U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICE
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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SUBCOMMITTEE ON PROCEDURES

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TUESDAY
MARCH 22, 2011

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The Subcommittee convened, in the Toronto Room of the Cincinnati Airport Marriott, 2395 Progress Drive, Hebron, Kentucky, at 9:00 a.m., Wanda Munn, Chair, presiding.

PRESENT:

WANDA I. MUNN, Chair
MICHAEL H. GIBSON, Member
RICHARD LEMEN, Member*
PAUL L. ZIEMER, Member

ALSO PRESENT:

TED KATZ, Designated Federal Official
NANCY ADAMS, NIOSH Contractor*
HANS BEHLING, SC&A*
ELIZABETH BRACKETT, ORAU Team*
ROBERT ANIGSTEIN, SC&A*
STU HINNEFELD, DCAS
JENNY LIN, HHS
STEPHEN MARSCHKE, SC&A
JOHN MAURO, SC&A*
STEVE OSTROW, SC&A*
SCOTT SIEBERT, DCAS*
MATTHEW SMITH, ORAU Team*
JOHN STIVER, SC&A*
ELYSE THOMAS, ORAU Team*
BRANT ULSH, DCAS

*Participating via telephone

C-O-N-T-E-N-T-S

C-O-N-T-E-N-T-S (CONTINUED)

C-O-N-T-E-N-T-S (CONTINUED)

C-O-N-T-E-N-T-S (CONTINUED)

C-O-N-T-E-N-T-S (CONTINUED)

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

8:59 a.m.

MR. KATZ: Good morning, everyone.

The Advisory Board on Radiation and Worker Health, Procedures Subcommittee, let us get started.

We have a couple of Board Members that will be with us by phone part of the day.

Let's begin with roll call with Board Members, with the Chair.

CHAIR MUNN: Wanda Munn, Board Member and Chair of the Subcommittee.

MEMBER GIBSON: Mike Gibson, Board Member.

MEMBER ZIEMER: Paul Ziemer, Board Member.

MR. KATZ: And do we have right now any Board Members on the line?

(No response.)

Dr. Lemen? Dick?

(No response.)

Then, carry on, NIOSH ORAU Team?

MR. HINNEFELD: Stu Hinnefeld from NIOSH, DCAS. I couldn't remember where I was from.

(Laughter.)

DR. ULSH: Brant Ulsh from NIOSH DCAS.

MR. KATZ: And NIOSH-ORAU on the line?

MS. THOMAS: Elyse Thomas, ORAU.

MR. SIEBERT: Scott Siebert, ORAU Team.

MR. SMITH: Matthew Smith, ORAU Team.

MR. KATZ: Welcome all of you.

SC&A team in the room?

MR. MARSCHKE: Steve Marschke.

MR. KATZ: And on the line?

DR. MAURO: John Mauro, SC&A. Good morning.

MR. KATZ: Good morning. Welcome, John.

MR. STIVER: John Stiver, SC&A.

DR. OSTROW: Steve Ostrow, SC&A.

CHAIR MUNN: Good morning, Steve.

DR. ANIGSTEIN: Bob Anigstein, SC&A.

MR. KATZ: Bob, you have a lot of interference on your line.

Okay. HHS or other government officials or contractors to the feds in the room?

MS. LIN: Jenny Lin, HHS.

MR. KATZ: And on the line?

(No response.)

Okay. And any members of the public on the line?

(No response.)

I'm sorry, could you say that again? Anyone else in the public?

(No response.)

Okay. All right. Wanda, it's your agenda.

John, you have like Bob on the line. Do we have a special order of the day

to make use of people who have partial roles?

DR. MAURO: This is John.

We do have a number of people on the line. I'm not sure if there is a more efficient way to do it in terms of the schedule. We may be able to sweep people in and out. It would be a little more efficient that way.

CHAIR MUNN: You do have the action item list and agenda, do you not?

DR. MAURO: Yes, I have it right in front of me. I know Hans is not on the line yet. He's not going to be jumping in, I guess, until OTIB-70.

DR. BEHLING: John, I'm on the line.

DR. MAURO: Oh, you are on the line?

DR. BEHLING: I just missed the roll call.

DR. MAURO: Okay. So, yes, we do have a large number of people from SC&A on the

line. And the first one up, it looks like might be Bob.

We have, yes, the database. Steve, of course, will cover that. And, then, OTIB-10, I believe that's Bob Anigstein. Then, the others come in sequence later. I don't know how you would like to proceed.

CHAIR MUNN: Well, it was my plan to pretty much follow the agenda with one insertion somewhere along the line. We had had some background communications about OTIB-2 and the number of outstanding items that we have on it, despite the fact that that procedure is no longer in place. And I thought I would slip that in this morning, if that's possible to do.

But, other than that addition, I had intended to pretty much follow what we have here, unless there is someone who feels that that is too much of a crunch on their personal schedule. This is the appropriate time for us to change anything that needs

changing. I guess that is the best way to go.

DR. MAURO: I wouldn't suggest you change the schedule. I think that it looked fine to me. It is just a matter of whether, for example, Hans could join us a little later, at 11:15. I'm not sure who is involved in OTIB-21. I have to say I am not familiar with that particular one and what the issues are.

Steve, offhand, do you know what that is?

CHAIR MUNN: No, it's 2, not 21.

DR. MAURO: Oh, I see. I see. Okay.

CHAIR MUNN: OTIB-21 is on the list, but --

DR. MAURO: Okay. So, OTIB-2 is an item that you are inserting.

CHAIR MUNN: Correct.

DR. MAURO: I'm not sure which one that is.

MR. MARSCHKE: It is maximum

internal dose estimates for certain DOE complex claims.

CHAIR MUNN: Which has been cancelled.

MR. MARSCHKE: And it's been cancelled.

DR. MAURO: Oh, okay.

CHAIR MUNN: And so, the discussion pretty much is going to be what happens to those action items.

DR. MAURO: Okay.

CHAIR MUNN: There are about 30 action items outstanding on that.

DR. MAURO: Oh, I mean, I guess I can cover that. So, at least for the first maybe hour or so, until we get to Bob's on OTIB-10. I don't know. As far as we're concerned, we are fine staying on the line listening in and, then, jumping in and out as necessary.

Very often, we will hit subjects that other people, the SC&A people, could

contribute. Sometimes it is just not predictable. So, we are fine staying online, if it is okay with you. But if you would rather, for efficiencies, perhaps Bob will join us at 10:00 and, then, Hans could join us after the break at 11:00; that might be a way to go.

CHAIR MUNN: Well, as you know, it is my preference to keep the agenda as fluid as necessary for the people involved. But if it is okay for you --

DR. MAURO: Ted, and everyone else, having everyone online would be my preference.

CHAIR MUNN: And I think it would probably be mine.

MR. KATZ: That's fine. That's fine. I just didn't want to hold anyone hostage. I don't know who's doing what. So, I didn't want to hold people hostage who are coming in much later. But that's fine.

CHAIR MUNN: We'll just try to

pretty much stick with what we've got with the possible exception of 0002.

DR. MAURO: Knowing my crew, what's probably happening is, if it is a subject that they are not involved in, they are probably busy punching away on their computer doing other things and listening with one ear. So, we'll be fine.

CHAIR MUNN: That's good. All right. Fine.

Then, let's go ahead and address where we need to insert what I assume will be a fairly brief discussion about OTIB-2. I would like personally to do that just before we start the carryover items because I don't anticipate that it's going to take very long for us to do that. So, just ahead of TIB-10, if that is all right with everyone here, we'll talk about OTIB-2 there.

The first item on our agenda is a report on the database working meetings that have been going on behind the scenes to try to

get our database all cleaned up, spiffy, and exactly the way we would like to have it.

