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CENTERS FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL
SAFETY AND HEALTH

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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

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WORK GROUP ON URANIUM REFINING
ATOMIC WEAPONS EMPLOYERS

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MONDAY
AUGUST 3, 2015

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The Work Group convened telephonically at 10:00 a.m. Eastern Time, Henry Anderson Chairman, presiding.

PRESENT:

HENRY ANDERSON, Chairman
R. WILLIAM FIELD, Member
DAVID KOTELCHUCK, Member

ALSO PRESENT:

TED KATZ, Designated Federal Official
BOB BARTON, SC&A
RON BUCHANAN, SC&A
MARK FISHBURN, ORAU Team
ROSE GOGLIOTTI, SC&A
LARA HUGHES, DCAS
JOHN MAURO, SC&A
JIM NETON, DCAS
MUTTY SHARFI, ORAU Team
MATT SMITH, ORAU Team
JOHN STIVER, SC&A
DENNIS STRENGE, ORAU Team
TOM TOMES, DCAS
JOE ZLOTNICKI, SC&A

C O N T E N T S

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

10:06 a.m.

MR. KATZ: So welcome, everyone. This is the Advisory Board on Radiation and Worker Health. The Uranium Refining AWEs Work Group.

And we're meeting today to address Site Profile reviews on two sites. Well, three in a sense. But NUMEC, Apollo and Parks Township, PA, Pennsylvania that is. So that's the NUMEC site. And then W.R. Grace in Erwin, Tennessee.

And for people on the line, the agenda for the meeting, which is that simple, is on the NIOSH website. Together with documents related to these sites from their reviews.

So, if you go to the NIOSH website and you go to the Board section, today's -- you go to scheduled meetings and today's date, you'll be able to follow along with the documents that people will be discussing today.

So, and then the only other thing to note for people listening in, is to please put your phone on mute so we don't have any issues there.

Press *6 if you don't have a mute button, and *6 again to take your phone off of mute. But please, folks, mute your phones.

For roll call here, please speak to conflict of interest related to both the NUMEC site and W.R. Grace as we go through roll call. And let's start that with Board Members.

(Roll call)

MR. KATZ: Okay then. Henry, it's your meeting.

CHAIRMAN ANDERSON: Okay. Well, the first on the agenda, we -- it's been a while. But we have a NUMEC Technical Basis Document that we reviewed, that SC&A reviewed.

The SC&A issues were identified and sent to NIOSH. And the middle of May we received the NIOSH responses to the SC&A review.

And really what we want to go over today is those NIOSH responses and comments from SC&A as to -- as well as other Board Members, if we're satisfied with those NIOSH responses.

They're fairly comprehensive. I think

they've addressed most of the issues. But, I'd like to get the idea or the comments from SC&A, ask if they feel this is settled. And to put the comments together, what the -- if they're satisfied with these responses. Or whether we need to have -- if there's continuing events and we need to have further discussion.

So, SC&A, do you want to go over those -- your review and the NIOSH responses, please?

DR. MAURO: Hi everyone, it's John Mauro. Yes, we all had an -- we have our team on the phone.

Joyce Lipsztein is not here. She's unable to connect. I believe she's in Israel at this time. But, she did send me some written material.

We have all read through the responses, and we have discussed them. But, I guess the way we're looking at it right now, is certainly there are areas where we would like to have additional discussion on some of these items.

But also, I think that many of us felt

that we -- to some of the responses where there's considerable information, we would like a little more of an opportunity to review them.

And if it's acceptable to the Work Group, we could actually submit a formal response to each of the 24, in some places explaining, yes, we reviewed your proposed changes, for example -- there are many like that -- and we concur, or we may have some additional questions.

So, I can't say that we're in a position today to say yes or no, we agree or don't agree and what the issues are. I think we're more in a position to get clarification, identify places where we'd like to look a little more closely at some of the responses. And then get back to you folks formally. If that's acceptable to everyone.

MR. KATZ: Well, go ahead and proceed John. I mean, that's where we are, so.

DR. MAURO: Yes.

CHAIRMAN ANDERSON: I mean, there may be -- what I'd like to try to do, is can we narrow them down? I mean, like on Finding 1 there, now

we've got a tremendous increase in the amount of information provided.

Are there any of these that we can close out?

MR. MAURO: I think you pointed out the first one that I agree with.

MR. KATZ: Well, can we -- I mean, for the record, so we have a decent record here. Can we have a presentation of the finding and then the response? And then discussion of whether that's satisfactory?

So, I don't know, I think, John, if you want to present what the finding was in the first place. And then you can either summarize or NIOSH can address how they responded and so on.

DR. MAURO: I'd be happy to if that's the way to go. And if we'd like to begin, we might as well get started.

It would always be helpful, you know, what I could do is just reiterate our original concern.

MR. KATZ: Yes.

DR. MAURO: And quickly summarize our understanding of NIOSH's response. And it would be helpful though if NIOSH went a little bit into, you know, what went into, for example, we'll see the first one in a moment, putting together their response.

I think that it was a very thorough response as Andy pointed out. So, if you'd like to begin, I can open by first giving SC&A's perspective on Number One. Finding Number One.

CHAIRMAN ANDERSON: Okay. Let's do that.

DR. MAURO: Very good. When we reviewed the two, I guess, Site Profiles, we found that there seemed to be some conflict and confusion regarding start and end dates. It's a complex, two sites.

And we just wanted clarification where there seemed to be some contradiction regarding the start and end dates for the operations. And NIOSH came back in their response in the overview that I presume everyone has in front, with a very

detailed annotation of the different operation periods for different types of activities that took place, in this case it's Parks Township.

And I mean, in reviewing all of that material, it certainly seems to be a thorough response. And I have no comments and I didn't see anything there that was lacking.

We did -- our team did have a chance to look it over. And I did not get any feedback that they felt that there was any concerns here.

So, the way I see it right now, this is an issue -- and we can document this all in writing if that's, you know, because there will be other places where we're going to want to prepare some material and do some work.

But on this one, I feel as if we're okay. And we would recommend closing.

MEMBER KOTELCHUCK: This is Dave. Just, this was all the Parks Township. The Apollo, apparently in the early reports, that the data was similarly quite accurate. Yes?

DR. MAURO: The dates, yes. This has

to do with the operation dates. And the concern was Parks Township had that concern.

MEMBER KOTELCHUCK: Okay.

DR. MAURO: And this, as you can tell, a very thorough annotation of the -- operational dates of the different activities that took place in Parks. And it certainly satisfies our needs.

CHAIRMAN ANDERSON: And there were a few that were added there, the underlining, that's very helpful --

DR. MAURO: Yes.

CHAIRMAN ANDERSON: For NIOSH. So, it certainly was worth having them go back over and come up with these revisions. There aren't too many.

So, but I think -- any other Board Members have questions or comments? Bill?

MEMBER FIELD: No, nothing. No comments.

CHAIRMAN ANDERSON: I mean, so I -- my -- just to keep us moving along here and not, you know, create more work then we need, I looked it

over as well. And looked at the case documents.

And as long as these revisions actually get into the TBD, I would think we would -- I don't know if we close this or how we do it.

MR. KATZ: Yes, Andy, it's Ted. You can just go ahead and close it. I mean, it won't be reflected until they -- I mean, it's the same thing to put it in -- well, it's just a -- it's fine. I think you can close it. Set one up and they will.

MEMBER KOTELCHUCK: Right. Write approve/close.

MR. KATZ: And then SC&A doesn't need to do any more on that, right.

CHAIRMAN ANDERSON: Right. Okay, any -- and well, with that, I guess all the Board Members, do you approve closing out Number 1?

MEMBER KOTELCHUCK: Fine.

MEMBER FIELD: Fine, yes.

CHAIRMAN ANDERSON: So, let's go on to Finding Number 2 then John.

DR. MAURO: Okay. Yes, Finding Number 2, the issue had to do with uranium enrichment.

The original material provided in the Site Profile, there was not very much said regarding -- see, when you're reporting on uranium, in bioassay samples or air samples, you could do it either in, you know, milligrams per liter or you could do it in dpm per liter.

When you're dealing with the milligrams, it's important that you specify the enrichment because the conversion into picocuries or becquerels per liter, it depends very much on the level of enrichment.

And I believe there was some ambiguity or incompleteness in the description of the level of enrichment in U-235 in some of the samples. So we just simply asked, could you give us a little more information. That would be helpful.

And they did. NIOSH has some explanatory material here related to those samples where they used fluorometric analysis, which would give you milligrams. And it seems to me that they were, I guess their plans are to provide some, a new section to the Site Profile, as I understand

the response. A new section 5.2.2.4, which talks about this.

And it certainly looks very claimant-favorable because where the information is lacking, they're going to assume, and please clarify if I got this wrong, but it looks like you're prepared to assume a 93 percent enrichment is going to be a default when you don't have other information.

And as far as SC&A is concerned, that certainly is a claimant-favorable and appropriate approach, and fully responsive to our concerns.

CHAIRMAN ANDERSON: Any other questions or comments by NIOSH?

(No response)

CHAIRMAN ANDERSON: So the 5.2.2.4, that verbiage there is now going to be added in as I understand it.

DR. HUGHES: Yes, this is Lara. Yes, it would be added to the next iteration of the Technical Basis Document.

CHAIRMAN ANDERSON: And any other

comments or questions by the other Board Members?

MEMBER KOTELCHUCK: No. Approve. That's absolutely claimant-favorable. Generously claimant-favorable, and that's fine.

MEMBER FIELD: They look fine.

CHAIRMAN ANDERSON: Okay. It does seem to me that in the last paragraph there that they frequently used highly enriched certainly would support -- I mean it's claimant-favorable.

The question that I would have is, you know, is it a reasonable set of assumptions? I think that was the only thing to put in a little more quantitative if there is any information on why you would assume that 93 percent.

While that is claimant-favorable, it would be nice to have that it is firmly, you know, a good foundation information on it. With that I would say let's close this one out. I think because the statement is -- certainly covers the area. It will help in the dose reconstruction for individuals.

So, everyone is in agreement, we're

going to close out Finding Number 2 as well?

MEMBER FIELD: That sounds good.

MEMBER KOTELCHUCK: Yes.

CHAIRMAN ANDERSON: Okay. Finding Number 3.

DR. MAURO: Number 3 is the -- the concern that SC&A expressed has to do with performing dose reconstructions prior to 1959. And NIOSH correctly responded well.

Prior to 1960, internal doses cannot be reconstructed with sufficient accuracy. And therefore, the approach to be used, you know, as usual, if you have some data on a person, certainly it will be used.

But, other than that, the position is their internal exposures, the doses, you know, cannot be reconstructed. And so I guess, you know -- but the only confusion I had, and I could use a little help here from NIOSH is, in getting -- in preparing for this meeting, I went back to look at the position regarding the SEC for external exposure.

And I have to admit that on -- I could use a little clarification on what the SEC position is on that. I quite frankly, I didn't dig deep enough to just -- to tease out Parks from Apollo and your position regarding dose reconstruction for external exposure.

Can you help me out a little bit with that?

DR. HUGHES: This is Lara. Yes, the external for Parks at the point where it's not thoroughly evaluated during the SEC evaluation because the infeasibility was clearly driven by the internal infeasibility.

And since both sites shared the monitoring program, we already knew when we did the Apollo evaluation, that the same issues would translate to the Parks facility.

So, our position is that external can be done if monitoring data is available. Which in some cases there is, especially in the later years, in the 70s, there is a number of workers that had external data.

DR. MAURO: Okay. So, I am correct then. Because I'm looking over the -- our review. And I really, right in the beginning summarize the reasons for assigning an SEC.

And they were all -- except for neutron, like some neutron exposures, there was a uranium/beryllium statement. It appeared that the reason for the SEC was virtually entirely due to internal.

But, I may have missed that. So, you're saying that external -- inability to reconstruct external exposure at both facilities is also the reasons for the SEC?

Because I wasn't sure whether you were saying that, yes, we believe we can reconstruct or cannot reconstruct external exposures. And what I just heard you say is that your position is that you cannot.

And, but you will of course when you do have data. Would that be a correct statement?

DR. HUGHES: Yes. In a sense, the infeasibility is driven by the internal. And then

at this point, we're kind of left to decide what to do with the external.

In some cases we can do the external. But there's also cases where we can't do it.

DR. MAURO: I think that from that -- let me help clarify. You will see as we move through, we will have lots of questions. And we have had and we continue to want to discuss a number of questions regarding external/internal.

But, I think it's important that we all understand is within the context of granting SEC, that an SEC has been granted for both reasons: external and internal. So, our questions are going to be more along the line of when you do have data, and you do plan to reconstruct the doses for people when you can, which is, by the way, commendable.

That is, every effort clearly -- I want to make it clear to everyone, that this is one of the -- I believe this might have been one of the Site Profiles where NIOSH really did everything they possibly can to try to explain how we're going

to reconstruct doses when we think we can.

In other words, given that there's a broad SEC granted, nevertheless, a great deal of attention was given to how are we going to do though, internal and external exposures when we do have some data?

And so, it's within that context, which is an important context. And so, most of our comments and the responses have to be viewed within -- with a perspective that everything is being done on both -- all of us are trying our best to find when you do have data, what's the best approach to use.

And so, but I think that's to be commended. And that is really a concerted effort is being made here to try to find ways to -- to assign some dose, at least as much as you can, to these workers who are not covered by the SEC.

So, now that being the case, Finding 3, we agree with NIOSH that the -- it's not needed. In other words, we could withdraw or close out Finding 3, simply because it goes towards guidance

on how doses would be performed prior to '59.

But quite -- you know, and it appears to me, if I'm correct that what you're really saying here is that, you know, an SEC has been granted. And what the -- it's not that you -- the answer says, you know, well, since an SEC was granted, there's no need for us to address this question.

But, in reality is you do plan to reconstruct doses when you can. And really, it's the remaining, starting from 4 on, where you get into quite a bit of detail on how in fact you are going to reconstruct doses.

So, I guess Finding 3 is just -- and I don't know if anyone else wants to weigh in on this, is really not needed within the context with which we're reviewing and discussing this particular Site Profile.

DR. NETON: Yes, John, this is Jim. I just want to point out one thing related to the external feasibility, which seemed to be one of the issues you had with this.

The SEC Evaluation Report for NUMEC

Apollo was an 83.13. Which means that it was a petition that came in that we evaluated.

And in those type of evaluations, we do all modes of exposure and feasibility analysis. And you will see on page 18 of that report, it clearly says reconstruction is not feasible for both internal and external from this.

Now, when you get to the SEC evaluation for NUMEC, it was an 83.14. And those are treated somewhat differently in a sense that, you know, those are self-initiated by NIOSH. We find a litmus case and the SEC proceeds from there.

DR. MAURO: I'm sorry to interrupt Jim. When you said NUMEC, did you mean Apollo or did you mean NUMEC?

DR. NETON: In this 83.14 for Parks Township.

DR. MAURO: Parks. Okay. I see. You said -- yes. Okay. So for Parks it's a -- so Parks is a -- I'm sorry, I'll let you continue.

DR. NETON: An 83.14. So in those 83.14s, we don't normally evaluate, we just go as

far as it can to determine the infeasibility. In this case it was driven by internal.

DR. MAURO: Okay.

DR. NETON: But, if you look under Section 6.2 of the feasibility of estimated external exposures in the NUMEC Evaluation Report, it says that -- I'll just read the paragraph.

As mentioned in Section 5.2, NIOSH has external monitoring data starting in 1961. NIOSH intends to use any available external monitoring data that may reside in an individual's file and that can be interpreted using existing NIOSH dose reconstruction processes and procedures to support partial external dose reconstructions for claimants not qualifying for inclusion in the SEC.

In that paragraph, I think it's pretty clear that the external was also considered, that we would just use what was in the files to do dose reconstructions.

I think it's as Lara said, the origin of the external was from the same source.

DR. MAURO: Are the implications then

that no attempt is made to develop a coworker model? I mean, when all is said and done, once you move into SEC world -- and we may get into this a little bit more.

But, it was my understanding that -- well, that once we're in SEC world, you don't really try to develop a coworker model. You say, well listen, we'll do it when we can.

Is that the circumstances we're dealing with here?

DR. NETON: That's the situation here.

DR. MAURO: Okay. Very good. By the way, for every -- other people's benefit, there are -- there have been circumstances where -- I have seen coworker models attempted in SEC world.

