels. And what does that just mean? You say that when there's no results? Or I guess I'm trying to figure out why that bullet point is there.

Mr. Rutherford: You know, and what we were saying any time you're doing a soil sampling, you know, you're sampling an area. You're looking for the best -- you know, you grid out an area. You sample it and such. There is no guarantee you've gotten every spot perfectly, you know. So you know, you could come up with a spot that's elevated.

And that's why, you know, you come up with different distribution levels based on your confidence. And you use those at different levels. And then look at what they were doing here with that million dpm, that sample.

The idea was to use a direct reading instrument to quickly identify potential hot areas. I think if you read that 1996 Texas Instrument Report it even talks about that specifically what they use it for. And then they do the quantification. They remove that pipe and they quantify different things, the soils around it, so --

Chair Beach: I'm sorry. And remind me, those samples for this '95 samples we're taking just -- the concrete was still in place, correct, when they were doing those measurements? Or was this after they had removed some of that?

Mr. Rutherford: No. The concrete was in -- the vitreous clay pipe was in place, and it was being removed. And they identified this hot location. I think if I remember correctly the report says that they removed this 12 feet of section of pipe or something like that.

Chair Beach: Didn't they do some sampling though before they started digging into that subsurface area in Building 10 to determine where the hot spots may be? Yes.

Mr. Rutherford: Pat McCloskey, could you help me on this?

Chair Beach: And the reason I'm asking it, so Pat knows, is I, myself, have read so many reports I

don't remember where this one was.

But some of the workers said you're going to find the hotter areas where the concrete is new, which indicated to me that that was areas where it had already been -- maybe the pipe had been clogged, and so the maintenance people had to get in there. But I would have to go back and figure out where that report is. So anyway, go ahead, Pat. Sorry.

Mr. McCloskey: I would be curious to see that, too, Josie. I mean if I saw new concrete, I would think they dug something up and replaced it, and the hot one would have gone away. But I guess it could continue to get hotter again.

So as far as what was done in Building 10 for the subsurface, first that report will tell you all of this. But it says first they did a pilot scale trial run. They broke a little bit of the concrete out to see how their process would work.

But the majority of the subsurface work that was done as part of the remediation in the mid-90s was done after the characterization. They did a full blown characterization of the subsurface, but there was one small section where they broke out pieces of the concrete first just to do a pilot study on how this operation would proceed. Does that answer your question?

Ms. Gogliotti: Yes. And that's when they found the fuel pin was in the pilot study.

Mr. McCloskey: Yes. And that caused them to go into a criticality based study. You know, that's why all that characterization was done because primarily they were concerned about criticality risk.

Chair Beach: Yes. That was when they determined the levels of the pipe one, two, three. That might be the report I read that about the concrete, so --

I'll have to find that because I thought that was interesting when they said new concrete was where

you were going to find the hot spots. So I'll have to go back and find that. Alright. Any other questions on this slide?

Member Anderson: Just quickly, what other data could be -- I mean you're saying it's appropriate to use mass based sample data to characterize the exposure environment, which I think is probably reasonable. But what other data would be available that could have been used or may have been used at other sites? Are you talking about this initial survey data or yes, what else --

Mr. Rutherford: I think what we were saying was that, you know, in situations where we're looking at an excavation or digging and such like that, that actual soil samples and samples of the material that you're digging into and activity per gram is a better way to predict the exposure against surface samples because surface samples are not looking at any of the subsurface environment.

Member Anderson: Do you have a surface --

Mr. Rutherford: Very few surface samples do we have on the actual areas that were dug in. Am I correct on that, Pat?

Mr. McCloskey: Yes. As far as that characterization, you're right. There wasn't a lot of surface scans done.

Mr. Rutherford: Yes.

Member Anderson: Okay. Does that -- I mean on the surface it's apt to be drier and finer particulates so more respirable. But if you don't have it, clearly some kind of a mass based sample is a useful tool. But if there is alternative data, it would be worth seeing what it is and has it ever been used.

Mr. McCloskey: Well if we wanted to model a residual period worker just walking across a concrete surface, the mechanism of exposure there would be his ability to stem the dust. It's lying on

the surface available to become airborne, we think.

But if we're talking about a worker who is pulling up chunks of soil, we believe that that's -- that kind of exposure is to use the characterization data that describes that soil that he's working with. So that's basically our thinking there, I believe.

Member Anderson: Yes, I mean I'm agreeing to that. I was just wondering this sort of to me implies that there might be other methods or measurements that could be used. And it really doesn't. It isn't. It's the only appropriate use.

Mr. McCloskey: Right.

Dr. Mauro: This is John Mauro. I have a little bit of a perspective on this in thinking about it as -- what we have here is if we recall when we first had our four day meeting with all of the petitioners, what that was was we were trying to construct, what are all of the scenarios that took place during the residual period and sort them out. And as you know, we now have maybe five or six different ones, you know, for example, the subsurface work in Building 10, subsurface work outdoors for the rafters, the HVAC system.

So what we did is we created scenarios. Now in thinking about your 100,000 dpm thing, well okay, what's really being said here is oh, we now know that there is at least one place, maybe more than one where the piping on its internal surface might have been quite high. Okay.

So what does that mean to me as a health physicist trying to reconstruct doses? Oh, well maybe this is another scenario that needs to be looked at. And is it possible that during the residual period some maintenance and repurposing work went down, without knowing it, of course, and this custom pipe or conduit that contained levels at that level. So that's a new one. It's a new scenario that we didn't look at.

And I said, well it's possible just like when we talked about replacing filters. It's a scenario. And we looked at that. And we have our analysis, et cetera.

Well like I said, is that listen. If everyone believes that there is a real scenario where someone, a worker, repurposing during a residual period encountered a pipe that may have had this level of contamination inside it, plated out inside, is there a need?

So well let's take a look at what kind of doses that might have been. Then we realize that could have been a one-time event, two or three times event. We don't know that. But on a per event case, one could say, well these are the kinds of doses that you might experience for that scenario.

And now are we talking about another scenario that needs to be part of the compendium of scenarios that we looked at, or is it such that, well, the one that we're using already where we're dealing with 1 percent of the specific activity of natural uranium, that more than adequately covers this particular scenario.