Since Steve is here, would you like to bring us up-to-speed so far? Where are we? I understand from conversations we had prior to starting this meeting that we are not going to be able to do much with our database live because of the status of where we are right now.

But tell us what's happening, Steve.

MR. MARSCHKE: Well, what is happening is, on February 17th, John Stiver and myself came down to Cincinnati and met with the NIOSH folks. We had a pretty long, pretty detailed discussion as to what the database needed to do and what it didn't need to do.

We walked through the database. We looked at all the screens. We cut out a number of the screens which we felt were redundant. We stressed the importance of

speed, so that we could keep up with the Subcommittee when the Subcommittee is making changes in live time.

And so, we basically had what I would call a design criteria meeting on February 17th, and we left NIOSH with a number of action items to go back and really to revise, extensively revise, the database.

I guess I should preface this by saying that the database original was an Access database written by SC&A. And, then, it was ported over into an SQL database which NIOSH was trying to integrate into their master documents control database.

After the January meeting of the Procedures Subgroup, NIOSH decided that that was too big of a job trying to integrate the procedures functions into their overall database. They decided they wanted to break it out into the NIOSH, or the Procedures Subcommittee database into a separate standalone database, perhaps linked to the

other one with some links to pick up documents, and so on and so forth, but primarily just a standalone database.

At that point, that is when we set up the February 17th meeting and went down and said, well, what should this standalone database do? What does it need to do? What can it do better than what we were doing with the Access database? And what needs to be done to support the Subcommittee?

And we think we have a path forward. I guess I would give it to Brant to update what has happened since the 17th.

DR. ULSH: Well, since the 17th, I mean we kind of categorized the improvements that Steve mentioned into two different general categories. One is kind of a behind-the-scenes thing that is going to be transparent to a user, that is going to improve the way the database functions, make it speedier, so that we can actually use it live time in a meeting. And those kinds of

things are going on right now.

The other types of improvements are the ones that Steve mentioned, you know, moving things around, delete this screen, make it easier to navigate. And so, that is going to happen.

Once the database goes live -- and this is all going to happen before our next Procedures Subcommittee meeting; that is our current plan anyway -- we are going to build some time into the schedule for all three, me, Elyse, and Steve, to go and use the database, kind of road-test it and make any further suggestions.

No doubt, if we implement some of the changes, it will bring up other ideas, too. But it is our goal to have at the next meeting of this Subcommittee, to have a perfectly functional database that is updated with all the latest status that we have been kind of stockpiling over the past few meetings.

CHAIR MUNN: And hopefully, a little of an instruction session for us at our next meeting.

DR. ULSH: We can do that. The goal is to have the new database look a lot like the old one, to kind of minimize the learning curve. That was one of the things that I asked our IT folks to do.

But there will be some changes, you know, some of the ones that we talked about in that February meeting. So, we can do that. We can incorporate a training session at the next meeting if you would like.

CHAIR MUNN: For those of us who have a hard time holding up a learning curve, we would really appreciate that.

(Laughter.)

DR. ULSH: Sure.

CHAIR MUNN: If we can plan on that, then I will plan on having that as a part of our agenda next time.

MR. MARSCHKE: I should say one of

the things we have been doing, like Brant said, we have not been updating the database to reflect the latest activities of the Subcommittee. So, I did ask Rose to go through the transcript from the last couple of meetings to pull out all the action items, all the changes that we made to status changes, and so on and so forth. She has made a list from the October meeting, a nice, detailed list as to what has changed, and so on and so forth. So that, when the database does become available to us, we can go back and make sure that we captured everything that we talked about at these Subcommittee meetings.

And we would plan on doing that when the transcript from the January one -- it wasn't available on the website when we looked, the last time we looked. It may be available there now. I don't know. I haven't looked in a week or two.

But we will do that, look for the January one, and we will do that again for

this meeting to make sure that we capture every change, all the changes that are made.

MR. KATZ: I don't know whether it is on the website yet, but I can get you the --

MR. MARSCHKE: Because the database is not ready to receive it yet, so it wasn't -- I know I can go to you and you would provide that to me.

MR. KATZ: Yes.

MR. MARSCHKE: But since the database wasn't available, I didn't see the urgency to do it.

CHAIR MUNN: I plan to have it certified in the next couple of weeks.

MR. KATZ: Okay.

CHAIR MUNN: Good. It will be an item on our next agenda.

MS. ADAMS: Yes, Ted, this is Nancy Adams. Procedures is not PA-cleared yet.

MR. KATZ: Right, right. No, I

understand it's not available yet generally.

MR. HINNEFELD: As long as it is not PA-cleared, but the Board Members can see it.

MR. KATZ: Yes. Yes, no problem.

CHAIR MUNN: Now the next item on the list, I hope that was clear to people what I meant. One of the things that certainly is not clear to me with respect to our getting the two-pagers online, we had a little discussion last time about how that was going to happen.

I think, Elyse, didn't you -- Elyse is on the line, isn't she?

MR. KATZ: Elyse, yes.

CHAIR MUNN: Yes. Elyse, didn't you indicate that this was not going to be a real problem, and that you would essentially have whatever behind-the-scenes activity has to go on in order to have us just send you the material that needs to go up on the new database which will be the two-pagers? Did I

misinterpret what was said last time?

MS. THOMAS: Yes, this is Elyse.

I'm not sure what I have to do with the two-pagers.

CHAIR MUNN: Okay. Okay. Very good. Then I misinterpreted who was doing what.

MS. THOMAS: Okay.

MR. HINNEFELD: Well, yes, I mean the one thing to determine, the thought, what I thought about these two-pagers was that they would be placed on the website.

CHAIR MUNN: Exactly.

MR. HINNEFELD: Because the report itself, the Procedures report, and once I started looking at it, I realized not all those were up there, either.

CHAIR MUNN: That's true.

MR. HINNEFELD: So, what we are doing now is assembling the various reports and procedure reviews, and there are quite a number that SC&A has provided. Some of them

are so old that they were not yet what they call 508-compliant. After a certain date, everything that we put up there has to be readable by people with disabilities. And so, it has to be interpretable by a language interpreter, in other words, a program that looks at printed pages and makes an audio, reads it to the user.

So, some of them were old enough that they were not yet 508-compliant. And so, I believe SC&A is preparing 508-compliant versions. They may have already submitted all those. I forget whether --

MR. KATZ: No, they haven't submitted those yet.

MR. HINNEFELD: But when we have all of SC&A's reports of their procedure reviews, you know, the big ones that come out, those will go on the website. Some of them are there now, and you can look on our website under Advisory Board and, then, Reports from the Technical Support Contractor, and, then,

you go down about two-thirds of the page and you get to the Procedure Review. There are a couple or three that are on there now, but we will have all of them on there. Then, that's the place where the reports are.

Now you can decide where you want to put -- if you will let us know where you want the two-pagers to go, you know, we can provide that as well.

CHAIR MUNN: Okay.

MR. HINNEFELD: They could go on their own page with a link from that site. They could do it however you want to design it.

Or, in fact, Chris might have a good suggestion.

CHAIR MUNN: It was our original intent, when we talked about it earlier, to have the two-pagers have their own --

MR. HINNEFELD: Their own page-- their own page, their own site. And the introductory information that we have approved

in the past would be the first thing people would see. Then, the procedures would be listed alphabetically, and for people who wanted to see the original procedure, there would be a hotlink that could take them to that.

MR. HINNEFELD: Okay.

CHAIR MUNN: But I was concerned about our internal procedure here. I wanted to make sure that, especially since at the last Board it was agreed that this Subcommittee would be able to approve what was going to go up there, we wouldn't have to take it back to the Board each time.

And that being the case, then I wanted to make sure that our internal process here amongst us was workable, easy, and agreeable.