But, it doesn't apply here. So, this is a subject for, I guess, a future discussion. Under what circumstances would you try to build the coworker model for performing certain doses, you know, when it, let's say for internal exposure?

Well, anyway --

MR. KATZ: This is Ted. John, this is

Ted. I think you're mistaken.

DR. MAURO: Go ahead.

MR. KATZ: Where there's an SEC granted for say internal, we don't do -- they do not do coworker models for that dose that is infeasible.

DR. MAURO: For that particular one.

MR. KATZ: So, it's always -- and they always do, though, they always use whatever records they have in the files.

DR. MAURO: Yes.

MR. KATZ: For people who actually, you know, have recorded dose and so on. But they -- this is just standard business really for any site.

DR. MAURO: Okay.

MR. KATZ: Yes.

DR. MAURO: Well, you're -- I may be jumping the gun. But, I think there is one place here where we found that there is considerable data that we're going to talk about.

Whether or not -- I don't know what to do with something like this where it looks like perhaps there is a possibility of a coworker model.

And I don't know what quite. You know, but we'll discuss that one.

MR. BARTON: Yes, John, this is Bob. Maybe while this is on the table right now --

DR. MAURO: Okay.

MR. BARTON: We could kind of get some clarification on this point. Because I guess I was not aware of or had never seen a case where the external dose feasibility wasn't necessarily explicitly evaluated but was a priori assumed to be infeasible. And that's the case with Parks.

DR. MAURO: Yes.

MR. BARTON: It was external was evaluated for Apollo. And then I guess, and thank you, Jim, for the clarification about 83.13 versus .14.

In the case of Parks, they evaluated the internal and found it infeasible. And then, it sort of stopped there. But maybe an unintended side effect of that is, it's quite poss -- we just don't know about the external because it was never actually evaluated.

But, we're sort of assuming that it's infeasible. Which pretty much takes any chance of a coworker model off of the table. And I guess I had never seen that before where -- and the justification is not a bad one necessarily that, listen, these sites were kind of sister sites. They were -- it was the same health and safety programs. So, one can expect that if at one site the external dosimetry was not good enough that it would be also not good enough at the other site.

But, the fact that it was never evaluated was rather strange to me. And I wasn't aware of any situations where that had necessarily had come up before.

DR. HUGHES: This is Lara. I may add that when we're reviewing health and safety files from Parks and Apollo, we can't actually -- often we can't even tell which site they're on.

It's basically we look at the entirety of the health and safety records for Parks and Apollo. These sites were operated by the same contractor.

So, I wouldn't go as far as saying they were not evaluated. We've already done the evaluation for the Apollo site, and we knew that the Parks site was faced with the same issues, internal and external because we did look at the data that was available at the time.

MR. BARTON: And maybe this is simply, I guess, maybe an administrative or paperwork thing. But, the actual recommendations from the Advisory Board and the official report from HHS only says internal for the Parks.

And I guess maybe that needs to be revised. And perhaps with the position statement that you just made. That, listen, the first time around we didn't explicitly say that no external, because I mean, I'm looking at the official HHS report and point tests is the last point.

It says NIOSH can reconstruct external dose, occupational medical dose and certain internal dose. That's for Parks.

So, as the paperwork I guess stands right now, external is still on the table even

though, you know, for good reasons, one could assume that it's probably infeasible to do.

But, I'm not sure that it's ever, I guess officially been documented that it was evaluated and found infeasible.

MEMBER KOTELCHUCK: Let -- Dave Kotelchuck. Let me ask. There may well be situations in which we grant an SEC and there are no partials that come up.

And implicit in what you're saying is that we should at the committee level, we should go ahead and plan for partials, and make the decision that needs to be made for the dose reconstruction on partials.

And it just seems to me adding a layer of work that may not be necessary. The Committee will always be there. And if partials come up, where issues come up that we haven't dealt with, then it seems to me we could talk about those.

But to do it for every single case, when in many cases, for particularly smaller shops, there won't be partials. It happens that there

won't be partials.

Then, I would say we shouldn't worry about having the partials done. Or how we would do the partials if there were partial claimants that we came upon.

MR. BARTON: I think I understand what -- I guess our main concern was that since the way the SEC is worded for Parks, it does not include an infeasibility necessarily for external that it still leaves open a possibility that you could create a coworker model for unwanted or external portions of --

DR. NETON: Well, I think if you look at 83.14s in general, you're going to see that's a fairly consistent pattern. I mean, you know, the SEC has been added and we end up, as the language usually says, doing what we can do.

DR. MAURO: You know, this is an interesting policy decision. And I think well, we may get to it again I guess later on when we get down to this issue.

But, we have an interesting

circumstance. And I'm not saying we're conclusionary here. I think this is -- we're in the mode of discussion right now.

But, Bob, you had looked pretty closely at the data that was available for Parks, I believe. And I understand the comment you just made, namely well, to just leave and say well, because Apollo, you know in one case is 83.13.

Now, when you get an 83.14, let me see if we get this right now. You get an 83.14, there's a -- and I guess what triggers that is an individual that you were not able to reconstruct the dose, and therefore it triggers an SEC for that particular scenario. Let's say it's an external dose.

Now, you're going to have to help me with this, and bear with me. But if it turns out that, you know, you look at that one individual and you can't do it.

But let's say you look at collectively, let's look at all the data for Parks. And say wait a minute. Hold the presses. There's a lot of data out there.

Is it possible we could build a coworker model, which would pick up this person who perhaps you're having a problem with. So, could you help me out a little bit with that? And in other words, when you conclude an 83.14, --

DR. NETON: John, there's a couple of flavors there. One is, as Ted mentioned earlier, it's say for instance we can't reconstruct thorium exposure.

Then it's all thorium exposures for everybody regardless of who they are unless they have specific monitoring data available. That's been consistent from the beginning of the process.

DR. MAURO: Yes. Yes.

DR. NETON: Now, if you're talking about, you know, it's an SEC based on thorium, and then can we reconstruct external, that's a different issue.

DR. MAURO: Yes.

DR. NETON: But, until now, we have done the best we can do for those types of exposures. But the Board has typically not

evaluated every single modality of exposure, you know, to see if it can be or cannot be reconstructed.

DR. MAURO: You know, it's interesting. I mean, with thorium from our experience, it's often -- well, it becomes clear that thorium was problematic.

And you know, when you find it for one person, there's a very good chance, you know, that you don't have data for everyone. The circumstances under which the exposures occurred.

So, I can see an 83.14 going -- triggering -- being triggered for the inability to reconstruct internal exposures in thorium.

I guess I would like a -- one of the things we'd like to talk about some more, and again, remember, I'm not being conclusionary here. Is that if you did an 83.14 for a person on external, let's say at Parks. But then we went ahead, and Bob, you can help me out a little bit here, just took a look at. Well, let's see, you know, what kind of data are there for external?

Because, you know, very often for external, unlike thorium, for external, you may have a considerable amount of data that will allow you to build a coworker model once with the internal thorium, we know that that doesn't happen, or certainly I haven't experienced it.

But, the external is a different beast. And I guess I just want to talk a little bit more about that. When you decided to -- in a funny sort of way what I'm saying is my only concern is this, when you trigger an SEC, let's say in this case external, certainly, you know, that's very favorable for the petitioners and the claimants.

But, at the same time, if there's any aspect to it that perhaps maybe you, you know, you can build a coworker model. And here's where things get interesting. You know, in effect what you're saying is well, reality is, maybe there's sufficient data out there to build a coworker model.

And that picks up all the people with the other cancers that are not covered. If you

think you can build a coworker model.

So, we're in a place right now that we're looking at the other data. And we're seeing a considerable amount of other data on external. And I guess we're -- that's one of the areas where we'd like to follow up a little further with you on, you know, whether or not, you know, there is such a deficit in external dosimetry data that that really can't be done and a coworker model can't be built. And I guess at this point in the process, we're in a funny position in saying that we'd like to take a little closer look at that.

CHAIRMAN ANDERSON: Yes, let's -- we're having a -- this is an interesting discussion on -- but I think I really want to get us back to, we're looking at the TBD here, the Site Profile.

And is there something that needs to be added or modified in the Site Profile to provide that guidance, or identifying what data is available and, you know, how that is then applied is somewhat of a different issue that's the use of the TBD.

So, the thing is for me is for the -- is this response where you say on how to perform the dose reconstruction. The Finding 3, in response to it, but does that mean there's going to be some modification within the TBD to provide greater detail?

Or, I mean, I agree with what the statement is, and that's how it's -- I think that's a discussion that's done that. How it is done and how it's applied.

But, the question to me is, is it sufficiently descriptive in the TBD so when somebody picks it up to start to do -- use it for dose reconstruction, they have the guidance written down that they need rather than just the -- this is how we've done it in other circumstances.

DR. MAURO: Yes, and I think that Finding 3 can be withdrawn or closed. And the reason I'm saying that is if the next series of findings that actually go toward this question. So, effect --

CHAIRMAN ANDERSON: Well, let's do

that then. Board Members have -- I mean, this is -- it's a start and I see where you're going on this, John. That now you get into each of the individual older areas.

MEMBER FIELD: Andy, this is Doug. I just question and I was curious about it. The methodology is going to be based on evaluating the plutonium that was processed and then reviewing existing claims.

I was just curious, is there a good cross-section of existing claims with plutonium bioassay?

CHAIRMAN ANDERSON: Anyone answer that?

DR. NETON: This is Jim. I don't know. I mean, I've not looked at that in detail. I'm sure -- what was your question related to though? I mean, is there a lot of people that would have plutonium bioassay?

MEMBER FIELD: Yes, in Number 3 here, it says that the methodology is going to affect the quantity of plutonium processed, evaluate all

monitored exposures as well as reviewing existing claims with plutonium bioassay.

I was just wondering how many claims, like there will be a cross-section of claims with plutonium bioassay? If this methodology is going to be based on that information.

DR. NETON: Where are you reading from, Bill? I'm confused. This is Finding 3?

MEMBER FIELD: Yes.

DR. NETON: I don't see our response saying we're evaluating existing plutonium bioassay.

MEMBER FIELD: Right. You don't see that?

DR. NETON: No, I'm on page four of our response.

MEMBER FIELD: Maybe I'm in the wrong place.

CHAIRMAN ANDERSON: You may be on the next one.

MEMBER FIELD: I probably am. Okay, well that's -- hold off on that one then.

DR. NETON: And I understand what John is getting at here. And you know, we probably would want to do the best we can for the claimants, given the bioassay data available.

I think this is a unique situation in the sense that even though these are physically different facilities -- and they're different facilities because they have physically different locations, they shared the same radiological monitoring program.

They had a single dosimetry program at NUMEC. There wasn't one for Parks and one for Apollo that I'm aware of, at least.

And so this is sort of a unique situation. And how much one could tease out the exposures at Parks versus Apollo given that, I think is -- it could be interesting to pursue.

I don't know if at the end of the day it's going to work out that we can do it. But, I understand what you're saying, John. And we'd certainly be interested to hear your thoughts on that.

But, again, this is a fairly unique situation where you've got a site with one single Site Profile, one single radiological program.

CHAIRMAN ANDERSON: And two sites, yes.

DR. NETON: And two sites.

CHAIRMAN ANDERSON: Two physical locations.

DR. NETON: Two physical locations with the same program, monitoring program. So, I'm interested to hear this cache of data that you've discovered that you feel is uniquely applicable to Parks Township.

DR. HUGHES: This is Lara. We're looking at a similar situation with the Santa Susana sites where, you know, we found it's very, very difficult to do a coworker model for one site and not the other.

At the Santa Susana site, it's another with a Health and Safety Program that's shared by four sites, I believe. So, we have found from that point that it's very difficult to do that.

DR. NETON: And so, if you in fact can't tell which workers were in which location and getting which exposures, then I would suggest that it's not doable.

But, again, we're open to hearing SC&A's --

CHAIRMAN ANDERSON: Yes, well let's close out Number 3 then. It seems to be the next four or five findings that really just elaborate on Number 3, so.

DR. MAURO: Yes.

CHAIRMAN ANDERSON: So, let's close out Number 3 if everyone agrees and move onto Number 4.

MEMBER KOTELCHUCK: Agreed.

CHAIRMAN ANDERSON: Okay.

DR. MAURO: Okay. Then I'll pick up on 4. Four has to do with the reconstruction of the internal dose of uranium. And when you look at that, there really are two sides to that coin.

One is during operations. And one is during the residual period. It is our

understanding it is NIOSH's position that you can reconstruct uranium intakes and doses after 1960 for operations. And of course also during the residual period.

And one -- we've sort of confounded two things here, and I want to tease them apart. When it comes to, let's just talk about the residual, because that's the easy one.

The residual period, one of our findings is -- and which is, you know, and I believe NIOSH agrees with this, is that you know, once you're into the residual period and you have general air sampling data, airborne concentrations of uranium, not breathing zones, but general. That's the number you should use during the residual period.

So, we're fine with that, and it looks like NIOSH is fine with that.

But this question goes to more than just the residual period. It actually goes toward the operational period post 1960.

Now, and please clarify if I get this

wrong, but it was my understanding that one of the things you're going to do is take advantage of breathing zone samples. I think you have bioassay and breathing zone samples.

And you take advantage of breathing zone samples and come up with intakes. And under those circumstances, we just simply raise the question regarding the uncertainty.

And we've been through this quite extensively if you remember on Fernald. And Davis and Strom addressed the question of uncertainty in reconstructing internal doses from daily weighted exposure from breathing zone.

And I believe your answer answers this, but I just wanted to make sure I understood it. So, when it comes to reconstructing internal exposure to uranium post 1960, during operations, you will be using, you know, the breathing zone DWAs where applicable.

And also a GSD of five to account for uncertainty. If that's the case, as far as I'm concerned, this issue has been resolved.

DR. HUGHES: Yes, I do believe that's correct.

CHAIRMAN ANDERSON: I think that's what it says, yes.

DR. MAURO: Well, that's what it says, but you know why? Because there's a cross-pollination between general air and the residual period. And it's not very clear that that distinction is being made here.

That's the only confusion. And I don't think the two different aspects, operation versus residual, has been separated.

And in one case you're using general air, residual period. In the other one, you're going to use breathing zone. And when you use breathing zone, and that would be during operation, you will use a GSD of five.

And that was my -- you know, that was what I interpreted from reading this. I just wanted to make sure that was clear. And then that was confirmed.

MR. STRENGE: This is Dennis Strenge.

I think that's not quite clear in our revised TBD. I need to take another look at that. And make sure that's spelled out specifically.

DR. MAURO: Yes, by the way, just for my -- again, my own information, for the post '60 period, are you heavily relying on bioassay or breathing zone? I'd have to go back and look again.

MR. STRENGE: Well, we use whatever we have.

DR. MAURO: You use what you have.

MR. STRENGE: And it's usually not much.

DR. MAURO: Yes. Okay. Okay. But this is one of the areas now, uranium intake post '60 that is one of the areas where you can reconstruct the exposures.

And it doesn't fall under this where you would build a coworker model if need be. In other words, you know, if you need -- if you don't have complete data, but you are claiming that you can reconstruct uranium intakes and exposures post

1960 and also during the residual period.

And this is the approach you plan to use. Is that a correct statement?

MR. STRENGE: Yes, I believe so.

DR. MAURO: That being the case, do you think there's a need, and now, you may have done this. But, I mean, for a coworker model. And we -- okay, we're going to do it.

And unlike when, you know, when you're doing -- when you're in SEC world you don't build a coworker model. But for this particular aspect of it I believe there might be a need for a coworker model.

And forgive me if you've already addressed this and it's already there in detail. But, is there a coworker model for post 1960 uranium when you don't have complete data for a particular worker for example?

DR. HUGHES: There is currently no coworker model that is planned.

DR. MAURO: Okay. Let's talk a little bit about that. Because I think this is an issue

that we're interested in. Given that uranium intakes can be -- you know, is not covered by the SEC post '60, that is -- this is something that you're going to do if you had to.

The implications are very often, do you need a coworker model? And the answer usually is, well, you really don't need a coworker model if you have a complete set of data for the workers that might have been exposed to uranium.

And when you don't, now -- so, the issue then becomes, is it NIOSH's position that you really don't need a coworker model here? Or something that you can maybe you should take a look at?

DR. HUGHES: Based on the Apollo Evaluation Reports where the -- it stated that uranium is feasible. There's also disclaimers that that's for the -- the reconstruction for uranium internally is feasible for the time periods where uranium bioassay data is available.