So to me, what I'm hearing is that this particular piece of information is not so much affecting the distribution of levels in the 95th percentile and all of that. No. It really says well we've got ourselves another scenario that we didn't look at, where if one believes, and I don't know if this is true or not, that there could have been a worker during the residual period that went down and happened to cut out a piece of pipe or snake a piece of pipe or whatever that had that, which is different, that had that internal plated out crux on it. Well what kind of doses might he have experienced when he performed that operation for whatever time period it took place? We didn't do that. I don't think NIOSH did.

Chair Beach: So John, let me -- can I stop you?

Dr. Mauro: Yes.

Chair Beach: We had talked about this from the very start of the Working Group calls and meetings. The maintenance workers were down unclogging those drains for the whole time period on a routine basis based on the interview notes. So they did mention cutting pipes and putting in new pipes.

They also mentioned when they refabbed that whole building, all of the equipment or -- actually equipment is not the right word. But all of the wiring, everything, they couldn't run it above. They had to go into the ground.

So when they moved equipment for all of those things that Mike mentioned for the new period, they had to be in that subflooring and in those trenches that they found in '95 that were contaminated, some higher, some lower.

But the problem is we don't know what those maintenance workers encountered doing that work. And I'm surprised to hear that that wasn't part of what you all looked at because we've been talking about it for a while.

Dr. Mauro: I believe the pipe --

Ms. Gogliotti: I misspoke. We definitely looked at that.

Dr. Mauro: Did we do -- now I know when, you know, we did our dose calculations, the rock we stood on was that whenever a person was down in a hole, for whatever the period of time, the number of times he did it, we always assumed that what he was dealing with was this 5,000 or 6,000 picocurie per gram, 1 percent number. That's what he encountered.

No matter where he was, whenever he went underground, that's what he encountered and the dust loading was 200 micrograms per cubic meter. And that's what he was breathing. And we felt that was a severely bad circumstance no matter where he was subsurface.

Now I do not recall whether we said, wait a minute, hold it. What about the scenario when it's not that he's working with, but it turns out he happens to encounter a pipe that has this other contamination, which one would call not loose contamination that's readily resuspendable, but now we're encountering, oh, no, a pipe that has relatively high levels of plated out material.

Now I didn't do the calculation. Maybe NIOSH did. But to me that's another scenario. And the only question we have to ask is: do we believe that the scenarios that we are using bounds that?

And if we say, yes, that is something we did not explicitly model. Then the question becomes if you were to explicitly model that, does the method that we are using universally, this 1 percent number we'll call it, does that more than bound that other scenario. And the answer to that is, well I'm going to give you just like a conceptual idea.

What you're now dealing with is rather than dealing with material that is theoretically resuspendable and inhalable, now you're dealing with a pipeline that has a given contamination contaminate with material that probably has much less of a potential to become airborne because that's what is plated out as a crust.

But all I can say is that what I'm listening to is as if I was sitting back in that meeting way back when and that was brought to my attention because I was sort of like one of the inventors of the different scenarios. I would say, oops, because we looked at a lot of them, I would say, you know, let's look at that one. That's what I would done back then.

So all I can say right now is that is there any reason to believe that there was someone that might caught and worked with that pipe or concrete conduit that had the 100,000 sometime during the residual period? And is there any reason to believe that it's possible that particular exposure scenario for that occasion could actually result in exposures

higher than the kinds of exposures that we're calculating working with the 1 percent loosely contaminated scenario?

And you know, as an objective observer of this looking at the story, I said well did we miss a scenario that may need to be looked at? And I think that that's my takeaway from the conversation we just had.

Chair Beach: Okay. Thanks, John. Any other Board questions? We'll move on to Slide 11.

Member Kotelchuck: If we go on to Slide 11, we're not going to finish today.

Chair Beach: I know. I know.

Member Kotelchuck: I mean no. And I mean also I really wanted to discuss the interview with Tim Taulbee last October about the mound dig.

Chair Beach: Okay. Yes, and I --

Member Kotelchuck: And we're not going to be able to get to it today because obviously it deserves attention, careful attention and discussion. I don't know quite how to handle what we're --

Chair Beach: So yes, my suggestion is let's finish two. Let's take a break and think about where we're at and how we should move forward because we're definitely going to need another meeting.

Member Kotelchuck: Okay, yes.

Chair Beach: So let's finish -- there's two more slides here and --

Member Kotelchuck: Alright. Go ahead.

Mr. Rutherford: So these last two slides, we go into our conclusion why we feel that our method is conservative and bounding. We talk about the doses assigned during the residual period. We include doses from -- and we talk about the more than 80

percent of the non-covered source term.

And it was very rightfully so pointed out, and I even acknowledged it, that we don't know the actual distribution of that source term, whether 80 percent of it's non-covered or not. We don't know what each contributor was. But there is a portion that was contributed by these other non-covered activities.

Also the same person is doing all the work to arrive at the bounding dose. So we provided an example. We assumed the same person does all 48 hours of the welding. And then that person turns around and does the two months of the digging or whatever it is, each one. And that same person is doing all these different activities, you know. And then the rest of his years we cover those exposures as well.

So we know the same person doesn't do all the work. We know that work is broken down into different people. So that's a very conservative assumption. We also used a 95th percentile contamination level.

And we feel the 212 microgram per cubic meter dust load is very conservative for a wet sediment that we expect to encounter based on those interviews.

Chair Beach: Yes. And I know you made that point on the wet sediment, and I know Rose made that point also. However, we did have, in our limited interviews with people that were in that area, it was a mix between whether it was moist or not, depending on what they were doing, so --

Mr. Rutherford: Okay.

Ms. Gogliotti: But the material in the pipes would be expected to be wet.

Mr. Rutherford: Yes.

Chair Beach: Mostly. Unless they opened up the pipes and let it sit there, and have it dry out when

they were cutting pipes and things like that. So there's different maintenance work that would have been done that potentially could have dried out that material.

And they weren't concerned about any radioactivity that could have been in those pipes at that time. I can't imagine that they cut into a pipe and got it done in the very same day so the material would have stayed wet. That's hard to imagine when I think some of the interviews we talked to said it took -- they may have uncovered an area, and it may have stayed open for a longer period of time.

So that's just -- some of it could have been respirable. I just don't want this to go on that it's all wet because that's not --

(Simultaneous speaking.)