And my thought at this time is that, since the Subcommittee as an entity does not have clerical staff to support it, that the logical thing to do, when we approve

something, is for me to try to provide a clean copy of that to Ted --

MR. KATZ: That's fine.

CHAIR MUNN: -- for his agreement that, yes, this is what we had agreed to do. And, then, from you to Stu or whoever is the individual responsible for getting it up on the page --

MR. KATZ: That's fine.

CHAIR MUNN: If that is amenable with all here, then I would like to propose that that is essentially what we do in the future.

MR. HINNEFELD: That's fine.

CHAIR MUNN: All right. Very good.

Then, I will be sending you the pages that we have already --

MR. KATZ: The final copy.

CHAIR MUNN: -- approved and that the Board has approved very shortly.

MR. KATZ: Okay.

CHAIR MUNN: That's good.

MR. HINNEFELD: Now, if we have questions about how you want these links to work, should we talk to somebody in particular about it or should we --

CHAIR MUNN: Yes.

MR. HINNEFELD: Okay. Because the thing that occurred to me, I don't know much about web design, but it would occur to me that you would link back and forth. I mean somebody could go to the procedure report, you know, the big report with all the procedures, and could link to the two-pagers associated with that report.

Okay. And they could also read a two-pager and they could link to the report. Now I think you can make that link open at the exact procedure that you review. That would have to be definitely better because, otherwise, you have got this 200-page document where you've got to find your own procedure in, which you could find it in the table of

contents. But, I mean, it is still a little bit of a burden.

So, you just wanted to make this as easy for the user as possible.

CHAIR MUNN: Absolutely.

MR. HINNEFELD: And I think our guys, our designers, are probably better at deciding what to do than I am.

CHAIR MUNN: Good.

MR. HINNEFELD: So, I think it can open a specific page. I won't swear to that.

CHAIR MUNN: Well, it will be fine. From our perspective as a Subcommittee, speaking personally for myself, my concern is just the assurance that our two-pager does have a link to the original procedure, if people want to go there.

CHAIR MUNN: Okay. Now you're saying "procedure." You mean procedure review document, right?

CHAIR MUNN: Yes, I mean our two-pager has --

MR. HINNEFELD: The two-pager has a link to SC&A's procedure review?

CHAIR MUNN: Has a link to the original review, yes.

MR. HINNEFELD: Okay.

CHAIR MUNN: Yes. Because that is what the two-page is --

MR. HINNEFELD: Yes.

CHAIR MUNN: -- is a compilation of activities that occurred as a result of that review.

Any problem? We agree?

Seeing no objection, let's move on to the next item, which I had suggested would be the insertion of our OTIB-2, Rev. 2.

And, Brant, would you like to give us a thumbnail sketch of where we are here and why we need to clear this off our database?

DR. ULSH: Yes. I'll give you a brief update, and, then, I will turn it over to Liz Brackett, who is on the call, to discuss kind of the technical details of this.

This particular TIB, Steve gave you the long time earlier, is out-of-date because we no longer use this TIB for doing dose reconstructions. This is one that had been reviewed, and there were, I think, approximately 30 open findings.

And so, it wasn't clear to me exactly what the disposition of those findings should be, given that the TIB has been cancelled. I don't want to assume that the findings just go away because, obviously, we are doing something different now. So, some of those findings might be transported to another document.

But, Liz, are you on the line?

MS. BRACKETT: Yes, I'm here.

DR. ULSH: Okay. Do you want to give a little more technical detail on the status with that TIB?

MS. BRACKETT: Okay. What happened was OTIB-2, you can tell by the number, it was a very early document in the

history of the project. It was in the early stages of developing approaches.

That one is an overestimating technique for assigning internal dose to people who had little to no potential for internal exposure and who weren't monitored. And it was based on a single acute intake of a large value relative to maximum permissible body burden.

Since that time, since we wrote that, we have pretty much evolved into a policy of assigning chronic intakes rather than acute intakes. And so, OTIB-18 is a similar document, but it is based on the assumption of chronic exposure at the maximum permissible concentrations.

So, that is pretty much what the dose reconstructions we do have and assigned an overestimate for internal dose. So, we slowly phased out the application of OTIB-2, and when dose reconstruction comes back for some reason, if there is a new cancer or some

change in the claim, then the dose reconstructor would redo the OTIB-2 part. It would be redone most likely with OTIB-18.

So, it is not being used in cases where you are using something different. The primary reason for changing this is because our methodologies have evolved over time, and that is just not one that we're applying at this time.

CHAIR MUNN: But it is still an outstanding active document for you?

MS. BRACKETT: It has been --

CHAIR MUNN: It has been cancelled?

MS. BRACKETT: It has been cancelled.

DR. ULSH: Yes, cancelled.

CHAIR MUNN: Now does OTIB-18 cover all of the material that was covered by OTIB-2? Can we make that statement? Or is that stretching the point?

MS. BRACKETT: I guess, what do

you mean by "the material", like nuclides or the approach or?

CHAIR MUNN: I guess the better question would be, are the 30 issues that are identified for OTIB-2 addressed in some way in OTIB-18? That is a better question.

MS. BRACKETT: No, it wasn't a direct replacement. We didn't cancel OTIB-2 because we replaced it with OTIB-18, because they were both used simultaneously. Well, they wouldn't be used on the same cases, but they were both available for use for probably a few years. So, it would be used for the same situation, but it doesn't say, well, use this instead of OTIB-2, no.

CHAIR MUNN: I understand. Is it possible for NIOSH to go through and identify from the outstanding items that we have open where each of those items is now handled elsewhere? Is that a possibility?

MS. BRACKETT: No. That was an approach that we no longer use. We don't

address the items because they are not applicable anywhere else.

MR. HINNEFELD: We could make a statement for each one probably about why it is no longer applicable each time, if, in fact, it is no longer applicable.

CHAIR MUNN: I think if we are going to close these items, that is going to be necessary.

MR. HINNEFELD: Okay. Yes. Well, I think why Liz is struggling with the conversation a little bit here -- and I'm going from memory here, and at my age, that's a real mistake; so, Liz, correct me if I'm wrong -- but the approaches between OTIB-2 and OTIB-18 are fundamentally different.

OTIB-2's approach is a postulated large intake of this entire suite of radionuclides that would cause like -- I forget the actual basis for why the numbers were selected, but they were a huge, essentially, one-time intake from the start of

the person's employment, feeling that that intake would bracket their reasonable exposure that they would have.

As I recall, it translates into like 110 DAC average in terms of ICRP-26 language. I'm sorry, 110 DAC years. So, 110 years at as an airborne standard.

Now the OTIB-18, as I recall, does not postulate this huge acute intake. It postulates exposure at some fraction of the applicable airborne standard at the time, and it is relevant, it is useful only in sites where we have established a record of a pretty full air monitoring program.

So, at that point, you know, once you have a site that has an air sampling program, there is some level of comfort that they are going to keep radiation workers below the standard, at or below on the average over the year, at or below the standard for radiation workers, and, then, occasional workers get some fraction of that. So, that

is the OTIB-18 approach. So, they fundamentally start from a different place.

And so, the OTIB-2 findings I don't think it is realistic to expect them to be addressed by OTIB-18, although we could perhaps make a statement as to why we don't think they are applicable anymore.

DR. MAURO: This is John. I have a question.

It is all coming back now, as you describe it, the MPC approach and how you use the full MPC versus a fraction. This might be a PER question. I am going to cast it in a different way.

You have a number of cases, I believe, that we used OTIB-2 for the purpose of maximizing approach for denial. I think that that was its role.

In other words, when you used OTIB-2, did you grant anyone under OTIB-2?

MR. HINNEFELD: No.

DR. MAURO: Or was it solely there

as a maximizing approach for denial?