DR. MAURO: No, I understand that. Which means of course when you have the data

available, you could reconstruct the person's doses.

But, in many cases there could be workers that don't have data. We don't have bioassay data or breathing zone data and you're confronted with the circumstance of how are we going to assign doses to this worker?

And, you know, if it's your -- I'm not being, again, I'm not being conclusionary. I'm just saying that this is something we would want to look at.

If you don't have a coworker model for uranium, one of the things we will be doing, here's an area where, Ted, the reason I had to preface some of my remarks, that there are going to be certain areas where we're going to want to look a little more closely at.

And this is one of them. Namely, if it's NIOSH's position that they don't have a coworker model for uranium and they don't need one, we're going to want to look a little more closely at that.

DR. NETON: John, this is Jim again. And this is an area where I think we've had this discussion in the past.

DR. MAURO: Yes.

DR. NETON: Just because there are bioassay data doesn't mean there is sufficient data to develop a coworker model that's sufficiently accurate. I mean, you know, we have not gone to great lengths to establish coworker models when there's an SEC granted based on, say, thorium or plutonium.

A lot of it has to do with the amount of available data. I mean, there are some sites where, you know, let's take Fernald is probably not a good example because I'm conflicted there.

But there are sites that have an abundance of uranium monitoring data. And they happen to work with some thorium and we can't reconstruct for thorium.

And we have a huge database where you can develop, you know, geometric means and GSDs and we've done that in many instances. But in cases

where we don't have an abundance of monitoring data, we just have some workers, we don't know if it was the highest-exposed workers.

In other words, if we tried to use the criteria of the implementation, the draft implementation guide against those data, it would fail. And so, are those sufficiently accurate coworker models? And you know, --

DR. MAURO: You can see then why my concern is, because then that means that one of the reasons for the SEC is you can't reconstruct internal exposures post 1960 with sufficient accuracy. You wouldn't need -- and I would accept that.

That is, if you're position -- but right now it's my understanding that that's not one of the reasons why. Yet --

DR. NETON: Well, this gets into an issue we've discussed before. Does an SEC have to identify every single infeasibility? You know, you can't grant another SEC for uranium since there's already an SEC based on plutonium.

It's just not possible, I don't think.

DR. MAURO: Okay. Well, you're helping me out a little bit. Because you see, the way I was looking at it is, if you claim you can reconstruct internal exposures to uranium, the implications are that, you know, for every worker that had the potential to be exposed to uranium, you could reconstruct those exposures.

And which might very well mean that -- you see, I'm thinking about the guys --

DR. NETON: I don't know if that's necessarily true. I guess maybe that's the central issue here.

DR. MAURO: Yes. That is the central issue. See, I'm thinking about the guy who's not covered by the SEC. And you're going to have to do your best to reconstruct his exposures.

And one of his exposures may very well be post-1960, the inhalation of uranium. I mean, you're not going to do thorium. But, your position is that you think, you know, you can do uranium.

And so I -- say what you are you going

to -- you know, how are you going to assign the various I guess, ET-1, ET-2, prostate, skin and others? Some of which, perhaps uranium intake could be not an insignificant contribution.

DR. NETON: Well, if we're not, remember, these are non-presumptive cancers that we're talking about.

DR. MAURO: Right.

DR. NETON: And they're not -- you know, most of the metabolic cancers are covered in the SEC. So you're going to reconstruct doses with almost no dose for the numbers.

It doesn't mean you shouldn't reconstruct it, but the doses are going to be very low for those.

DR. MAURO: Yes. You may very well be correct. But is ET-1 and ET-2 also part of -- is not covered by SEC, right?

DR. NETON: Any of those pharyngeal?

DR. MAURO: Yes, I think that -- correct me if I'm wrong, I know prostate and skin are not covered by the SEC. But I seem to recall

ET-1 and ET-2.

DR. NETON: I think they are, but --

DR. MAURO: They are? Okay. Then --

DR. NETON: Let's not talk about that --

DR. MAURO: Well, that -- but that's not -- that's not really -- well, you're right.

MEMBER KOTELCHUCK: Dave Kotelchuck. Question for John Mauro. Do we have such cases for NUMEC now? I'm asking concretely, not abstractly.

Do we have such cases where we need to do a partial reconstruction? And we may well have. But I want to be sure this isn't --

MS. GOGLIOTTI: There's definitely cases that had to do a partial. Let me pull up the exact numbers here.

MEMBER KOTELCHUCK: Okay. So this is a substantial issue here? If we have some, that's --

DR. MAURO: The issue really goes to are there a number of cases where we have a worker who was exposed to uranium post-1960, but he was not -- his doses were not reconstructed because we

don't have any data for him, but we suspect that he might have been exposed. That's really the issue. If you have data then you're going to reconstruct it.

But, our position is that well, if there are a number of workers that perhaps did get exposed to uranium, but you're not going to reconstruct those doses post-1960 because you can't do thorium.

MEMBER KOTELCHUCK: I guess, so my point of view, if there are cases and we can do a reconstruction, then we should do it. We have to do it.

But, I'm just concerned that there are many situations in which, for small or moderate size facilities, we don't have such claims.

DR. MAURO: I understand what you're saying. If it's not relevant, it's not relevant. I mean, we don't have that circumstance.

And Rose, if you could help us out a little bit, that would be good. But, even if, you know, this is something that again, that we'd like to look at a little bit.

And I don't -- you know, I want to make sure that everyone sees that there's some wisdom to this, some virtue to try to look into this.

And if we do have a number of workers that could very well have been exposed to uranium, but you don't actually have any data that will allow you to reconstruct his doses, do you try to build a coworker model for him so that you can at least assign some doses to him for uranium post-1960?

And that's really the question.

MEMBER KOTELCHUCK: Yes.

DR. MAURO: And we would, you know, --

DR. NETON: John, I would submit that the coworker models you would reconstruct would have to meet the same standards as you would for a coworker model where SECs are not granted. And then that becomes problematic.

You get a lot of these sites with small amounts of data. And you can't really develop a coworker model.

DR. MAURO: Well, and then I would agree with you if that was one of the reasons why

they granted the SEC.

DR. NETON: I'm say that I don't think that every infeasibility needs to be identified in the SEC that way. I mean, what you're suggesting is every single nuance must be identified before the SEC Class can move forward.

And what we've been doing for a number of years now is identifying the major ones. Or identifying what we can and cannot do. And doing, as we always say, the best we can do given the data that are available for the other nuclides.

DR. MAURO: Well, let me postulate a circumstance while Rose is checking these. Let's say we have a large group of workers post -- in this case post-1960, where you suspect it could very well have had some uranium exposure, especially at a site like this.

But, you're not going through -- and he's not covered by the SEC because of the type of cancer, your position is that well because we granted an SEC based on thorium, there's no need to try to build a coworker model.

DR. NETON: That's not what I said.

DR. MAURO: Okay.

DR. NETON: I said the coworker model has to pass the same litmus test or criteria as we would for a non-SEC site.

DR. MAURO: Okay. Then I would --

DR. NETON: Then you would say, let's develop a coworker model --

DR. MAURO: Yes.

DR. NETON: Because we want to be nice people. It has to pass certain scientific tests.

DR. MAURO: Okay. Are you saying now that right now you don't believe you can construct a coworker model for the uranium workers, then?

DR. NETON: I'm not sure exactly what we're doing at Parks. I thought I heard some indication that we're taking these samples and applying a GSD of five. Is that not correct?

DR. MAURO: That would be the breathing zone. Right, yes. That would be a cowork -- I mean, it started --

DR. NETON: Help me out here, I thought

that's what we said we were doing?

MR. STRENGE: Well, that's if we have the breathing zone data for a particular individual.

DR. NETON: Exactly.

DR. MAURO: But what about just in general? I know in the past you've used breathing zone data to say well, you know, for a Class of workers we've applied this geometric mean, geometric standard deviation and it would be a coworker model.

And that -- so there is where I guess a little clarification --

DR. NETON: No, I think that the -- at the end of the day, I think what has to happen, John, is someone, maybe this is where we're missing.

We have to look at the data to determine whether or not coworker models are feasible that way.

DR. MAURO: Fair enough.

DR. NETON: Okay. I would agree with you.

DR. MAURO: That's all I'm saying.

DR. NETON: You can't just -- I agree that you can't just throw up your hands and say well, it's an SEC, we're not doing anything. But in many of these cases, and I think there's a number of them, there aren't sufficient data to develop coworker models.

DR. MAURO: And you see why if -- and I understand. Would it be acceptable to the Work Group for -- as part of SC&A's response to this set that we look into this a little bit?

MR. KATZ: No. This is Ted. No, this is -- I mean really, so I think you got clarity now about the situation that -- I mean, yes, if there's an element that's not addressed by the SEC evaluation and then there's a question raised by SC&A in this case about, well, would it be feasible to develop a coworker model for that element since it's not addressed in the SEC evaluation.

DR. MAURO: Yes.

MR. KATZ: I think it falls to NIOSH though to do that evaluation and determine whether

it's feasible or not. And not SC&A to try to do follow-up.

DR. MAURO: Well okay, then we -- but then do we agree, though, that this issue will be explored a little further?

MR. KATZ: Yes, no, I think it's a valid question. I think it's a valid question if there's some element that's not addressed by the SEC evaluation, then there are going to be partial dose reconstructions.

And if some element of the partial dose reconstruction potentially could be addressed by a coworker model, it's not ruled out until NIOSH looks at it and says it's feasible or it's not feasible.

And then of course SC&A -- you know, the Board can evaluate that and determine whether it agrees with NIOSH or not.

DR. MAURO: I'm right with you 100 percent. And I agree with that completely. It does not have to be SC&A that looks at this.

MR. KATZ: Yes.

DR. MAURO: Just as long as it's looked at.

CHAIRMAN ANDERSON: And it really isn't -- I mean, part of that -- I mean, we're on the TBD here. And the question is, does the Site Profile need to be modified to give that guidance or not?

MR. KATZ: Right.

DR. MAURO: You got it.

MR. KATZ: That's the question exactly right, Andy.

DR. MAURO: Exactly.

CHAIRMAN ANDERSON: To me, it's a much broader issue of those -- you know, how you do the dose reconstruction. But, you know, are there things missing in the TBD or --

MR. KATZ: Right.

CHAIRMAN ANDERSON: Is it sufficiently vague somewhere that it needs to be clarified? And kind of following on that, Ted. Is this review and the responses, does that become part of the TBD?

So, dose reconstructor would see the

responses here?

MR. KATZ: So, not quite. They would have to revise the TBD. But in this situation, they would have to address the question that SC&A has raised, what about, can a coworker model be developed for this period where it's not addressed by the SEC evaluation?

So, that would be a, you know, we'd that we'd need a response from NIOSH and then we'd need a -- the Work Group to consider it. And then depending on how that all works out, if NIOSH decides that in fact it is feasible based on the review, then they would have to revise the TBD.

But no, for a dose reconstruction they wouldn't refer to anything from the Board.

CHAIRMAN ANDERSON: Okay. So if it's none, kind of the question becomes, if we -- and I think the conclusion here was some assessment of, you know, coworker models or whatever, a response NIOSH may be needed.

MR. KATZ: Yes.

CHAIRMAN ANDERSON: Do we need to make

that another finding?

MR. KATZ: Yes, so I mean, I think SC&A has raised the issue. And now it's just for NIOSH to consider it and provide a response.

CHAIRMAN ANDERSON: Okay. Then we don't need to do -- I'm just trying to do the nuts and bolts of how do we move on here.

So, okay. So, I think that's an issue that we'll ask NIOSH to take a look at and respond back to us before we close out the whole TBD thing.

But, back to Finding 4, it sounds like, have we -- we're satisfied with the NIOSH response then? Or do we want to identify and put this on -- in abeyance until we hear back on the coworker model?

DR. MAURO: If I may offer SC&A's perspective on this, it seems that there's the possibility there might be a need for a coworker model. And that judgement has to be made for uranium post 1960.

And if there is -- and what does that coworker model look like, and the basis for it seems

to be something that needs to be addressed.

Now, we're going to get to Finding 5 in a minute, which is related to all this. And decide do you have a coworker model and the data and how do you use it to reconstruct intakes of uranium.

So, I think that it's not an item that -- in abeyance --

MR. KATZ: Yes, this is Ted. So, Andy, for an item that's not resolved in principle, you just keep that in fact as in progress.

CHAIRMAN ANDERSON: Okay. Well, Number 4 then is in progress.

MR. KATZ: Correct.

DR. MAURO: Good, thank you. That's what we were hoping to be the outcome of this.

CHAIRMAN ANDERSON: Okay. Moving right along to Number 5.

DR. MAURO: I'm sorry for going on.

CHAIRMAN ANDERSON: Oh, no, I mean, it's a -- it's a good discussion. And I don't want to lose, you know, we can talk about these things and then time goes by and then we come back and talk

about the same things.

We really kind of just want to be sure we're moving forward on them.

MEMBER KOTELCHUCK: So, we're waiting, we're not approving SC&A doing this.

CHAIRMAN ANDERSON: Right.

MEMBER KOTELCHUCK: We're waiting for a response by NIOSH to the concerns raised by SC&A.

CHAIRMAN ANDERSON: Right. Right.

MEMBER KOTELCHUCK: And then at that point, the committee will decide.

CHAIRMAN ANDERSON: Right.

MEMBER KOTELCHUCK: Okay. Working Group, yes.

DR. NETON: This is Jim. My concern is that SC&A's -- an issue does not seem to be captured in Number 4 to me.

DR. MAURO: Yes. You're right. That comes later.

DR. NETON: Yes. So maybe 4 -- Four is a different issue. I mean, we kind of morphed into a --

DR. MAURO: Yes, we did.

DR. NETON: And then what Finding 4 was really all about.

DR. MAURO: We did. We did. And but, you'll see, I believe it will come up again.

DR. NETON: Well, I understand that. But I don't want 4 to be held in progress if there's nothing to start --

DR. MAURO: I see what you're saying. Yes. It's almost like transfer. Make that -- we've done that before haven't we? Well 4 really is part and parcel to something a little later. I don't know what number it is.

So, but you know, as far as explicitly addressing 4, we are going to, you know, there's nothing about 4 right now that I see is unique for 4. It actually is part and parcel to something we're going to be talking about later.

Do you see what I'm getting at?

DR. NETON: No, I really don't see that. I just see 4 is talking about using a GSD of five on the breathing zone air samples.

DR. MAURO: Right. Yes.

DR. NETON: And so you're going to do this.

DR. MAURO: And you're going to do that. All right.

DR. NETON: This is Jim. I think that.

DR. MAURO: Okay. I give up. I give. I yield. You're right. You're right.

DR. NETON: I don't see the need.

DR. MAURO: Yes, we did morph into a different item.

MR. KATZ: All right, so you can close this one.

DR. MAURO: So you can close 4, yes. We'll get to this other issue later on. And then we'll --

CHAIRMAN ANDERSON: Okay.

DR. MAURO: Okay, good.

CHAIRMAN ANDERSON: Okay. Four is closed.

MEMBER KOTELCHUCK: Okay.

CHAIRMAN ANDERSON: We'll just assume

then the later discussion we've had here.

DR. MAURO: Yes.

CHAIRMAN ANDERSON: I mean, we got 16 more to go here.

DR. MAURO: Yes. Yes, let's move. Yes.

CHAIRMAN ANDERSON: Well, I mean not move. But I mean, some of those, this breaks it up into smaller parts about the same broader issue.

So, you know, we've got the concept of coworker model may be needed and NIOSH is going to look at that and where we're at as far as in progress. So, we'll come to those later.

So, let's look -- go to Number 5.

DR. MAURO: Number 5, again -- it goes toward again uranium intake. And it almost appears that this is a coworker model, I mean, that's what is unusual about all this.

And let me explain the issue. When we reviewed the Site Profile, it appeared that our understanding was that there were data on the, I believe, it's the airborne activity of uranium.

And there was a number of measurements, a fairly large number of measurements that were made. And NIOSH took -- I believe the lowest value of those measurements and the highest value of those measurements and multiplied them together.

And took the square root, which effectively is a definition of a geometric mean. And that's one way to come to a geometric mean when you have limited data. And you're trying to get the best you can.

And -- but it -- and so we were concerned that there were a couple of matters related to this. One is that well, there really is a lot of data out there, a considerable amount of data out there where you could -- you didn't have to just work with the two extremes. You could actually take the data and fit it. And then actually see what the distribution is.