Member Kotelchuck: Even though they acknowledged that it was wet, and we acknowledged that it was wet there, the fact is they're using the 212, which is dry. And they are eliminating consideration of the fact that it was wet there. And so I would like to -- I mean sooner or later we'll get to the mound data and interview with Tim.

(Simultaneous speaking.)

Mr. Rutherford: Well I'll point out, I mean it's a good point though, Dr. Kotelchuck, but that is a conservative assumption. Using that 212 is based on a drier dirt and drier material. And so more of that material would be respirable and more would be in that area. So that's why we assume it's conservative.

Again, and then our other -- okay.

Member Kotelchuck: No, I took the floor. Look, I'll telegraph where I'm coming from. I looked at the interview with Tim Taulbee, and you're telling me that a ditch dug through contaminated dirt and

essentially underbrush is a good model to estimate what's going on in the underground work that the people were doing with the pipes. And I must say I really am not persuaded.

I very much appreciated, by the way, that all of you did that interview. And I've been asking for information about mound, and how good a model is mound for what's going on inside Building 10. And I have to say I appreciate that you attempted and went out of your way to try and give us more information.

Nevertheless, it does not appear to me that it's a very good model. It's just not the same kind of work. But I'm getting ahead of myself, of course.

Chair Beach: Yes. So two things here, and hold that. One is was great that you guys held that interview. However, I was disappointed that the Work Group wasn't invited to listen in.

Second, I think we need to take a break because I feel that this might be a lengthy discussion. So how about, Rashaun, how long should we break for? Can everybody make do with 10 minutes or? I can't hear you, Rashaun.

Dr. Roberts: Yes. I mean 10 minutes sounds okay to me. I don't know how the other group members feel about that.

Member Kotelchuck: Okay by me.

Member Valerio: Okay by me.

Chair Beach: Okay.

Dr. Roberts: So we'll --

Member Anderson: 1:15.

Member Kotelchuck: We'll do a comfort break, not a lunch break.

Member Anderson: Right.

Member Kotelchuck: Right.

Dr. Roberts: So reconvene at 1:15 p.m. Eastern.

Chair Beach: Alright.

Member Kotelchuck: Okay. Good.

Chair Beach: Thank you.

Member Kotelchuck: Thank you.

(Whereupon, the above-entitled matter went off the record at 1:04 p.m. and resumed at 1:15 p.m.)

WG Discussion of Path Forward

Dr. Roberts: Okay, by my clock, I do have 1:15 Eastern Time, so I'm going to go and reconvene the Working Group, and I will start with a quick roll call.

(Roll call.)

Dr. Roberts: So, let me just say while we're waiting just as a reminder, just make sure if you're on Zoom to keep your phones on mute. That button is in the lower, left-hand corner.

If you're joining by phone, you're pressing *6 to mute and *6 to unmute. There's been not too much disruption, but some here and there, so just periodically check your phones, please. Thank you.

(Roll call.)

Dr. Roberts: Okay, great. Alright, Josie, we do have three out of the four. Would you like to go ahead and proceed? We have a quorum.

Chair Beach: Yeah, I think we need to have a discussion on how best to use the next 45 minutes. I know we ended with Dave talking about the Mound data. I don't know if we can cover that in that time frame.

Member Kotelchuck: No, I don't think we can either. That, we'll need to go through in another meeting,

and I must say I'm satisfied. I mean, in terms of process, I really am satisfied going through slide by slide of LaVon's presentation. I think it's been useful.

So, we might just want to go ahead and keep going as far as we can go and then schedule a meeting just as quickly as we can to continue really the agenda for today, which is to finish this up and go on to the other issues, in particular the interview. In my case, that's what I would like.

Chair Beach: Right, and so I think we have about 30 minutes left, and the last 15 minutes, I think we need to use on scheduling. Rashaun, do you think that's enough time to try to sort it out or are we going to have to schedule maybe via email?

Dr. Roberts: I would say we would probably need to do the specific scheduling via email, but, and we also have the point of needing to prepare if there's going to be an item on the agenda for the full Board meeting on the 14th and 15th.

Chair Beach: I suspect we're not going to be ready for any -- I'm echoing here. I suspect we're not going to be ready to report out if we're only to slide 12 and we have 30 minutes left, so that's going to be an issue. We need to do some tasking potentially too, but we need to have some time maybe at the end.

Dr. Roberts: Sure.

Chair Beach: So, save the last, you know, ten to 15 minutes maybe to talk about tasking. Okay, so I guess we're going to restart.

Mr. Rutherford: Alright, I think everybody's mute must be on because I'm not hearing the same echo Josie had.

Okay, so on this slide, this is where we were continuing our discussion on reasons why we felt this was a bounding and conservative assumption.

We assume that all airborne sediment is respirable.

We also use the most claimant-favorable solubility type, and this sediment area with the highest activity concentration contained a uranium rod and was approximately up to 90 percent clogged, you know, so we felt like this activity concentration, given the high activity that it was, had not been reduced over time, and that was it for this slide.

So, these last two slides discuss what we thought was claimant favorable in that. Do we have anything on this or should I go on?

Member Anderson: Just a quick question. So, I mean, there's no question you can always make anything claimant favorable or -- a question to me is does this result in a plausible exposure even if it's a low exposure? How accurate is this assessment? I mean, how conservative is it?

Mr. Rutherford: Well, you know, I think it's pretty conservative myself, but I also want to point out as we had spoke about at the last Work Group meeting that, you know, Dr. Melius made statements about these situations where you have a lower dose, you are allowed for more uncertainty in a perceived lower dose in that situation. And I recommend everybody go back and read his words on that because in this situation, we feel like we have bounded it, and although there's always uncertainty, there's uncertainty in any model, but look at these doses. The dose is very low, and as Dr. Melius said, we can allow for more uncertainty in those situations.

Member Anderson: I mean, kind of what is the criteria for sufficient accuracy?

Mr. Rutherford: Well, if --

Member Anderson: I mean, if you're accounting for uncertainty, I mean, we don't have any measurements, but the result, do you end up with a result that's really, you know, not --

(Simultaneous speaking.)