MR. HINNEFELD: It was a maximizing approach, expedient.

DR. MAURO: Okay. So, basically, you have all these denials. Now, in the PER world, what you have now is, okay, we have all these denials that were triggered as a result of using OTIB-2. And now you are saying, well, we have got to withdraw OTIB-2, and the question becomes, are those decisions that were made using OTIB-2 still valid, in light of, if you were to do them again today, is there any reason to believe that their doses would go up? And, therefore, possibly trigger them back into compensation?

I suspect the answer to that is probably no, but isn't that where we are on this question? In other words, your real question is, by withdrawing OTIB-2, the question is, if you were to do those cases that you did do over again, is there any possibility that their doses would go up? And

it becomes a question of whether these people should now be compensated.

CHAIR MUNN: John, you are looking at this from a holistic point of view. I am looking at it from an individual finding point of view.

And I am looking for a way that we can avoid overlooking one of these action items by reason of making broad statements that almost apply, but do not in all cases, which is a situation I could see easily falling into if we start looking at one procedure as opposed to another procedure.

So, what I am suggesting here is that NIOSH take a look at each of these open items -- some of them are open; some of them are in abeyance -- and give us a statement on each of these items that would make it possible for us to close the individual finding, either by transference to some other open procedure or by outright closure, by reason of the fact that it is an approach that

is no longer used at all.

Yes, Paul?

MEMBER ZIEMER: The opening statement that Brant made suggested that there could possibly be findings that in some way would be translatable to some other part of the system. So, that is part of the question you want to answer, are all of these moot points at this juncture? And you can certainly do that as you go down through the list and just say, okay, could this be still an open item that is in a different procedure now? I guess that is what you are going to answer on that.

DR. ULSH: Exactly. And if there are pieces of OTIB-2, even though that document has been cancelled, but if we have taken any pieces of that and incorporated it somewhere else --

MEMBER ZIEMER: Right.

DR. ULSH: -- and there is a finding on that particular piece, I wouldn't

want to just propose it for closure.

CHAIR MUNN: Yes.

DR. ULSH: I don't know that that is the case.

MEMBER ZIEMER: Right, right. I understand.

CHAIR MUNN: No.

DR. ULSH: But that is one thing that we will look for.

CHAIR MUNN: And that was my concern --

MEMBER ZIEMER: Right.

CHAIR MUNN: -- more than anything else.

MEMBER ZIEMER: But, aside from that, it seems to me John Mauro is asking a different question, which is not the closing of the issues question, but the impact of not using that procedure, having an alternate procedure now for the same kinds of cases. And that may be something that NIOSH would want to ask themselves that question also.

I mean, in principle, wouldn't you sort of do that anyway? If you said we are no longer using this procedure, here's a new procedure you are using, and set that not one-to-one analogous, but sort of like that, but now when we get a case in of the type that we used 002 for, here's what we do now. It sounds to me like the 002 procedure was a much, much liberal assignment of internal dose, but do we know that a priori?

MR. HINNEFELD: See, I think the question you are asking is, if we can satisfy ourselves that the new techniques, you know, the techniques we are using now, will definitely result in a lower dose than TIB-2 in each case, you know, in whatever categories we are going to apply this to, then we can say, okay, that's good enough. And if not, then we have to consider, if we can't say that about some of the cases, then we may have to look at those cases.

MEMBER ZIEMER: But it is a

different question than closing that.

MR. HINNEFELD: Yes.

CHAIR MUNN: Yes. I interpreted that also. That is why I was saying my focus here is on closing these.

DR. MAURO: Yes, very good. Now I think I understand your perspective now. Thank you.

CHAIR MUNN: You're most welcome.

We may need to address the issues that you raise, John, later in the process. But, at this moment, if we could prevail upon NIOSH as an action item to give us --

DR. ULSH: Yes, we will take that.

MR. HINNEFELD: Yes, we actually have two. We have two action items here. The first one being on the specific findings to provide our take on whether they are relevant at all and, if so, where are they addressed?

And, then, the second finding is to decide, take a look at the alternate approaches in light of OTIB-2 and see if we

are confident that OTIB-2 definitely overestimated it would be higher than what we would probably use, or whether some subset of them would have to considered with new -- as a PER.

CHAIR MUNN: All right.

MEMBER LEMEN: This is Dick. I just wanted you to know I have been listening to your progress.

MR. KATZ: Welcome, Dick.

CHAIR MUNN: Hi there.

MEMBER LEMEN: I had trouble finding the call-in number.

CHAIR MUNN: Glad you found it.

All right. Did you have some comment about this discussion?

MEMBER LEMEN: No, I don't.

CHAIR MUNN: All right.

MEMBER LEMEN: I have been in on most of the discussion. I just didn't want to break into some other's comment.

CHAIR MUNN: Okay. Okay. We

appreciate it.

Welcome. We're glad you're here.

Now, then, that will be on our items for next meeting to see what has transpired.

Carryover items. The first one listed on our agenda is TIB-10 and the MCNP runs.

SC&A, you're noted as having the ball.

MR. MARSCHKE: Well, we got the MCNP runs from NIOSH and I gave them to Bob Anigstein to look over. And Bob is on the phone.

He sent out a brief summary of his review. We sent that out, I sent that out to everybody yesterday. I believe you should all have it. And Bob is on the line.

Bob, if you want to discuss what is in that review for the Subcommittee?

DR. ANIGSTEIN: Sure. This is Finding 08. The finding specifically, it was

summarized in the database as the use of the Attila software question.

In response to that, we had a response. NIOSH made a response on November 7, 2007, said, "Attila was used out of convenience. Concurrently, we also ran MCNP-X models and obtained similar results."

Then, the Revision 3 of TIB-10, which came out, I believe, in -- what's the date on that? -- in June, June or July 2010, included an appendix, Appendix C. Basically, Revision 3, just to backtrack, is identical to Revision 2 in terms of it was cleaned up a little, much better illustrations, but they were the same. They were the same figures. They were just much better produced.

And, then, it included three appendices. One appendix was simply what had originally been called Section 6 and what is now simply transferred to an appendix. And, then, it had an Appendix B. That was Appendix A.

Appendix B gave details on the Attila analysis which had been previously furnished to SC&A privately, but never made public. And that was actually another finding.

These details had not been furnished, and it was actually Finding No. 1. And that finding can now be considered closed because those details were furnished.

And, then, Appendix C describes the MCNP-X analysis, which apparently, according to the footnote, was a Class assignment for Tim Taulbee, when he was taking a course on Monte Carlo modeling at the University of Cincinnati.

We were furnished, it gave a very clear description of the model, which, first, to begin with, is quite different than the model that was used for the Attila analysis and that is the basis of the correction factors in TIB-10.

The Attila analysis assumed that

the radiation source was the point source. And that is actually a very conservative assumption because, first of all, the radiation is isotropic and there is no self-attenuation, self-absorption in the source itself. And so, first of all, if it is a small concentrated source or if it is a powder, or whatever form it is at, it would be that approach, the point source approach, serves as an envelope. It is not going to be any worse than that.

In the MCNP-X analysis, they assume that the source was a sort of button, probably want to think of it as a pancake, like a cylinder of solid plutonium metal, 1-centimeter high and 2-and-a-quarter inches in diameter. Sorry for the mixed units, but that is the only way to describe it that would be convenient.

The problem with that approach is that two things we look at. You always describe three positions on this. So, it is

basically a water-filled shape, cylindrical, sort of an elliptical cylinder for the torso and a circular cylinder for the neck, the head and arms.

But that is really not important because the location of the tally point where the dose was calculated was a small rectangule that represented a dosimeter. And one was placed on the abdomen. One was placed at a position corresponding to a lapel, even though it was on the center of the body, not off to one side. And the third one was on the wrist.