And I'd like to hand the ball off to Rose Gogliotti who has looked a little closer at this in preparation for this meeting. And maybe could give a little richer explanation of our concerns.

Rose, could you take it from here?

MS. GOGLIOTTI: Yes, I can step in. To answer Dave's question real quick, it looks like there's at least 90 claims that were not compensated for this. So, there are quite a few partials that were done.

And going back in, for this NIOSH eventually developed a default air concentration to the fumes of breathing zone air concentration fumes when a claimant is not clear where they worked and they don't have breathing zone samples.

And initially our concern was that we weren't able to replicate their data. But, they were calculating mean a different way than we were calculating mean. So, we weren't ever going to get the same answer.

But, they provided some additional clarification. And we were able to match their numbers. And looking at the HASL studies in general, it looks to be that it's fairly well representative -- or very claimant-favorable even for most occupations.

But, I do have some concerns with it. When you look at the HASL studies, there's a clear indication that anyone who works in the ceramics lab and ceramics fabrication had just astronomically higher intakes then anyone who worked in another area of Apollo.

And that's our first concern. And when I look at the HASL data and tease out those values, the average for those two areas are significantly higher than the two 10 dpm per cubic meter.

We also have some concerns when looking at the SEC Evaluation Report, which indicates that there's breathing zone uranium samples for Apollo from '61 to '82. And the HASL studies really only cover two years of employment, which are the earliest two years.

So, we're not sure necessarily that the default model that was developed is representative of all time periods. Now I haven't been able to find the remaining breathing zone samples.

But we do have some concerns that they might not be representative of all time periods.

CHAIRMAN ANDERSON: Comments? Anyone else have something to add?

DR. MAURO: This is John. Just one more point. Isn't this a coworker model? We've been talking about coworker models but it seems to me that in spite of the fact that the position is there is no need for one. But this in effect is one.

That sort of, you know -- so I guess in a way what we're saying is, it appears that this Item Five is actually talking about a coworker model. And the discussion we're having is, is that coworker model sufficient to make sure we don't underestimate the doses of some of the workers.

And has all the data been used and used in the best way to capture things like the ceramic area where the exposures were clearly unusually high. And whether or not -- so, there's a lot of clarification that we need a little bit here.

One is, is this description that we're looking at here effectively a coworker model? So at all time periods post-1960 for uranium,

apparently, the data that we did look at was data primarily that represented the 1960s?

And also, within the time frame, within that data set, there appears to be certain locations that that broad data set really would underestimate the exposure for some workers that happened to be located in the ceramic area.

And so we're in a situation where we're saying, you know, when a worker does show up where you need -- you don't have data, so what's going to be done? Are we going to try to assign some intake for him for uranium using this approach?

So, which means that it is a coworker model. And second, do we agree that maybe there's some deficiencies in the strategy that's been described here. As Rose just explained there may be some problems with this -- these certain areas within the facility. I think it's called the ceramics area.

MR. STRENGE: This is Dennis. This whole analysis here was done specifically for the residual period just to get a starting point in air

concentrations.

DR. MAURO: Yes.

MS. GOGLIOTTI: But this is during operational periods but it seems like.

MR. STRENGE: I know, that's the data we used to get one -- to get a claimant-favorable estimate of the concentration at the end of the operating period.

MS. GOGLIOTTI: But the recommendation is to apply it during the operational period.

MR. STRENGE: Well, I guess that's something we and NIOSH need to consider.

DR. NETON: Yes, we need to look at this a little closer. I mean, I'm looking, there's a lot of bioassay data listed for uranium in urine. But a lot of that was CEP which we had discounted in numerous situations.

You know, I'd have to go back and look at this. I haven't looked at this in a while. But, I understand what you're saying, we have some HASL data in those years. Is it representative of all the years? Probably not.

Could it be used for some partials? Maybe. So, I guess we'll have to wait to -- defer until we can look at this a little closely.

DR. MAURO: To add a little -- to help out the situation a little bit, the '60s data that are available, appear to be -- and Rose is the one that explained this to me, it certainly appears to be in your high end time period.

So, if exactly we're somehow going to use the '60s data and apply it for the broader time period, I guess up to the -- into the 1980s, which is the -- it would certainly be claimant-favorable.

DR. NETON: But if you looked at the '60 data I think for uranium, they were processed by CEP I thought?

DR. MAURO: Uh-huh.

MS. GOGLIOTTI: This is the breathing varying data we're talking about.

MR. STRENGE: Yes, the CEP didn't start until 1976.

DR. NETON: Well, that's not what I saw here, but -- and we've got some lapel samplers from

'66 to '67.

Yes, well, we'll have to look at that. I mean, I don't know.

DR. MAURO: Yes. That's -- you know, that's the -- we're bringing these up because you know, we read this material, we get our impressions. We do a little homework.

And this is where we help clarify the issues. And so, what I'm hearing is this is another open item that we need to revisit a little later.

CHAIRMAN ANDERSON: Okay. Let's hold the -- any other comments from the Board Members? So it sounds like we're going to hold this one in abeyance.

MEMBER KOTELCHUCK: No.

MR. KATZ: In progress.

CHAIRMAN ANDERSON: In progress, that's what I mean, yes. And NIOSH will relook at it and expand on their findings, on the response I guess.

So to Number Six?

DR. MAURO: Okay. I think -- yes, Number Six has to do with, I believe when you're dealing with -- we're talking about reconstructing, I believe we've got plutonium intakes.

Now, plutonium is one of the radionuclides that you can't reconstruct. So, we're not talking about a coworker model or anything like that.

So we're talking about when you -- now somehow when you can reconstruct or you're going to try to reconstruct the internal doses from plutonium, some descriptive materials provided in the Site Profile on how you're going to do that.

And it turns out, when you do that, you have to make certain assumptions what the mix is. Whether it's a weapons grade, commercial grade.

Like I said, there's other grades of plutonium that come out of, I guess, the Hanford complex as being the type of plutonium now. So, the question goes toward all right, you know, which type of plutonium is going to be used when you do

reconstruct the doses?

And there's an answer here. And it looks like quite a comprehensive answer that you, you know, is satisfactory.

Now I can't speak to the technical substance of this in terms of -- but it certainly looks like a complete answer. And you know, one fact it's going to be done and why. And it certainly looks reasonable to me.

But, I have to admit that I'm not a person that could read this material and say yes, it looked really, you know -- all I could say is that what I'm reading here looks like it's a very comprehensive review of the issue. And NIOSH has described in substantial detail what they plan to do.

I don't know if there's anyone on the phone, and Ron, I can certainly look to you a little bit. Is there anything about here that we would want to look into further to convince ourselves, yes, this is it? You've answered the question? Or are we pretty satisfied with this?

DR. BUCHANAN: This is Ron Buchanan with SC&A.

DR. MAURO: And I don't want to put you on the spot Ron. You may not have had the chance to look clearly at this. I just -- I read it and I said my goodness, they certainly have given the information.

But, I wouldn't want to jump to the conclusion that it's SC&A's position that we can close this issue right now, because this may require a look at in greater detail by some of the folks that are, you know, especially familiar with this particular subject.

DR. BUCHANAN: No, I read over it. But I didn't go into the details of it. And so, you know, at this point I do not see any red flags.

But, I would not say that we can close this yet. This would require some further review to give an okay on this.

And so, you know, we haven't had this too long. So we need to look into more of the details of it before we could do that.

CHAIRMAN ANDERSON: So Board Members, any questions?

MEMBER KOTELCHUCK: Well, sounds like it's in progress.

MEMBER FIELD: Yes, another in progress.

CHAIRMAN ANDERSON: Yes, I -- it looked to me like it's quite a comprehensive response. NIOSH, any comments you have? Or at this point we're --

DR. NETON: It looks like it's definitely an SC&A action item.

CHAIRMAN ANDERSON: Yes. So, it's in progress. And what we're waiting for here is SC&A to read it and give us more than just we looked it over.

Okay. Next?

DR. MAURO: This is also the case of -- let me -- Finding 7 has to do with the MDAs for, I guess americium and plutonium.

And our -- in the Site Profile and in the response, NIOSH has addressed what they believe

to be reasonable, minimum detectable activities for americium and I believe it's also for plutonium.

And what I did do in preparation for this meeting is I asked Joyce Lipsztein, who's, you know, really an expert on the subject to take a look at this material. And does it, you know, is it responsive to our original concerns.

And she was hoping to be in the meeting but she couldn't because she couldn't connect in from Israel. But, she did send me an email summarizing her concerns.

And the bottom line is she still has some concerns. And the concerns go toward this, some of the MDAs, she's particularly mentioned americium, do not seem to be compatible with MDAs that she has reviewed herself for other sites under other circumstances.

And that the MDAs might be here too low. And the reason that's important is, if you don't reconstruct the doses to a worker where you do have data, and you have to go with one half the MDA as

your default value, because you know, you measured it, but you didn't see anything, you go with one half the MDA. Now, depending on what you pick as the MDA, that could be a substantially different dose. And Joyce felt that the MDAs in some cases, it might have been too high. And therefore, not claimant-favorable.

But again, we would like an opportunity to have a -- you know, look at this and have a -- Joyce did write something up, but it was relatively brief. It's about a page or so of material that she sent to me over the weekend.

And so, this was one I'd recommend that we leave in progress until we can actually put something together in writing on the reasons why we feel that perhaps the best MDAs have not been selected.

CHAIRMAN ANDERSON: So do you have any comments? At the end of the NIOSH response, talk about added guidance there for the MDAs are quite different than rather lower --

DR. MAURO: Yes. No, --

CHAIRMAN ANDERSON: I mean, it -- I mean we can hold this. But --

DR. MAURO: The reason I'm bringing this up is yes, NIOSH has provided us substantial additional information like the previous one. And in this case, unlike the previous one before that, you know, dealing with this -- these different mixes, we have had a chance to have one of our specialists, Joyce, look at it.

And she read through it. And she responded back. So, notwithstanding the fact that NIOSH is planning to revise the Site Profile and provide this additional information, Joyce had a chance to look at this information. And she still felt some concerns.

So, you know, the fact that -- it's good that we have a dialog going and NIOSH is revisiting this and has their perspective. We did have an opportunity to look at this. And we still think there's some problems here that we wanted to talk about.

DR. NETON: Yes, this is Jim. I'm

looking at the data here. And I think the americium numbers don't look too bad to me. But I would agree that the plutonium numbers look somewhat small since the time period of those in vivo MDAs were developed, I think the thinking of plutonium has evolved quite a bit over time given the, you know, development of the Livermore phantom and such to really get a more accurate detection limit.

I think -- I could see some room for increasing the plutonium MDAs. I just don't see what --

CHAIRMAN ANDERSON: Okay. Well, thank you. That's helpful. As it looked like you had adjusted them somewhat. But --

DR. NETON: And the plutonium -- the americium numbers don't look too bad to me.

CHAIRMAN ANDERSON: Yes, well that's what I -- that's -- most of John's comments was on the americium. And I looked at that.

DR. NETON: Yes, and the plutonium number though, you know, it's very chest wall

thickness dependent. Every five millimeters of chest wall reduces your signal by about 50 percent.

So if you get a real heavy guy like me, it's not going to be 35 nanocuries, it's going to be probably 100 nanocuries. You know, it needs to be looked at I think a little closer in light of the current development of MDAs and plutonium lung counting.

CHAIRMAN ANDERSON: Okay. That one is in progress. Seven.

MR. KATZ: So, can I just have clarification about that? Jim, from what you were saying, is this something NIOSH can relook at based on the quarrel comments you have? Or do you need more detail from SC&A?

DR. NETON: No, I think since Joyce has already gone to the trouble of putting together her thinking on this, I would rather look at what her opinion is before we proceed.

MR. KATZ: Okay. Good.

DR. MAURO: Yes Jim, I think --

DR. NETON: I think plus I pretty much

have the same wave length. I did my whole PhD dissertation on in vivo counting. So I'm pretty familiar with this literature here.

And Joyce has got the same data set I'm sure, so. I'd just like to see what she's summarized already before reinventing the wheel here I guess.

DR. MAURO: Yes, I'd be happy to vote. Joyce sent me a rather informal write up. It won't take very much on our part just for me to package that up and send it in.

DR. NETON: Okay. Let's do that.

MR. KATZ: Okay. Right, then John would you please copy the Work Group when you do that please, and me.

DR. MAURO: Absolutely. And whatever I -- yes, I'll be -- what I'm going to do is it sounds like there are a few action -- at the end of this meeting, it would be helpful if we could go through which ones we have the ball.

MR. KATZ: Yes.

DR. MAURO: And we'll owe you some

material. That will be helpful so we're all on the same page.

MR. KATZ: Okay. Thank you, John.

DR. MAURO: Yes. The next Item, I think the next Item, you know, we agree. What I'm getting at is that in effect, this is almost a subset of the previous one.

We agree that, you know, NIOSH will -- what we're really saying here is yes, NIOSH is going to reconstruct the doses, two internal doses from plutonium when the data are available.

And so, this is really a subset of the previous Item. And so I would say let's withdraw Finding 8. Because for all intensive purposes Finding 8, unless I misunderstand this and misread it, is a subset of the material that we just talked about, namely Joyce's concerns.

If that's -- if everyone agrees that that's a proper interpretation. That's how I read Eight. And now that we've discussed Joyce's material, I -- maybe we don't need Eight anymore.

CHAIRMAN ANDERSON: Other comments?

(No response)

CHAIRMAN ANDERSON: Well, we can close this then.

DR. MAURO: Yes. That's what I see. Unless anyone else sees something different.

CHAIRMAN ANDERSON: Okay.

DR. MAURO: Good. Let me go onto Finding 9. The point that was being made here by SC&A is that when we read the Site Profile, we felt that the plan was to use OTIB-54, which is mainly designed to reconstruct internal doses when you've got gross beta or gross gamma data on urine samples.

And we pointed out that -- and that there are many, many circumstances where even OTIB-54 agrees that you really can't use OTIB-54 once you start to separate the fuel and to digest it. Like after the digestion process.

And you can't really use it. And NIOSH's response is, I believe, very much consistent with our thinking. Namely, you know, they reinforce the fact that no, we're not going to use OTIB-54 when it's not appropriate.

And so, you know, I can't -- you know, there's nothing more to say as long as this really becomes a what happens here is as long as there is not -- as long as you don't have guidance in the Site Profile that is telling the dose reconstructor to do this, this and this, you know, without taking into consideration, hold the presses, don't do that under certain circumstances, you can't use OTIB-54.

And in effect, that's what's being said here. NIOSH is stating that they will modify the guidance to caution the dose reconstructor. You know, only use OTIB-54 when it's, you know, when it's applicable.

And I'm fine with that. So, as far as I'm concerned, Finding 9 can be closed.

CHAIRMAN ANDERSON: Board Members, any comments?

MEMBER KOTELCHUCK: No comment.

MEMBER FIELD: No.

CHAIRMAN ANDERSON: Well, for me the only issue is how are we going to ask to keep an

eye on this is when revision comes out to see that in fact. Hopefully we can get a red-lined strikeout version so we can see what changes were made.

Okay. So we'll close out Number Nine.

DR. MAURO: Moving onto Number Ten. Number Ten goes toward recycled uranium. When we reviewed the Site Profile, we were the beneficiaries, SC&A, of experience that was gained from our review of Fernald.

And one of the things that came out of Fernald was a reconsideration of the mix of, I believe and please correct me if I'm wrong, the mix of other radionuclides, transuranics and maybe some fission products, that might be associated with recycled uranium.

And you must take into consideration if you're going to reconstruct the person's dose for uranium, as you folks claim you will. And you have the, you know, making use of that data.

And what all we are point out here is that there is new -- the experience that we went

through regarding RU for Fernald should be factored in here.

And I guess we found at the time of our review that the approach being used for recycled uranium here predated the experience that -- what we've learned when we did our recycled uranium work on Fernald. I believe that's the case.

And as a result, maybe you wanted to take another look at the mix or the -- what the -- how you're going to approach recycled uranium.

CHAIRMAN ANDERSON: So --

DR. MAURO: And I think you had indicated you will be updating this. So there will be an update. So, maybe we're okay.

MR. STIVER: Hey John, this is Stiver. Let me just kind of add a little to that. Fernald remember, the main issue is that we had plutonium out of specifications that came out of the Paducah gaseous diffusion plant in 1980.