Mr. Rutherford: Yeah, I think we have a plausible model here. The feel is or the -- recognize that this program allows for models. It does allow for you to develop models and you are going to have uncertainty in models, but again, you've got to look at where we feel like that we have applied conservatism in this model and the fact that, at a much lower dose like this, you can have larger uncertainties because it's not going to affect -- it's not going to change the compensation decision.

Dr. Taulbee: If I could interject here, and Bomber, if you could go to that last slide that shows Table 4, I think it is, which shows what the dose is for the subsurface that we're currently assuming?

Mr. Rutherford: Yes.

Dr. Taulbee: If you could jump over while I'm speaking? We're talking about using the 95th percentile of the soil concentration. We're talking about adding a 95th percentile of an airborne resuspension type of factor.

And what we're looking at, assuming a two-month exposure, is 17 millirem for uranium and 30 millirem for thorium. To put this into perspective, that's the minimum detectable level for a single film batch for a radiological worker.

So, to have this -- you know, this dose is very, very low from that standpoint. This is what, you know, in early years, really wasn't even recorded. It was recorded as a zero. We account this as missed dose when we're doing external, and so that's the order of magnitude that we're talking here.

So, you know, even if this is off by -- well, we believe it's high for one thing because we're taking the 95th times the 95th percentile here to calculate it. It's not unreasonably high. This is a very low dose that needs to be kept in perspective.

Mr. Rutherford: You know, one of the other things you brought up, Dr. Anderson, was that -- the criteria for sufficient accuracy. We went down that path.

You know, if you can remember back in the time where some of these discussions with Dr. Melius, we went down the path to try to develop criteria, and each site is different. Everything is different and we never could come up with criteria on that, so I did want to at least address it since you brought it up.

Chair Beach: Well, the other part of that too is we have awarded SECs, three that I can think of off the top of my head for low doses. Mound was one, Pantex for that DU uranium, and then I believe there was one in LANL. I'd have to go back and research that, but, so it's not unheard of that the Board has --

Mr. Rutherford: The Mound -- or which period are you talking about? Because the Mound period had significant exposure concerns. I mean, especially we had the polonium in the early years. We had radon concentrations that drove another part of the Mound period and --

Now, the Pantex DU portion of it, I can't remember what the doses were. They were small, but they weren't as small as this.

Chair Beach: Oh, I thought they were small. Like, I said, I just thought of it when you were discussing that, so.

Mr. Rutherford: I think any time -- here's what, you know, it obviously comes down to what information you have about the source term, what information, what data you have and such.

We've awarded SECs where we may have internally thought they were really low, but we just had no information to really put our arms around the source term, no information to put our arms around the work that was performed at the site.

I think of ones like Standard Oil and some of the other ones that seemed like small activities, but we just didn't have that information, so we've awarded it in situations where we just didn't have enough information, you know?

We think we have enough information. We've pulled together more models for this residual period than we have ever done at any other site.

We've pulled together more information for the residual period. So, I mean, we've looked at activities very closely for Metals and Controls and, you know, and tried to be objective as best we can.

Member Kotelchuck: I respect the enormous amount of work that's been put in by NIOSH, by SC&A, and the integrity of the process. I cannot tell you, however, that it is convincing. It's always been an issue that these folks were, if you will, not playing by the rules.

There were so many things that were going on that should not have been because they thought they were not working in a toxic environment and we're saying, well, NIOSH is trying to argue that, well, it wasn't a toxic environment, and I feel like we just don't know what the exposures were, just as the case you're referring to, LaVon, and that's where the problem comes in at.

I have to say I've tried to listen carefully and read carefully. I've done a lot of reading of materials, backup materials here, but the --

Mr. Rutherford: I respect your guys' looking this hard. I think it's great. I think that's -- you know, we should be trying to do our best job. There's no doubt, so --

Member Kotelchuck: Right, all of us, all of us.

Mr. Rutherford: -- I have no problem with what you're --

Member Kotelchuck: Yeah, and I agree. I've put more work into this M&C than I have for many other, other than the ones that I, the Working Groups, the one Working Group that I chair, but other than that, you know, we've got two groups trying sincerely to do the best job and working very hard at it.

Mr. Rutherford: Right.

Dr. Mauro: Dr. Kotelchuck, I do need to --

Member Kotelchuck: Yeah.

Dr. Mauro: Because we're talking uncertainty, there is something that is not uncertain. The doses that have been derived are clearly very, very high and it's, I would say, bordering on the point that they could never have really come to that level.

And it's not so much it is because we multiply 95 percent by 95, but there's one more thing we do that we keep forgetting. We're assuming that the same person is doing this job all the time over a 20-year period.

Member Kotelchuck: Yes.

Dr. Mauro: The same person is always in the 95 percent times 95 percent. So, what I believe is that we have now constructed something that, it's not that it's uncertain. It's that have we overestimated the dose to such an extent that it's not plausible? So, I would say the doses we're looking at right now, the real doses are easily 100 times lower, okay?

Member Kotelchuck: And I don't deny that the attempt by taking the model and then trying to make it claimant favorable means that a number of assumptions are just, if you will, exaggerated, but that again, it still leaves me feeling as if I really don't know and I don't believe we --

I'm worried that we haven't maximized. I don't

want to say I'm convinced, but I am really worried that these estimates, much as the work has been put in and much as the model has been extended enormously, don't persuade me I really know what the exposures are.

I will come to this also a little later in tasking because I have some thoughts about pursuit, continuing pursuit. Let me not -- let's go back to the main business.

Mr. Rutherford: Okay, any more on this slide? Should I move on?

Chair Beach: Yeah, I think so. I was thinking of thorium in that scenario, but I know we will talk about that also, and I understand the method that you're using, so I think that comes up later.

Mr. Rutherford: Yeah, I think we are down to -- is this Work Group comment three? Is that correct?

Chair Beach: Yes.

Mr. Rutherford: Okay, alright, the petitioner and Work Group Chair were concerned that they had not seen the Building 10 surveys that NIOSH had mentioned and they wanted NIOSH to follow-up on these surveys and provide more detail about them, and I was wrong. We do not have the actual surveys of the HFIR routine contamination surveys that were done.

And then we talked about we were making the case that because the surveys that were taken, then we, you know, they would not want to spread contamination, one, out of the HFIR area and they would not want it coming into the HFIR area. You don't want contaminants coming into the HFIR area because you don't want to contaminate your fuel.