And we didn't look at the wrist because that is really not part of the correction factor. The correction factor is the ratio between what the lapel film badge or, shall we say dosimeter -- it certainly doesn't have to be a film badge -- the lapel dosimeter and they're called the abdominal dosimeter.

The abdominal dosimeter is where the dose should be measured for organs

underlying in the abdomen. Because the procedure that NIOSH uses, the OCAS -- was it OCAS-1 -- is, if this is the film badge reading or the dosimeter reading, this is the dose to the organ.

This is based on ICRP-74 calculations, which assume a uniform radiation field. So, that is the radiation hits the surface of the body and, then, it hits the organ, and there is a certain attenuation do to that.

So, to back-calculate and try to estimate what would have been the reading on the dosimeter, had the dosimeter been worn on the abdomen, is appropriate for doing organ dose. Okay.

However, given the geometry, I believe it is illustrated, if everybody has the handout that I prepared, if you put your eye down where that abdominal dosimeter is, you are looking at that plutonium on edge. So, the photons coming out of the plutonium

have to traverse the whole or a good portion of the diameter where it is originating of that metal before it can get out and hit the abdomen.

Whereas, the lapel dosimeter is looking down on it, so you have the difference between 1 centimeter, which is slightly over three-eighths of an inch vertical thickness, and like two-and-a-quarter inches in a horizontal direction.

So, it is not surprising that the calculation showed that there was very little difference because what happened was the lapel dosimeter is further away, but the photons undergo less attenuation. And the abdominal one is closer, but it is more heavily shielded.

So, instead of a difference of about 2.3, a factor of 2.3, which the Attila runs produce, this comes out with something like maybe 1.15, 1.19, depending on which way you calculate it, and there's very little

difference.

And, then, they did another run. This one assumed that a glovebox had sides, a bottom, and top of stainless steel. It has very little effect on the problem. It is good it is there for completeness, but these are low-energy photons. You aren't going to get very much scatter.

And at the front is all made of acrylic plastic. Lucite is a tradename, one of the tradenames for acrylic; Plexiglas is another one.

And there is a front plate that is vertical, and, then, you go halfway up and it goes back at about a 30-degree angle, 30-, 45-degree angle with the vertical. So, the photons penetrate pretty much at right angles, depending on which way you are going. So, you have equal attenuation.

Then, you sort of say, well, what if the front of the glovebox is made of stainless steel? Instead of a quarter inch of

plastic, you now have a quarter inch of steel. Well, first of all, steel is a lot denser than plastic. Plastic has a density of about 1.2; steel has a density of 8. So, it is not the thickness, but the mass that matters. You have much more mass there. And, also, it is higher atomic number. So, in the low energy area, it attenuates much more.

And the result is that you actually have a reverse correction factor. The lapel dosimeter now gets seven or eight times more dose than the one on the abdomen.

So, I am not quite sure, honestly, why this appendix was provided because it does not confirm the Attila runs. I think it actually contradicts them.

So, that is basically it. We had some technical issues. Our associate, Dick Olsher, who is retired from Los Alamos -- Los Alamos is where the MCNP code was developed -- he was not one of the developers, but he was highly experienced with using it. He has been

teaching a class once or twice a year for many years. It's called MCNP for the health physicist, the medical physicist, and the rad engineer. So, he is thoroughly versed in the application.

He said mostly that the program was written in such a way that the calculations were very inefficient. The report itself, Appendix C to TIB-10, says, well, it is not really usable because it takes six days to run.

Well, we made some small changes in the method of calculation which did not affect the results, but we had very good runs in three hours. With the heavy shield being, with the self-absorption of the plutonium, and if you take that away as sort of your point source, 20 minutes gave very good statistics, on the order of 1 percent uncertainty.

So, MCNP, in our opinion, is a very good way to go, provided it is programmed correctly. The argument for using it is

primarily one of transparency. There are thousands of users of MCNP in the United States. I know there are about 1,800 beta testers who are considered sufficiently expert at Los Alamos who have been testing new versions that have been developed but not yet officially publicly released. There must be many thousands of people who are simply competent in MCNP.

There are probably very few Attila users. One of the problems being we looked into it when we first were doing, actually, I think it was for this TIB, we inquired, well, you know, we are supposed to review NIOSH's work. So, can we get Attila? Well, no, not really.

Even though Attila was developed at Los Alamos, it was turned over to a private firm. It was sort of a government/industry partnership. You can't even buy it. You can rent it at $20,000 or $30,000 a year, depending on whether you're working for the

government or privately. So, this was just not something that was practical.

And, then, usually, that is for a single user. Everybody in the company would have to have a separate license who wanted to use this. So, we still say that we think MCNP is the appropriate tool to use. It is widely recognized, widely benchmarked. And if the runs are properly designed, it can be quite practical.

MR. MARSCHKE: Bob?

DR. ANIGSTEIN: I am done.

MR. MARSCHKE: Bob, did we send NIOSH the results, the input files and the results that we put together for our MCNP runs?

DR. ANIGSTEIN: No.

MR. MARSCHKE: So that they could look at that?

DR. ANIGSTEIN: Oh, I can. I mean I didn't. You asked me, can we?

MR. MARSCHKE: Well, I asked, did

we?

DR. ANIGSTEIN: No, we didn't.

MR. MARSCHKE: Now I will ask NIOSH if that would -- I think the problem here is more in the line of the calculations supporting the TIB as opposed to, I think when we did our MCNP run, we basically confirmed the number that was in the TIB. Is that correct, Bob?

DR. ANIGSTEIN: Right. We originally --

MR. MARSCHKE: So, we agree with the number that is in the TIB.

DR. ANIGSTEIN: Okay.

MR. MARSCHKE: It is just a matter of how we get to that number.

DR. ANIGSTEIN: Let me just give you -- I won't go on -- give you one detail.

We reviewed this TIB originally in 2006, just about this time of year five years ago. At that time, we used -- I think MCNP-X actually wasn't even out -- we used MCNP 5,

which is a parallel version, and with no substantial differences.

At that time, we exactly -- Greg Macievic of NIOSH was kind enough to furnish his file or description. Actually, it was the file, the description of the input, which is now in Appendix A. We reproduced it, and we got close to the same number.

Now this time we took this file. First, we reran it and we got the same numbers that were reported from the MCNP-X. Then, we removed this plutonium metal and added a point source, and we ended up with actually a higher correction factor, 3.3 instead of 2.3, using this glovebox design, which is different than the Attila model.

So, we were able to confirm it five years ago. We were satisfied with that.

MR. MARSCHKE: Well, I guess the question is, what needs to be done to close this issue? I mean we are in agreement on or we were able to confirm the numbers, the

correction values that NIOSH has provided in the TIB. The computer analysis that was performed to get those numbers is what we are questioning.

When we run MCNP, we confirm the Attila runs pretty much. We did have some problems with when NIOSH made their MCNP runs. But the question is, what needs to be done so that we can move forward on closing this? What's the next action item, I guess, here?

DR. ANIGSTEIN: Well, the recommendation at the end was that if -- well, I think the action item is that all of the TIB-10 is sort of on hold anyway because of Findings 5 and 6, which we are not discussing because they are in progress, which have actually been kicked up to TIB-13.

TIB-13 is actually similar to TIB-10 in some ways. The issue in TIB-13 is the angular dependence of the radiation hitting the dosimeter. That becomes a factor that was discussed at the previous

Subcommittee meeting.

MR. MARSCHKE: It is on the schedule here at 11:45 this morning as well.

DR. ANIGSTEIN: Okay. Good. Well, the thing is I would say that anything on this should be deferred until TIB-13 is settled. That would be my recommendation.