DR. MAURO: Uh-huh.

MR. STIVER: And so we really, most of the debate centered around, you know, how to

account for that. And I'm not sure that in this situation they handled that type of material.

DR. MAURO: Uh-huh.

MR. STIVER: So, you know, it may be worth looking at. But I don't think that we're going to be able to basically take, you know, the Fernald approach and fit it in.

DR. MAURO: Okay.

MR. STIVER: But, you know, it's certainly worth looking into the, you know, what -- you know, the source of the, you know, the very contraries and everything of the material processing and that.

You know, a lot of it just is, you know, we're not looking at these sites in isolation. I mean, there is a lot of cross-pollination going on I guess you could say for lack of a better word.

But yes, I think it would be worth look at. But, anyway, that's.

CHAIRMAN ANDERSON: Yes, but what does that mean, worth looking at? And what -- so what would be the action here?

MR. STIVER: I would say to kind of see if we could find what the inventories were, where they came from. The different batches had different constituent concentrations.

Most were actually quite low, less than 10 parts per billion. But, you know there were some that were quite elevated.

CHAIRMAN ANDERSON: Okay.

MR. KATZ: So is that -- is that an -- this is Ted. But does NIOSH have a response to this? Is this a matter for NIOSH to look further into?

DR. HUGHES: I don't have anything to add other then what's in the response.

CHAIRMAN ANDERSON: And the Fernald issue is still underway. But, I mean, that's when I -- you know, it's you've raised the issue. And I think NIOSH is aware of it.

I'm just not sure what --

DR. NETON: Yes, this is Jim. I don't know what more we could do.

CHAIRMAN ANDERSON: I don't know what

you would do. That's what I'm asking.

MR. STIVER: Yes.

DR. NETON: Right, we clearly said the source of uranium used at NUMEC is not known for many activities.

CHAIRMAN ANDERSON: Right.

DR. NETON: I don't know what benefit there would be in going back and trying to find additional sources we already know that we don't have. We do say we're using guidance in the Fernald Site Profile.

MR. STIVER: Mm-hmm.

DR. NETON: Or the activity for actions. Unless someone can point to a wrong.

MR. STIVER: Well, the activity for actions came from the DOE reports that came out about 2000. And so that would be the source that I would go look at to begin with.

So, you may have already done that, you know.

DR. NETON: Wait a minute. I'm sorry, I'm missing what you're talking -- you're saying

go look at the --

MR. STIVER: I'm saying maybe you guys have already looked at the DOE reports that came to basically the same conclusion that, you know, DOE used on Fernald. That it was all based on the DOE 2000 reports.

DR. NETON: Right. But what else would we use if we didn't use --

MR. STIVER: I wasn't referring to anything else out there. That was pretty comprehensive, so.

DR. NETON: That's my point. I mean, so what benefit would there be to look at it. I mean, we're using what we have.

MR. STIVER: Yes. I wasn't aware that you had already, you know, looked at it.

DR. MAURO: Yes, this could be on us on namely our response was, you know, based on, at the time, you know, when we made our review, the concern was, are you using the best available information? Are you? And what I'm hearing is that you did.

And you know, and John, you know, based

on your look at it, and thanks for, you know, helping us out here. To know that they did use the most recent information, then we're fine.

CHAIRMAN ANDERSON: Well, I mean, that was kind of my sense of when you say here might need to. Well, I think if we've talked about a looked at Item --

DR. MAURO: Yes.

CHAIRMAN ANDERSON: It probably doesn't.

DR. MAURO: Yes.

CHAIRMAN ANDERSON: So, my sense here would be I would suggest we close Item Ten.

DR. MAURO: Yes, premised on the discussion we just had, I would agree.

CHAIRMAN ANDERSON: Okay. Any other comments?

MEMBER KOTELCHUCK: Fine.

MR. STIVER: This is Stiver. I'm okay with that.

CHAIRMAN ANDERSON: Okay. Finding 11.

DR. MAURO: Okay, let's see. In this one apparently there was a -- there's a certain -- chest count data were compiled using the Helgeson, I guess is one of the chest count units, a piece of equipment that are used to do chest counts.

I'm presuming that's for looking for things like plutonium or americium. I have, you know, may need a little help here. And that this Helgeson I guess is a chest count unit, there were some problems apparently.

Oh yes, here it is, it's plutonium as I suspected. But NIOSH's response is that well, hold the presses. There really is no problem here. Because if anything, the -- this Helgeson protocol overestimated.

And not, you know, will tend to overestimate the intakes of plutonium. And so it's claimant-favorable. And as a result NIOSH does not plan to make any changes to the Site Profile related to this issue.

And I'm fine with that if there are other folks on the phone who are a lot more

familiar. As I said, you know, we all had a chance to sort of read through this, but not do any analysis.

But, I mean, I guess query folks like, you know, Ron Buchanan, who have a -- maybe a little more familiarity with this. And whether that, you know, that being the case, we can close it.

But I don't want -- again, Ron, I'm putting you on the spot. This matter of the Helgeson chest count protocol. Does that in fact result in an overestimate of the body burden?

Or is this something we better hold off a little bit and make -- and try to convince ourselves?

DR. BUCHANAN: This is Ron Buchanan with SC&A. I'm not familiar with this method, the Helgeson method. I would say, you know, if what -- if we can verify what NIOSH has stated here, then I have no problems with it.

If it increases the false positives, then it would be claimant-favorable and wouldn't be an issue for this site. So, you know, I see

nothing wrong with it.

We could look at the Pantex and see what they say about it if we wanted to verify that. But I had no other issues with it.

DR. MAURO: If it is acceptable to the Work Group, just give us a little bit of time to just sniff this out a bit. The folks that I guess are working Pantex but may not have all necessarily been brought in on this particular NUMEC issue.

And it may become -- we may be about to just get to this and put this to bed pretty quickly. But, I hate to shut it down without having that feedback.

MEMBER KOTELCHUCK: Okay. It's Dave. It sounds like another in progress, but really subject to SC&A review.

CHAIRMAN ANDERSON: Yes. We just need a response.

DR. MAURO: Yes.

MEMBER KOTELCHUCK: Okay.

CHAIRMAN ANDERSON: Short response from SC&A. Okay. Number 12.

DR. MAURO: Okay. You have to give me a minute. I did go through this. But there are a lot of them. I just have to refresh my memory. It takes me a moment.

The -- yes, this goes toward there's a sort of criticality foils I believe, which have absolutely no relevance to the dose reconstructions.

And unless anyone else feels, you know, my sense is that the answer is satisfactory, we could close it. I believe that that's our recommendation.

MR. ZLOTNICKI: John?

DR. MAURO: Yes?

MR. ZLOTNICKI: John, this is Joe Zlotnicki here I'm with SC&A.

DR. MAURO: Please?

MR. ZLOTNICKI: No, I think the answer that was provided by NIOSH addressed one of many points on criticality, which in and of itself may be fine. But there were a number of other issues.

For example, I should preface it by

saying that the external dosimetry sort of overall collection of badges and dosimeters that were used at these two sites is extraordinary. That's a very comprehensive list of just about every badge Landauer provided and many other types of badges from other vendors.

So, it's a very complex table if you will of all the badge types. But there was an error in the table which indicated that the in fact something wasn't being done when it was.

And that is, they were using CL-39 for neutron monitoring. Even though it says in the text and in the table 62, that it wasn't. And that was pointed out.

But for some reason that was not picked up in the response. It just said everything was reviewed and looked fine. So I was a bit puzzled by that.

So, anyway, I would say that the number of dosimeters that were used was very large and there seemed to be one or two errors in there as to how those dosimeters are the subcomponents.

And then the second part of that is how, you know, we have data, but what happened when one -- when you had multi-component badges, you often have a situation where two or three components are okay and one isn't. Or one of three -- only one of three has data.

And so clearly, there needs to be something in the profile that instructs the, you know, what to do in those fairly complex situations when someone was wearing these multi-component badges. What to do when you're doing a dose reconstruction.

So, those are the two parts of that beyond the criticality.

DR. MAURO: If it's acceptable to the Work Group, it sounds like that we need to articulate this in the response.

CHAIRMAN ANDERSON: NIOSH, anything further?

MEMBER KOTELCHUCK: Agreed.

CHAIRMAN ANDERSON: Okay.

DR. MAURO: By the way, I -- Joe

Zlotnicki was able to review as best he could, I asked him to take a look at this late last week. And he had a chance to read through the response.

And as you folks know, Joe specializes in the various types of dosimeters, extendable dosimetry. And he particularly looked at 12, 13, 14, let's see, 15.

And it would be -- and he sent me a report that I received over the weekend on his observations and concerns regarding those particular responses to our findings.

And Joe, if it's okay, would you help me out here a little bit here and perhaps take the lead on the next few Items that you had a chance to look at? I realize that you didn't spend too much time on it.

But you did have a chance to read it and get a sense of the adequacy of the response. Could you take over, if that's okay?

MR. ZLOTNICKI: Sure. So, on Number 13, the issue would be to starting for the last couple of hours whether or not there's data. But

of course having data is not the whole issue.

For example, if someone wore a dosimeter in a plastic pouch to protect it from dust and dirt and water, the dosimeter's response is going to be very different. Especially for low energy x-ray and for betas.

And it may or may not be calibrated in a pouch. Or workers may or may not have been wearing lead aprons, et cetera, et cetera. There's hundreds of situations like that where just having a dosimeter result isn't sufficient.

Another one would be, were you wearing a wrist badge or a badge on the tip of the finger in glove box work. And if you were wearing a wrist badge, was that representative of the highest dose of the extremity?

And I saw no information on any of these issues such as I just mentioned in the Site Profile. And so the question arises, is this information available? And if it isn't, what does that imply in terms of the ability to reconstruct doses?

Many other situations like were people

wearing the right badges? Or were they assigned the correct badge for the neutron field they were in for example, and so on.

Clearly, given the types of badges that were in use, one can make a statement that overall there seems to have been a real effort to provide the best dosimetry technology available. But I don't know that that applied down to the individual.

So, that was the -- with 13. I felt that the response from NIOSH, we just went around in circles and we did not sort of move forward on sort of acknowledging the issue or addressing the issue.

CHAIRMAN ANDERSON: NIOSH, any follow-on comments?

DR. NETON: Yes. Think this falls under the same category as we discussed for the uranium exposures is, can we really do a coworker model here? And I think a number of the reasons that were just enumerated may play into that analysis.

But yes, I think it's going to be in progress and we need to respond.

CHAIRMAN ANDERSON: Okay.

MR. ZLOTNICKI: Good. So Item 14, the -- where am I? I don't have the -- let me see if I can pull that up.

There was a detailed response for Finding 14 regarding the NTA and the neutron fields that people were in. And the suggestion of moving to a neutron to photon ratio methodology.

Like some of the other findings, I think that the response is thorough. I haven't had a chance to go through and see if it makes technical sense.

But it certainly looks like it's a very solid proposal. But I haven't gone in technically just to confirm that it is sufficient or not.

CHAIRMAN ANDERSON: So, do we want to put that in progress and we'll expect a response from SC&A confirming what you just said, that it's okay?

DR. MAURO: We -- the strategy to be

applied in a neutron to photon ratio, and I'm looking at these ratios. I guess, we'd just like an opportunity to look at that a little more closely.

And just to check. Because in the past neutron to photon ratios have always been a bit controversial. We've run into that in the past.

And I guess the best I can do right now is say that if you could give me just a little time to take a look at those ratios and where they come from and their rationale and justification, then we could get back to you. That would be our preference.

CHAIRMAN ANDERSON: Okay. So that's their responsibility to get back to us. Okay, 15.

MR. ZLOTNICKI: Okay. In Item 15, there were a couple of different issues. One of them was the fact that beta energies were listed for americium-241.

And so I had a sort of general question. The response was that they were listed because with the Auger electrons associated with americium-241

and then they were listed as greater then 15-KeV. Because those would be more likely to be an external problem.

So, I had several questions about that. Do we list beta energies for all alpha emitters because they'll all have Auger electrons? I hadn't seen that before. And that puzzled me.

And in addition, even on high energy Auger electron is way below the energy that could possibly penetrate the skin. And thus is only an internal problem, not an external one. So I was a little puzzled by the whole response.

There must be a miscommunication somewhere between SC&A and NIOSH. Or within NIOSH. I don't know quite where. But the whole thing was a little odd to me.

CHAIRMAN ANDERSON: So NIOSH, any clarifying?

DR. HUGHES: I would have to check and get back to you.

CHAIRMAN ANDERSON: We'd probably need to get something in writing from SC&A too. In this

sense there's also part of the fact that they did so much different measurements and monitoring. It's really pretty complex.

Board Members, do you have comments or?

MEMBER FIELD: This is Bill. No comment.

MEMBER KOTELCHUCK: No, no comment.

CHAIRMAN ANDERSON: I mean, so we'll put this in progress. But -- so, who is -- SC&A going to write something up for it, is that what it's going to be? A guide to us?

DR. MAURO: We'd be -- that was our expectation is that we would prepare something in writing for you. And for those where we don't have a -- where we still have some concerns and I think it's appropriate for us to communicate some of those concerns to you.

And really, there are two categories. For the Items that we don't close out, clearly some of these -- and then NIOSH agrees, yes, we better take a look at it.

This, but there are some places where

in order for NIOSH to take a look at it, they'd like to hear a little bit more about some of the, you know, some of the concerns we have.

So yes, that's why -- I was hoping that, you know, we would sort this out a little bit because it's getting complex. And we, you know, what is the information, when is the ball in SC&A's court?

It sounds like that we need to provide a little written material here that might help NIOSH respond.

CHAIRMAN ANDERSON: Yes.

MR. KATZ: Right.

CHAIRMAN ANDERSON: What I'm saying is we need to be sure that NIOSH understands what your issues are.

DR. MAURO: Yes.

CHAIRMAN ANDERSON: So, otherwise it's very hard to respond.

DR. MAURO: No, no, clearly. And in some cases we were able to, you know, everything was clear. But not necessarily in this case. And

there may be others like that.

Okay. In fact, maybe at the end of this meeting, SC&A could put together its understanding of its action items. Or Ted, if you could --

MR. KATZ: And I can run through them when we're done.

DR. MAURO: If you could run though, that would be great. That would really be helpful to me too. Thank you.

CHAIRMAN ANDERSON: Keep it running, that's why.

DR. MAURO: Yes. I'm over here.

CHAIRMAN ANDERSON: I'm in.

DR. MAURO: I started to take notes, but it got away from me. You know, I couldn't keep up.

CHAIRMAN ANDERSON: Okay. So Number 16 then?

DR. MAURO: Yes, 16 are we -- are we in -- Bob Barton, are we in your territory here?

MR. BARTON: Yes John, that's me. We're kind of circling back around on what we had

our first discussion on.

DR. MAURO: Yes, exactly. Good, good.

MR. BARTON: And I guess just to summarize I guess how my impression of it was that, again the finding was related to whether NIOSH would consider a coworker model for NUMEC.

And obviously as it stands now, Apollo is off the table. Because it's included as part of the SEC.

But it sounded like where we kind of left off earlier in this discussion was that when you have a component that's not explicitly covered by the SEC, then it in most cases it's probably going to be appropriate to evaluate whether a coworker model could potentially be developed.

Or at least, I suppose make an official statement as to why it's believed that no coworker model is possible and doesn't need to be evaluated. And I guess that was my impression.

I guess I'd ask NIOSH, you know, do they intend to look at the Parks site and see, make a determination whether a coworker model is first of

all feasible under the current guidelines that, you know, have been developing over the past year or two about how you could actually make a coworker model.

Or, is NIOSH's position that based on the fact that it was the same health and safety program, that their position is that no coworker model is then feasible because it had already been evaluated at Apollo. So it doesn't need to be evaluated here.

So I guess I'd ask NIOSH what their position is on it?

DR. NETON: Well, this is Jim. I think we're going to look at it. It may end up being the later of what you just stated. But we need to look at it a little closer and provide some more detailed rationale behind why we believe or do not believe that coworker models are relevant for external doses at Parks.

MR. BARTON: Okay. And if I might, because I hope I'm not the only one who was a little confused by this, but if I could ask a clarifying

question about the differences between 83.13 and 83.14. Because based on the earlier discussion, it seemed like there's a different, I guess, process that goes into each.

For the 83.13, which comes from the claimants, it seems like the major pathways are evaluated, as was the case at Apollo were both internal and external were evaluated and found to be infeasible.