So, these routine surveys were important, so we felt like this helped support our 95th percentile soil contamination level, and then we referenced the Metals and Controls Health and Safety Manual,

alright.

Chair Beach: Yeah, and my first comment on that is when I said sample, air samples, I didn't mean to say air. I just meant to say samples, so I wasn't thinking you had any air samples, so I know --

Mr. Rutherford: Yeah, I knew what you meant.

Chair Beach: You pointed that out, but, yeah, it was part of your report.

Mr. Rutherford: Yeah.

Chair Beach: Okay, any comments?

Member Kotelchuck: Yeah.

Chair Beach: Yeah, I know I have a whole page of them, but go ahead, Dave.

Member Kotelchuck: Well, no, I'll just say the people who -- the claimants from that site said that, they explicitly said that they didn't know about the manual, that they didn't pay attention to the manual.

I just don't think the statement that the manual sort of tells us about concerns about the M&C's established concern, that's the next slide, for contamination control. I do not -- if we're going to talk about that in disagreement with what people there testify pretty uniformly, the people who lived it, then I'd like to know, you know, who wrote that manual, why -- it just seems to me it's frankly not credible, and I would just say it, and that's the one I absolutely reject, reference to the health and safety manual from the operations period, and I'm willing to listen to the claimants on this. There's a sharp disagreement and the claimants where there.

Mr. Rutherford: Recognize this was only used in support of saying that, okay, you know, this area was likely -- assuming, if we assume these surveys were done, then we would assume they would have identified areas of contamination and removed

them. Even if we don't assume these were done, it makes no difference to our current model.

You know, we looked at the data from right after post operation, post operations, the very beginning post operations to support our model, so this was only just as a supporting thing to say, hey, look, you know, they're saying they do these contamination surveys.

If they did these contamination surveys, they would have identified all of these contamination spots and, you know, and it was just in support, but it doesn't change the data that we used to develop our exposure model.

Member Kotelchuck: And I would just say if I were in your shoes, I would delete it entirely and make the rest of the case.

(Laughter.)

Member Kotelchuck: You have data. You have arguments here.

Mr. Rutherford: Yeah.

Member Kotelchuck: This doesn't back it up. It undermines it, in fact, and --

Mr. Rutherford: Okay.

Member Kotelchuck: Because -- anyway.

Chair Beach: Well, and let me point out because I had something on that last bullet also, and I just propose that NIOSH does not make its case citing the health and safety manual and I was asking do you have the sample results, which you already answered.

To me, this is a program on paper only. There's nothing here and, I agree with Dave, it hurts your case when you look at a manual or you cite a manual, but then every single interview that you asked those interviewees -- and mind you there was

a very small amount of interviewees conducted that actually worked in that area.

Mr. Rutherford: Well --

Chair Beach: They all said they had never seen it, hadn't heard about it, don't know about it.

Mr. Rutherford: And I could agree with that on surface if it was just the Metals and Controls manual that we were talking about, but we have NRC inspection reports that support --

Chair Beach: Right, right.

Mr. Rutherford: -- that they were doing the monitoring and --

Chair Beach: Right.

Mr. Rutherford: -- we also have the other report, the TI, Texas Instruments report that identifies the routine contamination levels.

Chair Beach: Right.

(Simultaneous speaking.)

Chair Beach: Which are on different slides. We're not to those yet, but --

Mr. Rutherford: Yeah, yeah, but, I mean, on surface, I know that there are sites that have been, you know, great on paper or, you know, but in the field can be different, so we've seen that, you know.

Member Kotelchuck: It's generally been true in the whole field of health and safety I have to say, even beyond radiation.

Chair Beach: So, and your next slide, that routine work area, your second bullet, that all comes from your health and safety manual.

Mr. Rutherford: Right, yeah, that was in the manual, the identified routine work area contamination, personal --

Chair Beach: It --

Mr. Rutherford: -- but it also is supported in that Texas Instruments document that shows the things that are surveyed, and so --

Chair Beach: Well, yeah, and if you want to jump to that, it actually shows -- I think that's your Table 3, right --

Mr. Rutherford: Right.

Chair Beach: -- that you brought up earlier? And I don't think we're --

Mr. Rutherford: Do you want me to pull it up?

Chair Beach: We're not to that yet, but there's more to that story than --

Mr. Rutherford: Okay.

Chair Beach: I guess back on this slide, it bolsters that NIOSH has all of the evidence by putting these bullets in, that, oh, of course, they had a program, but we're talking about the maintenance workers. The maintenance workers did not have a program. They did not have shoe covers. They did not have -- I mean, I think they might have wore gloves, but nothing for radiation contamination. So, when you --

Mr. Rutherford: Well --

Chair Beach: -- put something like that in there, it just, it kind of undermines --

Mr. Rutherford: Yeah, I --

Chair Beach: -- well, in my opinion.

Mr. Rutherford: I understand what you're saying. The real discussion there was mainly for the HFIR project in that they had controlled that environment to go in and out.

Chair Beach: But even there, there's some

interviews that said the maintenance people for Metals and Controls did the maintenance on the HFIR program equipment, and we have people that have testified that they went in and out with no surveys, so --

Mr. Rutherford: Okay.

Chair Beach: -- again, you're using an area that if you go back and interview more people or -- we only have what we have with that limited sampling. It wasn't a program that was recognized by the maintenance personnel.

Mr. Rutherford: Okay.

Member Anderson: And I just, I would agree with all of the comments. This just seems like an overreach and I think that hurts the case.

Mr. Rutherford: Okay, right.

Member Anderson: And my earlier comments, I think what's happened is you have a --

(Audio interference.)

Dr. Roberts: Okay, I'm hearing some interference. Please mute.

Chair Beach: Yeah, that's Dave. He's out of the picture, but he forgot to mute, so. He had a phone call.

Member Anderson: So, next slide.

Mr. Rutherford: Okay, alright, and this is where we talked about the NRC enforced those contamination surveys so that whenever M&C wanted to change the administrative requirements, they send a request to the NRC.

And they also had NRC inspections during the residual period and provided NIOSH with independent assurance that radiological controls were monitored and maintained, and we talk about

what the NRC inspection inspectors wrote, so comments, questions?

Member Anderson: Do you have copies of the requests that M&C sent?