DR. ULSH: It seems to me -- and we just got the response yesterday, so I have only read through it. I haven't talked to Tim about it yet.

It seems to me that the next action item, I mean in the way at least that I read it was SC&A is questioning how we model the source-term. In Attila, we did a point source and in the MCNP run we did a plutonium button, but that seems to be an issue that is still unresolved.

So, it seems to me that the next action item is for NIOSH to respond the response that we were just given yesterday.

MR. HINNEFELD: Well, on the other

hand, the number doesn't seem to change, I mean significantly. I mean the number in the TIB seems to be appropriate. At least that is what Steve was saying. I think that is what I got from your -- you know, you can say 3.3 versus a geometric mean of 2.3, but a geometric mean, not the geometric standard deviation. So, it covers a range of values. Our TIB covers a range of values.

Also, 3.3 was with a specific glovebox design, whereas, it is lower for other glovebox designs. The TIB covers a range of glovebox designs.

So, I think that the TIB number is probably sufficient. If we want to move the issue to angular dependence, which I think is on the scientific overarching issue of this, then this finding doesn't have to stay open. Those other two findings are open to keep the issue there. This finding doesn't stay open.

And if the issue is we shouldn't use Attila anymore, that's done. We have let

our license lapse. We never used it enough that would justify $20,000 a year. So, we don't use it. We haven't had it for a while. So, any of this dose modeling will not have to be done with MCNP.

CHAIR MUNN: So, we can at least make a positive response to the recommendation that you use MCNP rather than Attila in the future?

MR. HINNEFELD: Well, I am saying we are not using Attila.

CHAIR MUNN: You are going to be using something other than Attila?

MR. HINNEFELD: If it comes up, I mean we are not, you know, like Bob says, yes, there are people who can run MCNP who, then, we would have to go engage in a contract, or actually our contractor would have to engage in a contract for that specific purpose.

We would have to check and see the feasibility of it. You know, money is always tight because there is too much to do. And so

we'll see. We have to see. But we are not crazy about running these dose calculations, you know, pure dose calculations anyway.

MEMBER ZIEMER: Wanda, I have a question about the assumptions here. Now, on MCNP you have an option on what geometry for the source. Can you use it? You don't have to have this size plutonium source that you talked about here?

MR. HINNEFELD: No, I believe you can model whatever source you want to model.

MEMBER ZIEMER: Whatever you want. And this particular one is one that you had used, I guess, in a particular case?

MR. HINNEFELD: Well, it was probably the plutonium button. It is the standard size of plutonium button.

MEMBER ZIEMER: No, but you wouldn't necessarily always use that?

MR. HINNEFELD: Not unless we were -- not for someplace else --

MEMBER ZIEMER: Right.

MR. HINNEFELD: -- where we weren't monitoring the modeling button, right, or the same size.

MEMBER ZIEMER: Well, it is sort of appears to me that this button itself may affect what might otherwise be called angular dependence. I don't think we want to confuse the two.

DR. ANIGSTEIN: No, that is a separate subject. The angular --

MEMBER ZIEMER: In other words, if you did the MCNP with a point source, you all get the same result, I would assume?

DR. ANIGSTEIN: No, no, you don't get --

MR. HINNEFELD: If we all did it the same --

MEMBER ZIEMER: Yes.

MR. HINNEFELD: -- we would get the same --

DR. ANIGSTEIN: If I may clarify, the angular dependence here is meant in two

different senses. In one sense, it is when radiation hits the film badge --

MEMBER ZIEMER: Right.

DR. ANIGSTEIN: -- it comes at an angle -- it deposits a different amount of dose.

MEMBER ZIEMER: Right. That is a different issue than the --

DR. ANIGSTEIN: I know, but somebody was just saying angular-dependent. Whereas, it is, also, the angle at which the radiation is emitted from the plutonium.

And also, the point which I didn't mention, which is in my writeup, is this was done for the source lying flat. Now, if, for instance, you simply took that same pancake and stood it on edge --

MEMBER ZIEMER: Right.

DR. ANIGSTEIN: -- you would get very different results. Because now the radiation is coming straight at the abdomen from the entire face of the plutonium with

only that 1 centimeter of thickness, and it is being more attenuated when it hits the lapel. So, it is a very arbitrary choice that was made of this particular configuration.

In my opinion, if I can mention that, I don't think that it is appropriate to have this appendix in this TIB.

CHAIR MUNN: Well, it has been suggested, and sounds perfectly reasonable, that since this material was just provided to NIOSH, NIOSH have an opportunity to review it and respond at our next meeting.

Is there any problem with that?

(No response.)

Then, let's do that. We will continue to have this on our agenda next time.

Although it is not on our agenda, is there any reason for us to visit any of the other information that was provided with this one? I think not at this moment. It's closed.

Are any of these recommendations

for closure new?

DR. ANIGSTEIN: Yes, Finding 1 is a new recommendation.

CHAIR MUNN: Finding 1, and what about Finding 9?

DR. ANIGSTEIN: Oh, Finding 1 is new. It was in abeyance, and we recommend that it can be closed because NIOSH did provide in Appendix B, they did provide the information about the source, the spectrum, and the dimensions of the glovebox.

CHAIR MUNN: All right. Again, I suspect that that is going to be an easily-acceptable recommendation, but in both cases, both 1 and 9, NIOSH needs an opportunity to look at what you have seen here.

DR. ANIGSTEIN: Well, 9 was a little puzzling to me when I saw the writeup in the database because 9 was considered already closed, but, nevertheless, SC&A was asked to look at it.

CHAIR MUNN: Well, as long as your

confirmation is that it is appropriately closed, then there should be no --

DR. ANIGSTEIN: No. No.

CHAIR MUNN: That's not your recommendation, right?

DR. ANIGSTEIN: No. The finding is that they did not specify, it had not changed. It was not addressed. Rev. 3 did not address this finding. We were asked to see that it did, and, in fact, it did not.

CHAIR MUNN: All right. Well, we will stand by our statement that not only item 8, which we have addressed at length, but, also, the other items that are involved in this response will be reviewed by NIOSH and we will see those back here next time, right?

DR. MAURO: This is John.

Just for my clarification, on item 1, which was originally in abeyance, is it SC&A's recommendation for the record that we are recommending that it be closed?

DR. ANIGSTEIN: Yes.

DR. MAURO: Okay. I think that should be part of the record. Now whether or not the Work Group -- sorry -- the Subcommittee wants to close it at this time, it sounds like, no, you would rather wait until you hear back from NIOSH.

MR. HINNEFELD: Not on 1.

CHAIR MUNN: Not on 1.

DR. MAURO: Not on 1? Good. I didn't hear that.

CHAIR MUNN: No.

DR. MAURO: I just wanted to get that clear. Okay.

Let me just ask, too, then, with regard to No. 9, it sounds like it was originally closed, but now SC&A is recommending that it be opened. Is that, Bob, what I am hearing?

DR. ANIGSTEIN: Well, I didn't state that because I was told that it remains closed. I didn't think it was my place to say it should be opened. But we were asked to

confirm this, and the fact was, no, it was not answered. So, it is up to the Subcommittee to decide whether it should be reopened or not.

DR. MAURO: Well, do you believe that SC&A made a mistake in originally recommending that it be closed?

DR. ANIGSTEIN: I don't believe it was SC&A that recommended that.

MR. HINNEFELD: John, my recollection of this situation is that it was that passage that was supposed to come out in Rev. 3. It is a recommendation to remove something. I thought that passage was coming out in Rev. 3, and apparently it just got moved to an appendix. So, we will have to check on that.

DR. MAURO: Yes, okay.

DR. ANIGSTEIN: For the record, I reviewed, I held Rev. 2 and Rev. 3 side by side, and there were absolutely no differences except for changing a figure, number and reformatting a table and adding the

appendices. But in the main body of it, it was word for word.