But it seems like with the 83.14, it's a little bit different where you begin the evaluation and then as soon as you hit one infeasibility, it's sort of, you know, pencils down.

MR. KATZ: Well, Bob, this is Ted. The 83.14 arises because you have a claim and you determine that some part of the dose cannot be reconstructed generically, not just for that individual. But, so, it's a different genesis. And once you determine that, then really the whole process is to expediently deal with that to get a Class added so that other people in that worker's

same situation don't have to wait and can have their claims adjudicated as soon as possible.

So, that's why you don't go through the process of looking at all other exposures and their feasibility. Because you're trying to get that claimant, and claimants in the similar circumstances, their claims addressed as soon as possible.

MR. BARTON: Okay. And I certainly understand that. It's efficient and the best way to handle it. I guess my only concern was that it seems to -- if you're not going to evaluate the other pathways, essentially what you're saying is we're not going to evaluate the feasibility of creating a coworker model. I just want to make sure that that's not actually the case.

And that further down the line, such as this situation, where we say, well, maybe you should look at creating a coworker model, then that process institutes after that. But it doesn't necessarily need to happen right away so that you can administer the SEC quickly.

MR. KATZ: Right.

MR. BARTON: Okay. Alright, thank you. I just wanted to clarify that.

MR. KATZ: No, you're quite welcome.

CHAIRMAN ANDERSON: Okay. So, 16 is in progress and it's a NIOSH activity to look at the coworker issue again. Seventeen?

DR. MAURO: I think maybe I can pick it up again, unless, certainly, Joe, if there's anything that you'd like to weigh in on.

But, Joe, my sense is that the concern was, did NIOSH take appropriate consideration of external exposure from beta emitters associated with surface contamination?

In other words, during the residual periods, you got contamination on the floor, on the ground or whatever, surfaces, where a person is going to be exposed to both photon and beta. And the concern was, did they take into consideration beta?

And the answer is, as I understand from reading this answer, I believe that you will. I'm

not quite sure if you're saying you already have -- maybe I misunderstood it -- or that you will.

In either case, the approach for taking external data exposures into consideration is well established. It is clearly explained in TBD-6000. And there are tables, work-up tables for doing all that.

So, as far as I'm concerned, this -- and if NIOSH has included their protocol already in the write-up, you know, I have to say that, you know, maybe we missed it. Or are they claiming here that you will include it?

Either way, as far as I'm concerned, this issue could be closed. Or I guess maybe in abeyance if you need to include it. But I don't see anything about this that there's an in progress issue. It's just a matter of whether or not the appropriate material is currently contained in the Site Profile. And with that I'll sort of turn it over to you folks.

DR. HUGHES: This will be added to the TBD.

DR. MAURO: It will be added. Okay, very good. Then as far as I'm concerned, I guess that's an in abeyance. You know, we have no issues with that. Once it's inserted, it's done. But usually we put that in abeyance until it's actually done.

MR. ZLOTNICKI: Yeah, John, Joe Zlotnicki here. I agree with everything you said. That sounds fine. I'm going to have to drop off the phone now.

DR. MAURO: Okay. Joe, thanks for joining us and helping us out with this.

MR. ZLOTNICKI: Okay. The timing worked out perfectly. Thank you.

DR. MAURO: Great. Bye-bye.

CHAIRMAN ANDERSON: So, since it's going to be included, do we close it?

DR. MAURO: Well, that's your call. I mean, in some circumstances when we agree, we close. Or we leave it in abeyance until the actual change is made and then we close it.

MR. KATZ: So, I mean, if there's

uncertainty about how this would be carried out, then you'd keep it in abeyance, Andy. But if it's a clear path --

CHAIRMAN ANDERSON: No, I think it's clear what you're going to -- you know, it's a matter of it's going to get in.

MR. KATZ: Then you can just close it.

CHAIRMAN ANDERSON: I think we can close it, yeah.

DR. MAURO: Fine. Yeah, that's fine.

CHAIRMAN ANDERSON: Eighteen.

DR. MAURO: Okay. Oh, I think this is an issue that had to do with the use of breathing zone versus general air samples for the residual period. And all we were recommending here was that you go with general air samples since it makes more sense for the residual period than the breathing zone samples that were, I guess, collected during operations.

Which sort of relaxes the way in which it's done. But in our opinion, that's the way it should be done during the residual period.

And then, let's see, and I think you've come up with -- breathing zones, they are higher. I'm reading real quickly. Am I correct that you are going to be going to the general air samples in this case?

DR. NETON: Yes.

CHAIRMAN ANDERSON: That's what it says, yeah.

DR. MAURO: Yeah, yeah. Like I said, I went through it all, but there were so many they sort of get blurred. And that was my recollection. And that's fine. As far as I'm concerned, this issue is resolved.

MS. GOGLIOTTI: John?

DR. MAURO: Yeah? Oh, please help me out, Rose.

MS. GOGLIOTTI: My concern here was that the maximum median value that they're going to use, as they say, it's 222 dpm per cubic meter. Which is actually higher than the operational period from breathing zones, which seems strange that your starting point during the residual

periods would be greater.

DR. MAURO: Oh, okay. Well, if that's the case, then that's the case. Is there anything about shifting to the breathing zone, Rose, that you feel maybe -- or not breathing zones, I'm sorry, to the general air samples, that could be problematic?

MS. GOGLIOTTI: I agree, they should be using general air samples. But I do find it strange that you would use a higher value during residual periods and operational periods.

DR. MAURO: Do you folks -- that would be a first for me, I have to say, that your general air samples are found to be higher than, let's say, your breathing zone samples. Has anyone at NIOSH looked into that? Or do you find that surprising or not?

MR. STRENGE: This is Dennis. The 222 is the highest value found and it was for 1966 at the hammer mill. And to be claimant-favorable, we used the maximum.

MS. GOGLIOTTI: It's the median

maximum. Not the highest value.

MR. STRENGE: Right. Oh, yes, that's correct. I guess that's just the way the data came out. Now, maybe we should have used a median over all of the working facilities rather than just a median, the highest median.

MS. GOGLIOTTI: Well, these values just call into question the values from 25. And I realize these are general air sampling data versus breathing zone data. But you would expect the breathing zone data to be greater. Especially in the earlier time period.

DR. NETON: Yeah, this is Jim. I'm wondering, if we look closely at those GA samples, sometimes HASL had a habit of looking at process measurements and then calling them Gas. I'm just wondering if that might not have been a process sample. We might want to go back and look at these data just to make sure that we're comparing apples to apples.

DR. MAURO: Yeah.

DR. NETON: I've seen GA samples

listed. And if you look at it, it's a process sample. They just stuck it right in, close in to get a high value. I'm not saying it is, but it does look a little bit odd to me.

I think we ought to go back and just take a look at that and assure ourselves that we're using the appropriate samples.

CHAIRMAN ANDERSON: Well, you're following a prescribed method. It just gives you an odd result. So, yeah, I would agree, I think you ought to --

(Simultaneous speaking)

DR. NETON: -- much higher values for the GA than the breathing zone. We'll look it at. It shouldn't take long just to make sure.

CHAIRMAN ANDERSON: Other questions, comments? Board Members?

(No response)

CHAIRMAN ANDERSON: Okay. Finding 19.

DR. MAURO: Nineteen, this has to do with the residual period. And it's the classic

question of, you know, you've got residual radioactivity on surfaces and you want to do a resuspension factor to get the airborne dust loading from resuspension.

And our concern was that NIOSH had employed, I believe, in the original write-up, a resuspension factor of 10 to the minus six per meter. Which is fine when there was some cleanup that might have occurred prior to the residual period.

And NIOSH has agreed that, well, in the case, I believe, at one of the locations, it might have been Apollo. I forget which one was which. But in one case there was cleanup; in one case there wasn't. And NIOSH has agreed to revise the one that there was no cleanup to get the resuspension up to 10 to the minus five per meter. And we are completely satisfied that that's the appropriate approach.

CHAIRMAN ANDERSON: Other questions, comments?

(No response)

CHAIRMAN ANDERSON: So, 19 we can close.

DR. MAURO: SC&A agrees.

CHAIRMAN ANDERSON: Okay. As long as it gets into the final spot.

DR. MAURO: Yeah. Yeah.

CHAIRMAN ANDERSON: Okay, 20.

DR. MAURO: Okay. You know, right now, I'm at the point where I'd have to read this. Could I ask NIOSH to help me out a little bit here? And maybe you could get out in front on a couple of these. You know, this is quite a load. Could you give us a -- I find myself reading them again to try to catch up. And perhaps to help me out a little bit, could NIOSH take the front end of this and just help me and go through a little summary and I'll listen?

DR. HUGHES: Sure, I can.

DR. MAURO: Okay, thank you.

DR. HUGHES: The issue was regarding the radionuclides other than uranium during the residual period. The majority of the activity

that was processed was uranium.

I apologize, I'll have to go back through it again --

CHAIRMAN ANDERSON: Yeah, I mean, the response talks about thorium.

DR. HUGHES: Right. But there is a suggestion to add some of the additional values from the recent data captured to the Site Profile.

MEMBER KOTELCHUCK: Dave, maybe we're approaching a break time for lunch? And that would give people an opportunity to take a quick lookover and get back to us on this after lunch?

DR. MAURO: Thank you. That would be very helpful for me.

CHAIRMAN ANDERSON: So, the question is -- I mean, it's the same issue on 21, too. Ted, are we going to take lunch?

MR. KATZ: Well, Andy and Bill, is it okay? Can we take maybe a 30 or 45 minute break for lunch and then resume?

MEMBER FIELD: That sounds good.

DR. MAURO: Yeah, and this is John. I

will blitz through 20 through 24 during the break and just refresh my memory. Because I do need to do that. And maybe Lara, could you --

CHAIRMAN ANDERSON: We end at 21.

DR. MAURO: Oh, we end at 21? Where do we go to?

MR. KATZ: We have 20 and 21.

DR. MAURO: Oh, that's it? Geez, we're in the home stretch. Okay.

MR. KATZ: But then we have Grace after that.

DR. MAURO: That's wonderful. We'll get through these.

MR. KATZ: So, is 1:00 -- does that give everyone time enough for a lunch break?

MEMBER KOTELCHUCK: Sure.

CHAIRMAN ANDERSON: Okay.

MR. KATZ: If that's okay with everyone, then let's break and resume at 1:00.

DR. MAURO: Very good.

MR. KATZ: Thanks everyone.

(Whereupon, the above-entitled matter

went off the record at 12:12 p.m. and resumed at 1:05 p.m.)

MR. KATZ: So, this is the Uranium Refining AWEs Work Group. We're resuming after a lunch break. And we have folks from NIOSH and SC&A on the line?

DR. MAURO: Yes, John Mauro's still here.

DR. KATZ: Great.

DR. NETON: Jim Neton's here.

DR. KATZ: Okay.

DR. HUGHES: Lara Hughes is here.

MR. TOMES: And Tom Tomes.

DR. KATZ: Great. Okay. Well, forward, John.

DR. MAURO: Oh, do you want me to pick it up?

MR. KATZ: Sure.

DR. MAURO: Yes, Finding Number 20, this has to do with the residual period and with the fact that there's some surface contamination of uranium. But there's also other radionuclides,

specifically thorium, that was handled.

So, when we reviewed the Site Profile, we saw that explicit consideration was given to uranium, but not for thorium. However, in the response that was provided by NIOSH, they made a nice detailed description of what the expectation should be and what I believe to be revisions or additions that will be made to the TBD to explicitly include thorium as part of the resuspension material during the residual period.

Just want to confirm that. And I don't think that was there at the time of the original Site Profile. But am I correct that this is material that will be added?

DR. HUGHES: Yes, that would have to be added. The approach needs to be refined and there needs to be some guidance as to how it's applied. And then it needs to be added to the Site Profile.

DR. MAURO: Excellent. And as far as we're concerned, we recommend this issue be closed.

CHAIRMAN ANDERSON: Okay. Any other comments?

(No response)

CHAIRMAN ANDERSON: Well, as long as it gets in, then we should be okay. So, closed it is. Twenty-one?

DR. MAURO: Okay, 21 has to do with the need to, I guess, include a little bit more descriptive material on the isotopic mix of radionuclides. Namely, apparently there is a mix of americium, plutonium, of different isotopes that need to be dealt with during the residual period. And right now I think it just refers to total alpha in the Site Profile. But in the response it was made clear that the Site Profile will be amended to make reference to the mix.

And more importantly, when they're not quite sure what the mix is, they'll make use of the most limiting assumptions. And SC&A finds this to be a great response. And we're recommending closing this item.

CHAIRMAN ANDERSON: Other comments?

(No response)

CHAIRMAN ANDERSON: Okay. We're on a

roll. So, we're going to close 21.

DR. MAURO: Yes, that's our recommendation.

CHAIRMAN ANDERSON: Okay. And I would agree. And others? I don't hear any objection.

So, should we review where we're at here on the NUMEC site?

MR. KATZ: Yeah, I can run through the actions, if you'd like.

CHAIRMAN ANDERSON: Sure. Why don't you.

MR. KATZ: Okay. So, let's see, well, if I don't mention it, let me just skip the ones that are closed and get to the ones that have action items.

CHAIRMAN ANDERSON: Sounds good.

MR. KATZ: So, that starts with Finding 5. NIOSH was going to provide further response.

Finding 6, also in progress. SC&A owes a complete review, a written response.

Seven, SC&A again. Finding 11, SC&A. Finding 12, SC&A.

CHAIRMAN ANDERSON: What about seven?

MR. KATZ: No, Finding 7 was SC&A. I'm sorry if I don't say that.

CHAIRMAN ANDERSON: Okay.

MR. KATZ: So, 7, 11, 12, all SC&A. Thirteen is NIOSH. This is the coworker issue. It's really the same as whatever it looks like.

Fourteen, SC&A. Fifteen, SC&A send comments. Sixteen, NIOSH. Eighteen, NIOSH. And that's it.

CHAIRMAN ANDERSON: And what did you have for 11?

MR. KATZ: For 11, I had SC&A owes comments.

CHAIRMAN ANDERSON: And 12, the same?

MR. KATZ: Twelve was SC&A.

CHAIRMAN ANDERSON: Yes. Okay, then I got them all.

MR. KATZ: Okay.

CHAIRMAN ANDERSON: Good. I think we've got it.

MR. KATZ: Okay.

MEMBER KOTELCHUCK: Andy?

CHAIRMAN ANDERSON: Yes

MEMBER KOTELCHUCK: Just for a number of those that are SC&A, where it's just a matter of their going over and confirming that it was as was said by NIOSH and that they just wanted to double check it, I think we should just -- if SC&A agrees with NIOSH, I would like to just consider those closed.

And then the next time we meet, we really don't have to consider all ten of these. I leave that to your judgement. As a Committee Member to the Chair, I leave it to your judgement as to whether we think we need to go over all of these or whether some can be resolved essentially by email and your confirming that, "Fine, okay."

MR. KATZ: Okay, but, Dave, all of these that I just went through, were ones where NIOSH needed the SC&A write-up or SC&A really hadn't looked at it in detail.

MEMBER KOTELCHUCK: That's correct.

MR. KATZ: I think we need a written

response from SC&A on all of them.

MEMBER KOTELCHUCK: Oh, I don't doubt that. I was saying if the written response says that we agree with NIOSH after, and as several of them suspect that that would be the case, then we can just resolve that and the Chair can just say, "That's fine, we've resolved it."

MR. KATZ: I mean, that's fine. But we'll need to do that when we're in a meeting anyway. So, the Chair can run through those. But we'll need to address them in a meeting.

MEMBER KOTELCHUCK: Okay. Well, okay, if we do. I was just hoping to shorten things.

CHAIRMAN ANDERSON: It may be a very short call.

MR. KATZ: Yeah, I mean, for those items, I mean, you can just check them off as we go through, but we're going to need a call to finish all this up anyway.

MEMBER KOTELCHUCK: Okay. Alright.

CHAIRMAN ANDERSON: Sorry.

(Laughter)

MEMBER KOTELCHUCK: Yes. Well, we have 10 out of 21 to go over. That's why I was looking. I mean, it's a large number. But they're not really large.

MR. KATZ: Yes, but then we can go over it really quickly. It's all in order.

MEMBER KOTELCHUCK: Okay. Let's move on.

MR. KATZ: Okay.

CHAIRMAN ANDERSON: Okay. So, now we're going to go to W.R. Grace. Is that correct?