Mr. Rutherford: We have copies of those NRC inspections. They're listed in the --

Member Anderson: The requests, I mean the --

(Simultaneous speaking.)

Member Anderson: -- you make any changes, they would send in the request to the NRC. You have the inspections of the NRC, but that could be different than the requests to make changes. Is there any documentation they actually sent in requests?

Mr. Rutherford: Pat McCloskey, could you answer that question for me?

Member Anderson: I mean, they're changing administrative --

Mr. McCloskey: Yes, yes, we do have some of those requests. If you look at the references that are provided in our White Paper, one has Metals and Controls saying, hey, you know, we're reducing the amount of fuel fabrication work we're doing.

We would like to stop doing the air sampling because all of our air sampling has demonstrated very low exposures, lower than what are required, something to that effect, but, yes, we do have a request or two where they asked for reduced types of surveys and NRC granted it.

Member Anderson: And what --

Chair Beach: Is there some supporting -- do you have that in the SRDB, those --

Mr. McCloskey: Yeah.

Chair Beach: And can you send that to us or send it

to Rashaun?

Mr. Rutherford: I think the SRDB numbers are listed.

Chair Beach: I looked at all of the SRDB numbers and I didn't see any request to make change coming from the site that I could identify, but I did look at all of the NRC, when they were trying, you know, the 79, 81 to 82.82, but I think this was, would have been in a letter to the NRC and I don't know that that is what you have listed in the SRDB.

Mr. McCloskey: Yeah, what they did was -- there are numerous versions of the Metals and Controls safety manual that we're talking about here, revised in the '60s, revised in '68, and what they would do is they would copy a page of the health and safety manual into an NRC letter, a letter to the NRC saying this is what we were required to put in our safety manual as far as the frequency of surveys. We need to change those now. This is the justification. Then the NRC would permit them to change their frequency of surveys and --

Chair Beach: Okay.

Mr. McCloskey: -- would allow them to change their safety manual.

Chair Beach: Okay, so that basic --

Mr. McCloskey: I'll send those to you.

Chair Beach: Yeah, pardon me?

Mr. McCloskey: I will provide those to Bomber and he will get them to you.

Chair Beach: If they're in the report, I already have them. If there's nothing else that's not in the report, I'm okay with what we have, but, so this goes back to the HFIR operation and reducing for that operation.

It really, for maintenance and controls, it doesn't

really cover what they -- anyway, okay. Henry, do you --

Member Anderson: I couldn't find any. You've done a deeper dive than I was able to do. I just got frustrated in trying to read things that are illegible and things like that, so.

Chair Beach: Yeah.

Member Anderson: That's why I asked. It's easier to ask and then whenever -- I'm not saying you don't have it. I can't find it. So, if you have it, just send it along and we'll shorten the search.

Mr. Rutherford: Alright, so the next slide is just more of the quotes from the NRC inspections, and then I get into what actual data we do have, so comments on this slide?

Chair Beach: So, the actual data, again that last bullet -- oh, I'm not muted -- the survey data from 1968 to 69, so those are the samples that in the SRDB go back to all of those sheets and I know there's like 20 of them from '64 on through '69.

I could only find one, the last SRDB number, clearly it was '69, so that's the survey data you're talking about, is that correct?

Mr. Rutherford: That's correct, all of the SRDB references that are listed in the report.

Chair Beach: Yeah, some, okay, some of those are pretty hard to read.

Mr. Rutherford: Okay.

Chair Beach: And does the AEC come in on this slide or is it a different slide because you commented on the AEC report, that '63 to '71 time period, and then the 1967?

Mr. Rutherford: I don't remember commenting on that.

Chair Beach: There was a comment for this, for comment three, pages nine through 16, but then when I looked at that report, there was also some non-reporting issues that AEC -- that were documented in this AEC report about non-reporting. So, Metals and Controls didn't report some of their issues and they were written up for it, but --

Mr. Rutherford: I've seen that they had had some kind of spill in one of the reports and then that AEC wasn't contacted, but then ultimately they had no finding on it. I've seen that one.

Chair Beach: I don't know if that's the same one.

Mr. Rutherford: Alright.

Chair Beach: My notes are kind of brief. It just, it was a non-reporting issue that they were -- I guess my point in writing it down was you can find pretty much whatever you want in these reports if you look before or after the pages that you guys looked at.

And so the other samples that are mentioned in your report on page nine are the -- and it gets to the locker room, lunch room, maintenance shop, those reports. When I brought them up earlier, Rose said they were HFIR surveys, so do those count or not, because those --

Mr. Rutherford: Pat, correct me if I'm wrong. Those aren't HFIR surveys, are they? Those were surveys from the post-operations for the areas on Building 10. Correct me if I'm wrong.

Mr. McCloskey: There could be a room or two there that are within the HFIR footprint. I think we could tease out which ones were within HFIR's footprint and which ones were not.

Mr. Rutherford: Okay.

Mr. McCloskey: I'd have to go look at that.

Chair Beach: I only found one that was in 1968 and

that was the furnace area. All of the other ones were between '66 and '67 from what I could tell on those, and I looked at each one of them.

There were some inventory issues too on the furnace when it reported having inventory or survey data that weren't actually available, so.

Mr. Rutherford: Well, what we can provide the Work Group exactly are the samples that we used and the sample areas that were covered by, you know, the survey data that we used for our analysis.

Chair Beach: Again, it just complicates it. If this is a HFIR time period and it's not covered, then it, you know, it makes it hard to sort through, so, okay, that's all I have on that.

Mr. Rutherford: Okay, let's see, well, it's about 12 minutes until 1:00. I don't know when you want to stop.

Chair Beach: Yeah, I think we better --

Mr. Rutherford: Or 2:00, 12 minutes to 2:00.

Chair Beach: I think we better talk about tasking. I think, Dave, you mentioned tasking of something?

Member Kotelchuck: Well, I have, earlier this week in preparing for this meeting, I went back to Jim Neton's original, his original presentation in, what was it, October of 2017 or August, I think, of 2017, and there was something, a comment that bothered me.

First, if you want to go to his slides, it was slide 16 on the date 8/24/17 Board meeting, the second day of our Board meeting. It's slide 16, and he talked about, and I'm quoting him here, I'm just quoting the transcript, there's 448 claims that were submitted for dose reconstruction.