CHAIR MUNN: All right.

MR. HINNEFELD: But that is my recollection of it. I expected it to come out, and I don't think you will see my signature on there. I don't review each of these revisions.

CHAIR MUNN: We will close No. 1 and everything else that is on this current report we are looking at will be reviewed by NIOSH, and we will have your report next time, right?

MR. HINNEFELD: Yes.

CHAIR MUNN: Very good.

The next item is status of revised OTIB-29-02. That looks like it is NIOSH action.

DR. ULSH: Well, the latest response from NIOSH is in the database, and it was dated on May 28th, 2010. We provided information on the derivation of the constant,

the value of which was 8, in the excretion determination. That has been located. It is going to be incorporated into the Site Profile in Section 5.3.1.2, for those of you who are keeping track.

And those factors include the count time, which was 30 minutes; counting efficiency, which was 0.5; aliquot volume, 20 mil, and hours in a day.

So, the current status is that this finding is in abeyance. We don't see where there's anything to be done until that OTIB is revised, and that response is included in the revisions. We don't see a change in the status on this item.

CHAIR MUNN: And I don't have the item in front of me. I assume everyone else does.

Any comment on Brant's response?

(No response.)

So, where are we?

MEMBER ZIEMER: Can you remind us,

what was the issue you stated again?

CHAIR MUNN: In 29-02? Brant?

DR. ULSH: I don't have that finding in front of me.

MR. HINNEFELD: Well, 29 is internal dosimetry coworker data for Y-12. Am I not right on that, OTIB-29?

MR. MARSCHKE: Yes, that's the one.

CHAIR MUNN: Someone who has the database up, tell us where we are.

MR. MARSCHKE: The 29-02 is "The ORISE CER database of uranium urinalysis records for the Y-12 site from 1950 to 1988 was used without questioning the accuracy of these records. The records were used, despite the problem pointed out by OTIB-19."

And, then, we had --

MS. BRACKETT: This is Liz Brackett. I think I can summarize what this issue is.

CHAIR MUNN: Thank you, Liz.

MS. BRACKETT: The concern was as just stated, and that the document said that we didn't know how they converted their results from mass to activity, how they are recorded in the database. But we have found the equation, and the issue was putting the equation into the document and specifying what all of the variables were and where the different values came from.

So, I believe the action is to revise the TBD because the coworker study I think refers to the Site Profile. So, the action was to put this equation and the complete explanation of it into the Site Profile.

DR. MAURO: This is John. Maybe I could take it to the next step.

It sounds like that you folks have agreed that you did need to include a little bit more descriptive material, so that everyone could understand exactly how you did your calculations. You went ahead and made

those, collected the information necessary. Was that reported back to the Subcommittee in a White Paper that says, okay, this is what we plan to do? Or is that something SC&A hasn't seen yet?

MS. BRACKETT: No, it is not calculations that we did. This was something that the site had done previously, prior to putting the data into their database. And so, this is just documentation of what the site did.

DR. MAURO: I got you.

MS. BRACKETT: And we have sent it, I have forwarded email messages. Since we weren't doing a derivation, I had sent this in an email. I believe it got sent to the Work Group. Then, the action was just to incorporate that into the Site Profile.

DR. MAURO: Okay. So, in theory, SC&A and the Work Group have a chance to look at your plans for incorporating this material. And if we had and said, yes, it looks like

they answered the question, at this point in time we could recommend in abeyance.

But I don't know whether or not SC&A has weighed-in on this. I am really talking process now. It sounds like you guys have done your job. Did we have a chance to weigh-in on that?

MR. MARSCHKE: The OTIB or 29-02 is already being shown in abeyance. I believe, if we go back through the records, we will find that we have had this discussion before. I don't know the date. We would have to go back and check in the records and see when the change was made to in abeyance. But the database is showing the last activity that occurred was that NIOSH gave us on July 16th of last year a nice writeup and an explanation of what they intend to do.

And probably, if we look at the transcript of the meetings that occurred after July 16th, we will see that we discussed this and we have decided to put in abeyance.

DR. MAURO: Now that you are describing it, I can almost picture the equation and it is all coming back. Yes, so now I guess the only question is, did it make it into a revision and does it say in abeyance?

MR. MARSCHKE: It says in abeyance. So, that means it has not been, OTIB-29 has not been revised to include this, or at least that we have not reviewed a revised version of it.

DR. MAURO: Okay.

CHAIR MUNN: So, essentially, we have had no action on it?

DR. ULSH: Right. The status hasn't changed.

MR. MARSCHKE: Well, there is no action to be had until they revise the OTIB.

DR. ULSH: Well, I would kind of propose that maybe that not be a carryover item anymore then. When we have it, when that revision is done, we will let you know and

then we can take it up again.

CHAIR MUNN: I would think so, as long as it is in abeyance now. Okay.

The next item on the agenda is OTIB-21, items 2 and 4; action, SC&A.

MR. MARSCHKE: SC&A, Ron Buchanan has looked at the -- I guess we received the NIOSH response on this some time ago. I think this has been carried over a couple of times.

Issue 2 has to do -- well, I can read it. "The OTIB was written in a manner that presents the data in a logical sequence. However, Section 8 does not provide any details concerning data contained in table 3, making reference to OTIB-52 instead. This could cause confusion or incorrect doses assignment to construction trade workers, if the DR expected or automatically-assigned doses to an unmonitored construction trade worker that was simply 1.4 times the database entries in table 2."

And, then, there was a back-and-

forth between NIOSH and SC&A; eventually, ending with that Ron Buchanan felt that the issue was closed. SC&A reviewed the recent data provided and verified that the method used by NIOSH was correct and claimant-favorable.

So, the SC&A recommendation on 21-02 is to close that issue.

CHAIR MUNN: Is there any concern with that?

(No response.)

We can show 21-02 closed. Agreed?

(Chorus of yes.)

Dick?

MEMBER LEMEN: Agreed.

CHAIR MUNN: Okay. Thank you.

OTIB-21, item 4.

MR. MARSCHKE: That, again, is in a similar situation to 21-02. The issue is "The assumption that the annual recorded doses prior to 1961 represented an entire year if monitoring is not supported. In fact, there

would have been the normal partial years of monitoring employment that would make the average annual recorded dose somewhat less than the dose that would have been received in a full 12-month period. The recorded dose prior to 1961 would need to be adjusted by an average monitoring period factor, such as 12 divided by 11, if the average employment monitoring period was 11 months."

Basically, again, there was back-and-forth between NIOSH and SC&A.

The most recent NIOSH was "The majority of the records, 96 percent, represents single entities (annual totals) for an individual for given years. There are some individuals who have more than one record entry for given years. However, when those records are integrated, the dose value (for both penetrating and skin) are zero. Without knowledge of the time period during which dose was accumulated, it is not possible to prorate doses during the period 1943 to 1960. The

attached examples and reference documents described in the CEDR ORNL database provide further details on this topic."

This is the last SC&A response that we got, and Ron Buchanan did this, was saying this. "This issue is in progress. SC&A reviewed NIOSH's response and attached article. However, the question of how does NIOSH know that the badging data before 1961 were all for 12 months of exposure and not from a partial year of badging (i.e., the employee started or stopped working or changed jobs) has not been satisfactorily answered, including badging data with less than 12 months of exposure as yearly exposures in a coworker's database would slightly decrease the overall assigned doses. Most likely, this decrease would be small, but it appears that there are no data available to sort out the partial-year from the full-year exposures in the badging data prior to 1961 from the information provided.

"SC&A did not see that the attached CEDR ORNL document satisfactorily addressed this issue."

So, we are recommending that this issue remain in progress. We don't think that the approach that is being suggested addresses the partial-year badging.