MEMBER KOTELCHUCK: Yes.

CHAIRMAN ANDERSON: Okay. So, what we have is an issues resolution matrix for W.R. Grace, findings, and NIOSH response. So, do we want to just go through these findings?

MR. KATZ: Yes, I think we should do it in the same fashion. Summarize what the finding was and then where each party stands on it.

CHAIRMAN ANDERSON: Yeah.

DR. BUCHANAN: Okay. This is Ron

Buchanan. I'll take lead on that, if you'd like, from SC&A.

MR. KATZ: Good. Thanks, Ron.

DR. BUCHANAN: Okay. Just a real quick background on this. The W.R. Grace facility handled uranium and plutonium for the AEC from '58 through '70. And there's a SEC for that period with a thorium bioassay, I think. And the first revision to the latest TBD was issued in September 2011.

We visited the site, SC&A did, in the fall of 2012. We sent out a review of the TBD in about January of 2013. And then NIOSH gave a response. We received it in July, the middle of July, of this year.

And as far as I know, there's been no other committee meetings on it. This is the first Work Group meeting that I'm aware of on the W.R. Grace Site Profile.

And we had a number of issues. And they weren't really large issues, but they're ones that need some discussion. And I will just briefly go

over the finding description and what I understand NIOSH's response is and our present verbal response.

Now, we've only received this about two weeks ago, so we haven't had a written response. So, what I'd like to do is to discuss anything with NIOSH that we need to discuss, and then write up a formal response and send it in to the Work Group. And in the meantime, a lot of these findings are going to be addressed by NIOSH getting further data from the site.

And so I think that a lot of that is still on hold until we get more of the data and we see how that affects the dose reconstruction and how it's going to appear in the TBD before we can really sign off on it. Most of the suggestions seem reasonable.

And so I'll start with Finding Number 1. And like any site, we looked at the accuracy and completeness of the bioassay records. And we did not find that that had been done. We did not find any red flags. But we did not find any V&V

being performed on it.

And so I understand NIOSH's response is that they are going to do further work on reviewing and analyzing the completeness of the claimant uranium bioassay data during the burial ground remediation. This site had work during '58 to '70. Then they buried a lot of this material. And then recently they've dug it up and shipped it off.

In the meantime, they're still processing uranium on a commercial basis. And so it mixes those two together. And so that's some of the issues with separating out what's AEC and what's commercial.

But the burial grounds was one place that they buried a lot of this AEC and commercial material. And now they've dug it up and shipped it out. And so still some questions on how the dose is being assigned.

And so we agree with NIOSH's suggested approach, and we'll be willing to review that data when they have it available.

Is there anything that NIOSH would like

to add to that?

MR. TOMES: No, that sounds correct to me.

DR. BUCHANAN: Okay. And that's going to include the plutonium data. And that's another issue we'll get to, is the plutonium usage.

Okay. Item Number 2 or Finding Number 2, this was the uranium bioassay data and intake during the SEC period, the '58 to '70. And about the only data available was a 1961 air sample, '58 and '61 air samples. And we would have liked to have seen more data. But this is the SEC period.

And so we reviewed this again and decided, you know, we could not find additional information. And then NIOSH agreed to reevaluate Table 315 for the different workers.

And we will review that when we -- when that becomes available. Is this correct, then, NIOSH?

MR. TOMES: Yes.

DR. BUCHANAN: Okay. Okay, this is Finding Number 3 then. And we see that this comes

to the use of plutonium.

And there are some questions, I believe the first revision of the TBD included plutonium as an AEC material. And then the revision that's currently out there Rev 2 disallowed the plutonium, and now it looks like they are going to reconsider that and have the plutonium back in. And this is one of our main issues with the whole TBD.

And this not only affects the operational period, but then the residual period. If it is AEC material, then that carries over to the residual period. If it wasn't, then it wouldn't.

And so, NIOSH is going to include this, a plutonium AEC material and look and see how it changes dose reconstruction and the TBD. And we agree with this. And will evaluate it when it becomes available.

Is that correct at NIOSH?

MR. TOMES: Yes. We're looking at how to reconstruct plutonium doses. We currently -- the TBD has specified just for the AWE period only,

if a worker has bioassay data for plutonium.

But now we're going to reevaluate it for the residual period as well.

DR. BUCHANAN: Okay. Thank you.

DR. NETON: Yes, this is Jim. This took quite some effort on our part to make the determination that that plutonium was AEC-derived.

Tom well knows, we went back and forth on this quite a bit. But ultimately ended up concluding that it was AEC-derived.

DR. BUCHANAN: Okay.

DR. NETON: That will be included in the residual period now.

DR. BUCHANAN: Okay. And then will there be a PER for that?

DR. NETON: Yes, I imagine so.

DR. BUCHANAN: Okay. Okay, then we'll look at that also when that becomes available.

So we can come to Item Number Four, Finding Number 4. And this is lack of neutron dose assignment. And most of these uranium processing facilities had a neutron dose assigned using some

N over P ratio or something.

TBD -- the present TBD had stated that there would be no attempt to assign neutron dose. And so we contend that that should be considered further.

And I understand NIOSH agrees that further investigation is necessary of a -- and use some sort of ratio value. And we agree with that approach. And we'll evaluate it when it comes available.

Is that correct, NIOSH?

MR. TOMES: Yes. We're going through that in our evaluation.

DR. BUCHANAN: Okay. Okay, the fifth one is probably the one that is the most unresolved one. The lack of dosimetry calibration.

Apparently, W.R. Grace just farmed their dosimetry out. And so they had Nuclear Chicago do it in the early years and had Landauer do it later.

And there is no real documentation on what the -- number one, what the field exposure

gamma ray energies were. And number two, on who processed them when and what the calibration was, and any feedback from the vendor.

And so NIOSH's response was that there wasn't much available, that one reference number, 23570, was the back sheet of a Landauer processing probably in the '70s, and they didn't plan on any additional efforts on this. And we would like -- I really don't know where the Work Group wants to go with this.

Most sites look at the photon energy. And I went back and looked at some uranium processing, plutonium processing sites like Weldon Spring, Fernald and some of the others, Hanford, even at Oak Ridge, the dosimetry methods and stuff.

And some of them say, okay, it's okay the way it is. And some of them say, well no, we missed some of the lower energy photons and so we'll increase it by 10 percent.

And so there seems to be a number of different ways it's been addressed. And what is correct for this facility, I'm not sure because of

the lack of information.

But, it seems that this subject has not been really approached in a technical basis to say, yes, the data recorded is correct. Or no, the data recorded at certain energy, at certain times, by certain processors perhaps needs an adjustment factor.

And so that's where we're at right now. We feel that it has not been satisfactorily resolved. NIOSH states they're not going to do anything else on it.

So, I guess really, I'll leave it to NIOSH if you want to make a comment at this point.

MR. TOMES: Yes, this is Tom. The W.R. Grace dosimetry records and claims generally have Landauer reports back to the late '50s. I'm not sure exactly which year.

But it's -- and I think the '58 maybe there's no real name on who it was that -- who was furnishing the data. But, I believe in '59, I may be off by a short period of time.

But approximately around that time

frame, all the results are on the Landauer forms that were -- that we have seen and from other sites, and from what I understand, we have not really been successful at getting that kind of detail from the Landauer processing. Jim may know more about this then I do.

DR. NETON: Tom, I can't add any more to that, really.

DR. BUCHANAN: Is there anyone there at the site now that could shed any, you know, any of the health physicists working there now, could shed any light on the history of it?

Was this asked when you were there? Or do you recall if they didn't know?

MR. TOMES: I don't -- I would have to go back and look at the records after that. I haven't looked at that from the -- from previous conversations.

So my memory doesn't really remember that. But, I do not believe there was any health physicists down there from the period that we would be concerned with, which would be the '58 through

1970 period.

For the residual period, we have default dose rates that we go by in the TBD. So we're talking about the 1958 through '70 period that would be in question.

And that is the SEC period. And I do not believe there was anyone down there who was working there at that time.

DR. NETON: Yes, this is Jim. My other concern here is that even if we understood the technology that was used and any correction factors that might have been applied, I'm not sure how we would be able to correlate that with the workers' actual exposures to the type of external radiation, you know, they encountered.

You know, you could argue that there may have been different levels of energy that they were exposed to, such as plutonium, americium versus higher-energy photons. But, I don't know how you would even begin to correct for those type of various exposure geometries in themselves.

DR. BUCHANAN: Well, I know some of the

sites that say, you know, if there's an --

DR. NETON: And those are sort of more single type sites where you might have, you know, a lot of uranium processing going on or you know, a single type thing.

But, this site had a number of different operations ongoing. Thorium, plutonium, uranium. I think it would be difficult to parse out those various exposure scenarios at this site.

DR. BUCHANAN: Well, sometimes they'll go -- if they don't know, they'll go ahead and adjust it by a certain factor if they suspect that it will.

DR. NETON: Well, right. But then you start getting into plutonium versus thorium and your order is a magnitude difference. And I'm not sure that would be appropriate here.

DR. BUCHANAN: Well, it just seemed like this site lacked information from that subject. And when that happens, I don't, you know, like I say, all we can identify it and the Work Group can, I guess, decide whether they want to, you know,

pursue it any further.

Or, it's going to be a small amount. Usually it's 10 percent or 25 at the most, would be adjustment to the lower-energy photons.

And you know, could make a difference in a few cases. But really don't know what cases or what periods or when it would actually affect the man.

CHAIRMAN ANDERSON: Other comments, questions on that?

MEMBER KOTELCHUCK: Dave. We now -- but if we do know -- we do know fairly accurately when Landauer was used and when the other company was used, yes?

MR. TOMES: This is Tom. I was looking at the TBD. The other company is listed in the TBD as through 1960 and Landauer started in 1961.

So that's -- I just now looked at that. I was --

MEMBER KOTELCHUCK: Yes.

MR. TOMES: And that's consistent with records I was looking at recently.

MEMBER KOTELCHUCK: Okay. And Landauer is generally, I mean, it is assumed that they're -- they do an accurate job. And we've used them in many other places. And there's not been any question about the reliability of their calibration. Is that not correct?

MR. TOMES: I have not heard any problems associated with that.

MEMBER KOTELCHUCK: Yes. I mean, I don't know what the other firm is. Or what, but --

DR. BUCHANAN: Well, they have it listed as Nuclear Chicago. And your statement is true of Landauer in later years. And if they matched the energy field.

Now, that was, you know, the question was there didn't seem to be any photon energy measurements done --

MEMBER KOTELCHUCK: Okay.

DR. BUCHANAN. Like at Mound. There was a lot of data there to compare.

MEMBER KOTELCHUCK: Aha.

DR. BUCHANAN: But, you know, being a contract facility, W.R. Grace was just producing the product. And using an outside vendor to do the dosimetry.

And apparently, you know, I almost have to assume from lack of documentation, that they sent their badges in. Landauer processed them and sent the data back.

And there's a void there that if there's any communication or any determination of what they recalibrated to that the Landauer facility matched the operations at W.R. Grace.

MEMBER KOTELCHUCK: One could, just to be claimant-favorable, simply put in a 1.25 factor on the Landauer results, and that's at the most the worst that the Landauer would be off, right?

DR. BUCHANAN: Well, yes, I'd say even Nuclear Chicago back then, you know would probably cover both of them. But I have no technical basis for that.

MEMBER KOTELCHUCK: Right. Okay.

DR. BUCHANAN: But that would require

a complete rework of all the claims.

DR. NETON: Yes, this is Jim. I'm reluctant to just sort of willy-nilly start adding 25 percent increases in doses for no real technical known basis.

I understand it would be claimant-favorable, but we'd have to have some indication that there was a technical disconnect between the result and the calibration.

MEMBER KOTELCHUCK: Right. And all, really, we know is we don't know.

DR. BUCHANAN: Right. There's just a void there.

MEMBER KOTELCHUCK: Yes. Yes. Well, that's a concern.

DR. NETON: And again, these are partial dose reconstructions. There's no --

MEMBER KOTELCHUCK: Right.

DR. NETON: What is this -- does this cover for thorium, Tom?

MR. TOMES: Yes, it did.

DR. NETON: Yes. And there would be

uranium actually, exposure.

DR. MAURO: So, Jim, this is John. Just a question of my own inquisitiveness here. If there's some question whether the -- you have an open window and a closed window.

And you're not quite sure how they calibrated the dosimeter. And you know that the facility was working with thorium and plutonium.

If it turns out it's thorium, I presume you're assuming that you have progeny with relatively strong gammas? And with the plutonium you have progeny -- or thorium itself with relatively weak photons where the open window would over-respond, depending on how it was calibrated.

DR. NETON: Right.

DR. MAURO: Am I on the right track here? You can see where I'm heading.

DR. NETON: You're on the right track. Depending on what badges were used, I'm not sure. I haven't looked at this myself in a long time.

But yes, if you had an open/closed and the lower energies, of course, the photoelectric

would predominate and over-respond.

DR. MAURO: Yes.

DR. NETON: But we don't really know. I guess that's the problem here.

DR. MAURO: Yes.

DR. NETON: Is we don't know. And I'm reluctant to just make up --

DR. MAURO: Yes.

DR. NETON: Some value here. Because again, you have a wide range between -- I don't know if they were working with plutonium in this time frame, Tom, were they? Or were they not?

MR. TOMES: Plutonium work started approximately 1967. But they would have been working with uranium, thorium and --

DR. NETON: If they were working with uranium --

MR. TOMES: I think it started in '67 approximately.

DR. NETON: My opinion is, you wouldn't be too far off. I mean, if it was -- uranium, 63, 93, 185. But most of the uranium gamma exposures

is actually due to the Bremsstrahlung, not to the protactinium-234, which is pretty high energy.

DR. MAURO: Yes. Yes.

DR. NETON: So, I don't know that there's a real disconnect here. I mean, if it's mostly uranium work, I think this is probably okay for uranium and thorium.

CHAIRMAN ANDERSON: Okay, so what do we do?

DR. NETON: Well this is Jim. I don't know what more we can do. I mean we --

CHAIRMAN ANDERSON: Well, that's what's my -- yes, I mean, it's an issue.

DR. NETON: It doesn't appear that the materials they were working with would warrant a very large correction factor. And given that there's no indication that they're incorrect, I would agree we just stay with what we have.

DR. MAURO: If -- this is John. If in fact, I mean, let's say we have some information on what -- the count they used for the calibration at the time for these things. Which theoretically

may or may not be available to us from Landauer now.

In all likelihood, they would have calibrated with a relatively strong gamma emitter unless they were explicitly requested to calibrate for some other energy distribution. They would go with either a cesium or a radium or a cobalt source.

I mean, just our -- I mean we worked with Landauer for so long, I mean, as one of the companies that have been providing us the data. We probably have a pretty good feel of, you know, what their standard practice was in those years. And let's say the 1960s.

And just this is -- so let's for a moment, if we were to assume that they used a relatively strong gamma emitter to calibrate their film badge, I don't know what they do about open-window.

Wouldn't the results, if you didn't do any correction, wouldn't you have an over-response? I mean, you would be predicting doses that were probably higher than they actually were.

DR. BUCHANAN: In some energy range.

DR. MAURO: Yes.

DR. BUCHANAN: And depending on the filters and where the filters are read.

DR. MAURO: Okay.

DR. BUCHANAN: It was changing in the '50s and the early '60s at the national labs. It was going from an open window. And then it's going to two elements. And then it's going to three elements.

And so, you know, none of that information is available, coupled with we don't know what Landauer was using for calibration. And we certainly don't know what Nuclear Chicago was using.

We can kind of back-extrapolate with Landauer, but with Nuclear Chicago we don't know.

I looked up -- tried to look up on the internet some information on them, and see if it said anything about their calibration procedures or anything, and there wasn't anything available.

So, you know, I agree it's during the

SEC period. It's into 20 percent, which we don't have a basis to base that change on.

But I did -- I did want to point it out to the Work Group. And you know, it's just an issue that comes up at most of the sites and some sites adjust it differently than others.

Some of them it's not an issue. Some of them over-respond enough that it compensates for it. There's those that don't make an adjustment. Some of them make adjustments.

But, in this case, we -- and usually they have some basis to it where -- especially at the national labs. Where they've done, you know, all these measurements. Whereas this commercial company didn't do that.

And so, you know, that kind of puts us in the position of not having anything documented one way or the other on it.