What's interesting to me is the number 314, which is dose reconstructions completed for energy employees who started their employment during the

period under evaluation, so 70 percent of the claims we have are affected by this SEC Petition, which is higher than I expected.

And then he goes on to say, well, it's a large site. I mean, I could read you the rest. I wanted to understand that, and if I went to slide 16, he quotes the numbers. He doesn't say, you know, it was more than I thought.

What I want to know is I'd like to task SC&A to get the information about how many people were, how many claimants were compensated during the first SEC during the operations period and how many people have filed claims during this second period?

And because if 70 -- if we gave an SEC and then 70 percent of the people who were claiming, and to make a claim means that you have cancer, 70 percent of the claims occurred during the period under consideration, the residual period, then it may be a sign that something is -- the exposures are more serious than we thought.

The answer, I don't know. All I would like to task is to get the information on claims during the previous SEC period, operations period, and the claims that we have now, and take a look at them and see if --

Chair Beach: Yeah, I think that's a NIOSH tasking, is that not correct, not an SC&A, LaVon?

Mr. Rutherford: NIOSH can certainly do that. We can --

Member Kotelchuck: Yeah, would you do that? I know it's data and it's probably been presented in later periods, but it is disturbing, although I'm not sure I'm clear about, based on what he said, that we're really talking about a total of 448 claims from in M&C.

Mr. Rutherford: I will make sure that we provide a detailed breakdown of the claims from the operational period, the claims that we have from

the residual period, the ones that break down the claims that were just from they only worked in the residual period.

Member Kotelchuck: That's right.

Mr. Rutherford: Yeah, okay.

Member Kotelchuck: I really appreciate that. Thank you.

Chair Beach: Okay --

Mr. Calhoun: This is Grady. Let me chime in one time on that.

Member Kotelchuck: Sure.

Mr. Calhoun: It's not -- I don't want to say wise. I don't know what you can glean that would be statistically significant from trying to relate cancers that were present or diagnosed when somebody worked at a site and funneling that into a decision on an SEC.

Member Kotelchuck: Well --

Mr. Calhoun: That really doesn't make sense. That's not part of our program at all, and given the limited number -- I mean, there's studies that have gone on at many of these nuclear facilities throughout the country with little or no indication that cancer risk was increased, and trying to do that on just a little subsample, I'm not sure that's a statistically valid approach to consider.

Member Kotelchuck: Well, let me say this: I am perfectly open. We're not doing epidemiology here and that's not our task, but I'm trying to deal with the fact that there is real question as to whether we are properly judging the level of exposure from the model that NIOSH is presenting.

And this may give some, if we have a very large number of claims, which is to say cancers, from people who started their employment during the

residual period, it may suggest that we're underestimating the exposure, and that is very loose, and I will also agree that this is not an epidemiological study. That's not our task. Our task is compensation, but our decision --

Mr. Calhoun: I don't think I'd even put that in the realm of something you'd look at. It's just not --

Chair Beach: I think it's --

Mr. Calhoun: It's not valid. It's just not.

Member Kotelchuck: Well, to say it's not valid, the numbers are the numbers. Now, I'm willing to absolutely consider the fact that in the end, it doesn't say anything. I'm not --

Chair Beach: And can I stop this going back and forth?

Member Kotelchuck: Sure, yes.

Chair Beach: NIOSH already said they would do it. We have about six minutes left and we have to end promptly at --

Member Kotelchuck: Okay.

Chair Beach: -- 2:00 for Rashaun. So, other tasking that needs to be done, anybody?

Member Anderson: How about the new model?

Chair Beach: The new, the January 21 paper? Yeah, I was going to -- I was hoping that we would get through that, but since we haven't, and now that we have NIOSH's models -- and I know they're using some of SC&A's. They added -- they've kind of outlined it.

I honestly think we do need to have SC&A look at that and maybe not give us their models, but just look at what's being done in this last paper and then give us a White Paper on that. Is that something we want to do now or after we have another Work

Group meeting and go through it all again? Which is more timely?

Mr. Rutherford: It would seem it would be more timely to have them do it now so at the next Work Group meeting, we can try to get through all of this.

Chair Beach: Okay.

Member Anderson: The Mound data is important for this site and --

Chair Beach: Yes, yes, I agree, and --

Member Anderson: -- it could also become important for other sites, so I think we need to get a sense early on is it appropriate for this site? And if it isn't, then how it will be for others, we don't know. So, I think if SC&A could get started on that --

Mr. Rutherford: Yeah.

Member Anderson: We hope we're going to get it before the April meeting, but I think --

Chair Beach: Yeah.

Member Anderson: -- we should take a look at that.

Mr. Rutherford: Okay.

Chair Beach: So, there's two parts to that. There's the White Paper that NIOSH put out on January 21, and then there's the additional support information for the Mound data, and we want it against the Board's criteria for surrogate data, correct?

Member Anderson: Yes.

Chair Beach: Even though it's -- oh, go ahead, Rose.

Ms. Gogliotti: So, just to clarify, you'd like us to look at the Mound data and see if it's applicable to this site based on the Board's surrogate data criteria?

Chair Beach: Yes.

Ms. Gogliotti: Also take a second look at all of the models that we've previously reviewed just in a new light?

Chair Beach: Yes.

Ms. Gogliotti: Okay.

Chair Beach: And I know you've reviewed them, but they've added and bolstered those up in some ways using some of your models, and so primarily I think they're the same, but, yeah, if you could do that, I think that would be helpful.

Ms. Gogliotti: Okay, and I will reach out to someone with NIOSH too because I know that we have had some trouble replicating some of the numbers, not all of them, but just to confirm that we know what assumptions are being used.

Chair Beach: And that's what we're looking for. We're looking for that technical support on those numbers.

Ms. Gogliotti: Okay, absolutely.

Mr. Barton: This is Bob. It may be appropriate to hold a technical call where we can ask specific questions where we are unsure of how they arrived at their numbers, and it might just help clarify things before we get to the next Work Group.

Chair Beach: And I would ask that the Board members be allowed to sit in on that, listen in if we do have a technical call, good idea.

Mr. Rutherford: Okay, and I think that's a great idea, Bob. I do want to say though that if we are going to try to schedule a meeting with every Board member being there and --

Chair Beach: Oh, no, no, make it available, LaVon, not try to schedule it.

Mr. Rutherford: Okay.

Chair Beach: If nobody's available, then nobody's available, but if we can be available -- just like with your interview with Tim, it would have been nice just to have been able to know it was happening and be able to listen in as we have on other interviews, not injecting, just listening.

Mr. Rutherford: Yeah, and I apologize for that. We should have asked you to participate.

Chair Beach: Yeah, and we won't hold you up. Don't think that that's the intention.

Mr. Rutherford: Okay.

Chair Beach: I just think we're all invested in this and would like to know where those numbers are coming from also, so.

Mr. Rutherford: You know, if it makes it better, we could set up a separate -- another additional interview to go back with Tim over with some of the Work Group members.

Dr. Taulbee: That's no problem.

Chair Beach: If we're going to do that, it might be nice to set up some interviews with personnel from the site, but that's, yeah, that might be a stretch.

Mr. Rutherford: Yeah.

Chair Beach: Is anybody interested in that interview or is it okay just to read the report? I think, Dave, you might have an answer on that.

Member Kotelchuck: No, I don't have an answer, but I would like to see more interviews, but I don't feel that we have discussed this sufficiently to know what we want to do the interviews for exactly.

Chair Beach: Okay.

Member Kotelchuck: Because we have a lot on the

record from the claimants, so I'm open to that, but I'm certainly not ready to request that right now.

Chair Beach: Yeah, I was mostly talking about LaVon just said that he could recreate the interview with Tim and asking you, I don't think that's necessary, but I was asking you because it was your issue.

Member Kotelchuck: Oh, I would, if I could be on that, sure, I'd love to. That, I misunderstood. Yes, certainly, I had real concerns about that and I'd love to sit in on it, but you folks decide when you need to meet and can meet, and I hope I can work it out to join you.

Mr. Rutherford: Well, recreating the interview with Tim would be specifically for you, Dr. Kotelchuck, so --

Member Kotelchuck: Okay.

Mr. Rutherford: -- we could definitely work out a time for that that --

Member Kotelchuck: Okay.

Mr. Rutherford: That way if you have additional questions and things you want to ask him, you can ask him.

Member Kotelchuck: Oh, that would be fine because really I have a number of questions.

Chair Beach: Okay, so wait a second. The problem with that might be that it should be recorded not in like a technical call, so I'm wondering if that wouldn't be better served in a Work Group setting to ask all of your questions.

Member Kotelchuck: That's what I had expected to do.

Chair Beach: Yeah, so that might not be a good idea.

Mr. Rutherford: I wasn't going to do the -- I was going to do that separate. The technical call is just to go over certain things with SC&A to make sure that SC&A's going to ask us, okay, how do we do this or that, or what data was used for this and that. Yeah, I agree that's not where we would make --

Member Kotelchuck: You're right about that and I wasn't --

Chair Beach: It might end up there.

Member Kotelchuck: -- really looking for another report. I want to discuss that report. I think --

Chair Beach: Okay.

Member Kotelchuck: -- that has much content in it and things we could discuss, should discuss.

Chair Beach: I think we should hold that then for the Work Group meeting --

Member Kotelchuck: Good, okay.

Chair Beach: -- and then, and have the technical call between NIOSH and SC&A on data points and such that we discussed earlier.

Member Kotelchuck: Very good.

Chair Beach: Alright, anything else?

Member Anderson: Not from me.

Chair Beach: Rashaun?

Dr. Roberts: No, so it sounds like there are a couple of meetings and things that need to be done in the interim before we have the next Work Group meeting.

So, I do think, you know, given that we have these interim activities, maybe we can talk about scheduling the next Work Group meeting via email and identify a reasonable time to reconvene.

Chair Beach: Yeah, and the tech calls are usually just between NIOSH and SC&A and then they just let us know when they do it, so you don't need to be -- I don't think you're involved in that.

Member Kotelchuck: I'd certainly like to --

Dr. Roberts: But the point is you wanted to have the technical call before the next Work Group meeting, correct?

Member Kotelchuck: That's right, yes.

Chair Beach: Yeah.

Dr. Roberts: Okay, so all of that needs to be -- my only point is that all of that needs to be factored into the timing of the scheduling of the next Work Group meeting.

(Simultaneous speaking.)

Dr. Roberts: But other than that, I'll certainly be in touch via email with the Work Group to try to put something together for a next meeting. Other than that, I don't have anything further.

Member Kotelchuck: I would love to have the meeting ASAP, the next Work Group meeting ASAP because we have an agenda and we're going through it, and so --

Chair Beach: How much time does SC&A think they need for --

Ms. Gogliotti: My review of the model should not take that long, but we'd have to get it through editing and publishing, which has a two-week minimum, but I don't know what kind of posting requirements we have either for the meeting.

Dr. Roberts: Right.

Mr. Barton: So, depending on what that shapes up as, it may require --

(Audio interference.)

Mr. Barton: -- new procedures that we're following, so that can add, again, significant time onto when we'd be ready with the White Paper that could be viewed by the public --

(Audio interference.)

Mr. Barton: I mean, we can almost always get --

(Audio interference.)

Mr. Barton: -- copies to the Work Group Members via --

(Audio interference.)

Mr. Barton: -- as long as it stays behind that --

(Audio interference.)

Mr. Barton: -- but the delay is really in getting it in a postable version so the public can see that work too, and that can be quite time consuming if we have to go to DOE because of certain references that are in there or what have you.

I know this previous report by NIOSH, I believe had to go through DOE as well, so I imagine any response from us or adding any new data or new --

(Audio interference.)

Mr. Barton: -- then it might have to go to DOE just based on our requirements.

Adjournment

Dr. Roberts: Right, so again, I think that it's probably more productive to just try to work out the timeline keeping in mind that, yes, we probably need to bring the Work Group together sooner rather than later, but obviously we need to factor in reviews and other things into that.

So, at any rate, if there isn't anything further, I

really do need to get off the call, so if it's okay, I'd like to go ahead and adjourn.

Chair Beach: Okay, I second that adjournment. Thank you, everyone.

Dr. Roberts: Thank you.

(Whereupon, the above-entitled matter went off the record at 2:05 p.m.)