DR. NETON: Yes, this is Jim. I don't recall, I know we've made adjustments where we've had the sort of the DOE complex badges, which there are a few different varieties out there.

But I don't recall, and I could be wrong, but I don't recall, especially at AWEs, adjusting the Landauer badge results based on any technical parameters that we have. I just don't think we've done that.

DR. BUCHANAN: In AWEs?

DR. NETON: Yes, AWEs are typically the ones that had a lot -- if they had monitoring, they would have been an outside vendor, not in-house. And where the AWEs are, I don't recall adjusting. Particularly they're uranium type facilities.

DR. BUCHANAN: Weldon Spring, they --

DR. NETON: Well, that's not an AWE.

DR. BUCHANAN: Yes. But they processed uranium there, and they added 10 percent.

DR. NETON: Right. But they had their own in-house badge I'm sure.

DR. BUCHANAN: I'd have to go back and look.

DR. NETON: Yes. I mean, any DOE-type facility that has -- that use what I call the DOE badge. I mean they were the ones that had the

multi-elements and such, I can see adjustments for. But, Landauer, since we don't know anything about their calibration methods and such, again, I don't remember doing that correction.

So, if we did start adjusting Landauer, we'd be a little inconsistent with what we've done in the past, is what I'm saying.

DR. MAURO: If I could -- this is John. If I could help a little. Since we're dealing with an SEC and what we're really saying is NIOSH is trying to do the best they can to at least assign some dose. But, in doing that, and this is a lot like we talked about earlier, you know, when we talked about NUMEC. You know, what do you do when you're not quite sure.

But within the context that you're doing the best you can to assign the dose. You know, to me that already is an effort that, you know, you are trying to give somebody some dose that's not covered by the SEC.

If we really can't get some information on the standard practice for Landauer let's say,

and then I guess we're talking the 1960 time frame, then NIOSH has done everything, you know, in my opinion, reasonable to try to assign some dose, external dose, given the information they have.

But, if it is possible to find out what standard practice was for Landauer in processing commercial film badges, that would be helpful to show that -- a degree of due diligence. I know that, you know, whenever we're in a circumstance like I go to Joe Zlotnicki who was the vice president of Landauer for 25 years.

And very often he goes back, gives the current vice president a call and says listen, could you help us out a little bit? And let us know what the standard practice was back then.

And often, they do have some answers. But, is this something that's worth doing now, or is it overkill? I'm not sure.

But, in the past, we did take advantage of our relationship with Joe Zlotnicki.

DR. BUCHANAN: The thing is I'd be more concerned with Nuclear Chicago.

DR. MAURO: Oh.

DR. BUCHANAN: From '57 to '60.

DR. MAURO: Oh, before then, I see.

DR. BUCHANAN: Yes.

DR. MAURO: Okay.

DR. BUCHANAN: Yes, that would be a good suggestion, you know, if we thought it was worth the effort to go back to '61 with Landauer. However, since there's no measurements made in the facility, we'd have to kind of say, well, guess at what the uranium, you know, and plutonium and thorium gamma ray energies were in the field since there wasn't any made.

And so, you know, that'd be kind of half of the puzzle.

DR. NETON: And my other thought here is, I wonder how large these doses are? I mean, given that it was uranium, which is a fairly low gamma rate, you know, low-dose-rate material. The thorium I guess could have been high. But I don't know if they processed that much.

Tom, do you have a feel for what the

magnitude of these doses are that we're assigning at --

MR. TOMES: Well, I just happen to have one open on my computer looking at it while we were talking about the records. This particular individual here, he had in 1968, he had quarterly results that ranged from 316 millirem to 130 millirem.

DR. NETON: Yes.

MR. TOMES: And I know there's numbers a lot lower than that. I don't know if there's many much higher.

DR. NETON: I was going to say, my gut feeling here is that these doses are not really that large. Or shouldn't be that large given the source term I'm thinking that they worked with from an external exposure perspective.

So making 10 percent adjustments on a pretty small dose with no technical basis doesn't seem to be warranted, in my opinion.

DR. BUCHANAN: Well, I think that SC&A, you know, has no heartburn with not making an

adjustment. We just wanted to point it out to the Work Group that there seemed to be a void there.

And nothing to really base any -- leaving it as it is or changing it.

MEMBER KOTELCHUCK: Well, why don't we get the -- Dave. Why don't we get the information from Mr. Zlotnicki if it's available, and it can be just checked by folks at SC&A, to just find out.

Well, it might be helpful.

DR. MAURO: Yes. Well, you know what it just is, John. It's just a matter of getting it on the record that we did everything reasonable to try to say something about this.

MEMBER KOTELCHUCK: Yes.

DR. MAURO: And I think a call into Joe. He may get back and say no, he's been through this before. And we really can't help you. And that's the end of it.

MEMBER KOTELCHUCK: Yes.

DR. MAURO: And if we get something well, then we deal with it then. But, I know that's it good to try to cover these things the best you

can.

MEMBER KOTELCHUCK: I agree. I think that would be a good idea.

DR. MAURO: I'll email Joe right now, right after we break. And see if he can help us out a little bit. It's not going to be a big deal.

And he's done this before and he knows the folks real well. You know, he could call up the President of Landauer and he'll get back to him right away.

MEMBER KOTELCHUCK: Good.

MEMBER FIELD: You know this is -- this is Bill. I can tell you it would be worthwhile too, to look for some of the folks that had pretty consistent monitoring over the periods where you had both vendors just to see if there's any discernible differences.

A single process that stayed the same between the two vendors, for instance a big increase or a big decrease in the vendor's over.

DR. NETON: Yes, this is Jim. Well, we could do that. But then you know, if you do see

a difference, you don't know when the source term changed. If you don't see a difference --

MEMBER FIELD: Right.

DR. NETON: But, I'm not sure what it would really accomplish.

MEMBER FIELD: Well, I mean, I'm talking about, you're saying the doses are probably low anyway. But, it would be at least something to look at.

You may not be able to explain it or it could be that process has changed. But, you could also look at it for when Landauer came onboard, was that -- how much -- how often was there a change? Was it pretty consistent exposures for workers that were monitored the whole period, or was there variation, you know, month to month even within those workers?

DR. NETON: Yes.

MEMBER FIELD: But I'm just speculating on some ends.

DR. MAURO: You're looking for a weight of evidence, you know, that you --

MEMBER FIELD: Right.

DR. MAURO: You know, you add it all together and you say well, you know, everything is telling us there's really no need to make an answer.

MEMBER FIELD: Right.

DR. MAURO: Yes. I agree.

CHAIRMAN ANDERSON: Okay, so where do we stand on this one?

DR. NETON: Well, it seems to me that SC&A is going to get with Zlotnicki and try to get some idea of what kind of calibrations Landauer used. And we're going to look at any differences in doses over time between the two vendors.

CHAIRMAN ANDERSON: Oh.

MEMBER KOTELCHUCK: And it sounds as if -- this is Dave. It sounds as if we're likely not to make a correction. But that we will pursue every avenue and get it on the record to assure that we've done more than due diligence.

MR. TOMES: This is Tom. I'm looking at these records, comparing them. You don't expect a large study. I was thinking a -- just a

small number of claims that have data. Does that sound reasonable?

MEMBER KOTELCHUCK: Yes, to me.

DR. NETON: I would -- I think so.

DR. MAURO: Would you actually follow one person? I mean, or a few people over time that crosses from the earlier vendor to the later vendor and just sort of see a trend?

If you all of a sudden see a step function break, is it some -- is it, you know with the same person. Or maybe, like, three or four people, that kind of thing.

I mean, that's how I would come at it.

MR. TOMES: Yes, I can do that.

MEMBER FIELD: Yes, you just wonder, I would imagine that they would change vendors, it's something strange. You never know. I mean that -- who knows.

CHAIRMAN ANDERSON: Okay. So, both NIOSH and SC&A are going to do the checking of that one. So, how about next?

DR. BUCHANAN: Okay. This is Ron

Buchanan with SC&A again. And we're on Finding Number 6. And this was the question of onsite or offsite medical x-rays required for work.

And this is one of those issues where again, there wasn't documentation one way or the other. NIOSH deferred to OTIB-79 that it would therefore assign as being taken onsite.

The only issue I had -- SC&A had was when we did the worker interviews, they stated that they discussed it among themselves and agreed that -- the workers agreed that the x-rays were done offsite in the urban hospital.

And so, this is where we have, where the workers say one thing and that -- but there's no documentation. And so it's, you know, it's claimant-favorable to go ahead and use OTIB-79 and assign it as if it was taken onsite.

And so, at this point, SC&A has not come up with any information to document other than what was said during the interviews, that the claimant-favorable thing would be to follow OTIB-79 and leave it as it is, assigning the x-rays

as if they were taken onsite.

So, at this point, unless the Work Group has a different view on that, we would recommend closure.

CHAIRMAN ANDERSON: Well that seems kind of frustrating that workers say they went to the hospital and you can't document it. But we will -- we need to go with what the protocol is. And that's the --

MR. TOMES: This is Tom Tomes. The -- I believe the reference was not clear enough for us to form the basis for assuming they were done offsite.

The record of the transcript indicates a present tense, and there's no reference to what period of time the workers were talking about, or what this could have been referring to.

And there was just -- it just is not -- that did not meet the requirement of having a good reference that it was done offsite.

CHAIRMAN ANDERSON: Okay. That helps clarify that. Okay. So, Seven?

DR. BUCHANAN: Okay. We're going to move on to 7 there, and this is the environmental dose. A question about the TBD not adequately covering the environmental, an internal environmental dose.

And so NIOSH has stated that they will do some data-capture efforts in order to properly address this environmental issue during the middle period. And get back with us and we will review that information.

Is that correct, NIOSH?

MR. TOMES: Yes, it is.

DR. BUCHANAN: Okay. So, that was the primary findings. Now the Secondary Findings were ones that, you know, could affect the way the dose is assigned mainly, more so then the methods.

And so we go to Secondary Finding A, which is this question, it's kind of a mathematical question, in that some of the tables in the TBD listed for 250 workdays a year.

And then Table 513 lists it as 365 calendar days. And NIOSH -- well, we thought that

it should all be adjusted to 250 workdays. NIOSH came back and said it -- showed some calculations from a calendar, and that they would add some text to clarify that in the TBD.

And I guess my question is, okay, mathematically we agree with that. We just didn't know why one table was 250 and the next one was 365, which kind of complicated the issue and could add some confusion.

Is there a reason for doing that?

MR. TOMES: I don't think there's a good reason for it to be confusing. But, sometimes it's just that in the course of doing this, some of the -- some of that just comes up less clear to maintain it, and we'll fix that.

DR. BUCHANAN: Okay. We'll review that to make sure we agree with it, and evaluate that.

Okay. Secondary Finding B, the AEC material was removed from the ponds and the grounds. It said in the original TBD that this was well documented.

We could not find documentation. During the site visit, we couldn't find documentation at that time to say what was -- what the material was being removed from the burial site and ponds.

I understand that NIOSH plans to do additional data capture to determine what bioassays needed to be performed. The reason that it's important is, did the bioassays that were performed cover the material that the workers were handling during this period?

And I understand that they are going to try to provide additional information on that. And we'll evaluate that again when it's available.

Is that correct, NIOSH?

DR. NETON: Tom, are you on mute? This is Jim. I believe that's correct. I don't know what happened to Tom, though. I was hoping he'd be able to --

MR. TOMES: Sorry, I had my mute button on. That -- yes, that's similar to Finding Number 1. What we're going to evaluate to actually the

bioassay data for those workers.

DR. BUCHANAN: Okay. That brings us to Secondary Finding C, burial ground workers and definition. The problem with some of that is the operator could be anything.

This is a small facility. So the workers get a lot of different tasks and stuff. And so, we need to determine how the dose reconstructor can determine who worked at the burial grounds.

And so, this is going to probably be one of those cases where if it isn't documented or sometimes they work there, then it's going to have to be by default to include them.

But I understand NIOSH is going to provide some more guidance for the definition of burial ground workers, and we will evaluate that change.

Is that correct, NIOSH?

MR. TOMES: Yes. I think this is also related to our evaluation of exposures from that work.

DR. BUCHANAN: Okay. And then the last one is Secondary Finding D, which is the external exposure to -- the external exposures in the TBD at Table 5-5.

We get the front end a little bit where the exposure started. And then we get the -- this is during the residual period, I believe.

And then some settling rates that we didn't really see how the non-penetrating and penetrating external exposure was derived when it was put in the Table 5-5.

And so I understand NIOSH is going to provide some steps in between so we can better evaluate that, and we will when that's available.

And that's correct, NIOSH?

MR. TOMES: Yes.

DR. BUCHANAN: Okay. So, that's our evaluation of that. We plan on putting this in writing, what I spoke today, and send that to the Work Group.

And then when we receive additional information, which most all of these involve that

from NIOSH, we will reevaluate it. And then either present it to the Work Group or put it in formal writing then, or both.

CHAIRMAN ANDERSON: Sounds good. Any, questions or comments from the Board Members?

MEMBER FIELD: No, it sounds good.

MEMBER KOTELCHUCK: Yes. No, comment.

CHAIRMAN ANDERSON: Most all of these are in process.

MR. TOMES: Are we going to close out the Finding Number 6?

MR. KATZ: Yes. You did decide to close that.

CHAIRMAN ANDERSON: Yes. Yes. Okay. Anything further on W.R. Grace?

(No response)

CHAIRMAN ANDERSON: Well then --

MR. KATZ: Well, that's taken care of it. If for these follow-ups, NIOSH, if we could just -- once you sort it out, if you can give the Work Group, and then we'll be getting from SC&A

their follow up -- but for you, if you can just have a rough estimate of when we'll have responses for these matters that you have to look into further, that would be great.

MR. TOMES: This is Tom. We have a data capture that is -- it's got, unfortunately, a fairly long schedule on when the data is going to be available from NFS.

MR. KATZ: So, what is that? It's open?

MR. TOMES: I don't know when that's going to happen. It's months, not weeks.

MR. KATZ: No, I'm not -- yes, I'm not pressing. I just -- but are we talking about, do you have it already scheduled? Do you know when that is?

MR. TOMES: I don't have the exact date in front of me.

MR. KATZ: Okay.

DR. BUCHANAN: So you're going to site to do the data capture?

MR. TOMES: I believe it's going to be

available. I'm not so sure how much -- some of it is going to be available electronically. I don't know how much of it we have to go down there and capture.

DR. NETON: Yes, this has more to do, right Tom, with the plutonium during the residual period. We never bothered to collect bioassay data during the residual period because plutonium wasn't covered, and now we need to establish some sort of methodology to do that.

MR. KATZ: Right. So, all I'm asking is, if you just send a -- once you sort out your path forward, if you would send a note to the Work Group.

I mean, just so that everyone knows where things stand. And has a sense for the schedule going forward.

MR. TOMES: Okay.

MR. KATZ: Thank you.

CHAIRMAN ANDERSON: Okay.

MR. KATZ: All right Andy.

CHAIRMAN ANDERSON: Okay, any other?

I think we've been through our discussions at least to -- and that W.R. Grace, we're going to wait for some kind of a time line.

I guess on the NUMEC, I think we're pretty close on quite a few of these. Do we have any kind of a time line for SC&A getting back to us on there as to the NIOSH part?

DR. MAURO: This is John. Are you referring to NUMEC now?

CHAIRMAN ANDERSON: Yes.

MR. KATZ: Yes.

DR. MAURO: Well, let's see, I mean, I'll stick my neck out and say we'll get a write-up to you in about two weeks.

MR. KATZ: That sounds good, John.

DR. MAURO: Yes. I'll just get the crew to work. And we'll get it. Because I don't think there's a lot here. Just a matter of putting it all together.

CHAIRMAN ANDERSON: It will be nice to get this closed out.

DR. MAURO: Yes.

CHAIRMAN ANDERSON: We had -- Ted, do we have anything else?

MR. KATZ: No, that's good. That takes care of all the business we had on our plate.

CHAIRMAN ANDERSON: Okay. I don't know if we have public on that want to --

MR. KATZ: We don't have any members of the public on, or at least we didn't before.

CHAIRMAN ANDERSON: Okay. So we don't need to have any additional comments. So, with that I guess we can pretty well say, have lunch now.

MR. KATZ: Yes, for those folks in the Midwest and adjourn.

CHAIRMAN ANDERSON: Okay.

(Whereupon, the above-entitled matter went off the record at 2:00 p.m.)