CHAIR MUNN: So, we are awaiting a NIOSH response to the issue of partial-year data?

DR. ULSH: Yes.

CHAIR MUNN: Okay.

MEMBER ZIEMER: Could I ask a question?

CHAIR MUNN: Please.

MEMBER ZIEMER: Just to refresh memory here, is the partial year based on what is in the worker's file, like they started in mid-year or something like that, or is it simply the film badge record or the dosimetry record starts, say, mid-year or some fraction of a year? So, that record is like "X" number

of years plus so many months? What's the issue here?

MR. HINNEFELD: I think the issue here is this: the CEDR database contains a number, the annual reported dose. If the person working, if everybody worked 12 months of the year, then you have an annual dose from people who were exposed.

MEMBER ZIEMER: Okay.

MR. HINNEFELD: And so, then, you sort of characterize the workplace. So, the 95th percentile of people --

MEMBER ZIEMER: So, that is part of the coworker thing?

MR. HINNEFELD: Yes, it's a coworker thing.

MEMBER ZIEMER: All right.

MR. HINNEFELD: It's a coworker --

MEMBER ZIEMER: Oh, okay.

MR. HINNEFELD: And so, the issue on the table is, if a number of those doses are not for 12 months, but are only for six

months for some typical exposure or some unknown number of months of typical exposure, then you have injected, essentially, these artificial low numbers in your distribution, which in some way would drag down the percentiles. I believe that is the issue. I'm not saying I agree with it, but I think that is the issue.

MR. MARSCHKE: I think, yes, that's the issue, is basically some of the numbers that roll up into the coworker model, you are putting in partial-year doses, where if somebody received like 1 rem over a six-months period, that is going in as an annual dose. It is going in as 1 rem over a 12-month period.

MEMBER ZIEMER: Okay. So, let's take the extreme and say that everyone in that Work Group only really worked a half a year. And you have some number, you have a distribution. What is being said here is that, actually, maybe that distribution --

MR. MARSCHKE: Could go up.

MEMBER ZIEMER: -- is off by a --

MR. MARSCHKE: By a factor of two.

MR. HINNEFELD: Yes, in that case.

MEMBER ZIEMER: Yes. Okay. So, the issue is going to be, to what extent there are enough of those to significantly alter the distribution.

Although one could argue that the distribution takes care of the real-life thing because not everybody for which coworker data is being assigned may have full years, either.

MR. HINNEFELD: And, in fact, by and large, well, coworker data is used when you don't have data for the individual.

MEMBER ZIEMER: Right.

MR. HINNEFELD: By and large, DOE sites badge the people who are more highly exposed. And so, you build a distribution of exposed people to monitor people, and you are using it for unmonitored people. There are some exceptions. That is kind of why the

issue with a lot of this is that sometimes people who should have been badged and should have been in the monitored population were not.

So, that is kind of the fly in the ointment for going too far, but the fact is, by and large, this probably doesn't matter. But everything that we do kind of is, well, are we really be friendly for these guys, though, people who should have been in the monitored population and worked a full year? I mean that is the way the argument is going to go. I don't know how you play this one out, to be honest.

MR. SMITH: Stu, this is Matt Smith. Do you want me to add a few points?

MR. HINNEFELD: Absolutely. Somebody who knows something should talk, Matt Smith.

MR. SMITH: On this period before 1961, we have got 59,012 records that are part of the coworker dataset. When you look at the

CER summary document, they are quoting that 56,444 records are the annual readings. So, there is where the 96 percent number comes from.

MR. HINNEFELD: Okay. I was just going to say, so is correct when you say that is their annual reading, that that means they were employed for 12 months?

MR. SMITH: That is as close as we can get. When we actually go in and interrogate the records and see what are in there, what we see typically is a value for a skin dose, a value for a penetrating dose, and, then, in some cases other entries.

Let me just stop right there. So, 56,444 are just that, a single entry for skin and deep, and that's it. In some cases, we have two entries, three entries, and maybe even more than four. But, unfortunately, what we see in those extra entries is null data, zeroes. It doesn't indicate any dose. So, it does not allow us to pick an end date, a start

date, do any prorating.

The other point I will make on top of everything, and this is kind of global for all the coworker TIBs, is that we do add missed dose to the measured numbers as well. So, if there is any deficiency, we are probably more than making it up on the missed dose front. At a minimum, we are adding the maximum number of exchange cycles minus one, and then taking that times LOD over two. So, that is the other component that works in the coworker dose numbers on the final number that goes into a DR report.

MR. MARSCHKE: So, basically, you are assuming that all the doses received in one period --

MR. HINNEFELD: One badge exchange.

MR. MARSCHKE: -- one badge exchange period, and all the other -- that might be a way to figure that in to cover the -- that may be conservative --

MR. HINNEFELD: Yes.

MR. MARSCHKE: -- a say to just --

MR. SMITH: We have taken a very claimant-favorable approach on the missed dose.

MR. MARSCHKE: You are adding the missed dose for 11 months.

MR. HINNEFELD: Every cycle.

MR. MARSCHKE: Yes, every cycle, for all but one of the cycles of the period. That might be the argument, to say because you are filling out for a whole year or for -- yes, for the whole year.

And so, if somebody was there for one cycle, they had one badge exchange, if they have a reading, they must have had at least one badge exchange.

MR. MARSCHKE: Correct.

MEMBER ZIEMER: And, then, you are adding in the rest.

MR. MARSCHKE: Then, you are adding in the rest as missed dose.

MR. SMITH: Correct.

MR. MARSCHKE: I think that is the argument that would address -- I mean, to me, that seems like you could develop that argument and address Ron's concern here, saying that there are no partial years because we are filling it in with missed dose.

MR. HINNEFELD: Yes. Certainly, it ameliorates the situation.

CHAIR MUNN: So, NIOSH will respond?

MR. HINNEFELD: Yes, we will provide a response.

CHAIR MUNN: Okay. Very good. We will carry that one.

The next item on the agenda, OTIB-51-01, verification a link is complete and the item is closed. NIOSH?

DR. ULSH: Yes, there are a number of issues, 51-01, 47-02, OTIB-19, that are simply linking issues. That is dependent on the database getting up and running. So, I

mean there's no change in that. All we have to do is verify that the link is complete.

MR. MARSCHKE: Those are links to an external document? Is that what you mean by a link, to a PDF file?

CHAIR MUNN: I thought so.

DR. ULSH: I think so. Elyse, is that the case.

CHAIR MUNN: I thought so.

MS. THOMAS: Yes, that's the case. The responses and these attachments were reviewed. Everyone agreed on a path forward and everything, but we just have to link those. And so, until the linking functionality is in the database, that is just kind of on hold.

CHAIR MUNN: Okay.

MS. THOMAS: That is just a linking issue, yes.

CHAIR MUNN: Something magic will happen when the database is complete. All right.

And, Brant, you listed several. Did you --

DR. ULSH: Yes.

CHAIR MUNN: Aside from 51-01, what were the others?

DR. ULSH: OTIB-47, Finding 2.

CHAIR MUNN: 47-02, the next one on our list.

DR. ULSH: OTIB-19, I don't have a finding number on that.

CHAIR MUNN: It may be the entire OTIB. I don't have a finding number for it either. Let me see if I can get back to it on the old list that we have. I can't tell whether I am going to get there or not.

MS. THOMAS: Yes, this is Elyse.

I will try to find it as we are speaking here.

CHAIR MUNN: Right.

MS. THOMAS: Or as you are speaking.

CHAIR MUNN: Well, I have run out

of things to say, so we are in real trouble.

(Laughter.)

I don't see OTIB-19 yet.

Steve, are you any better than we are?

MR. MARSCHKE: The database is slow, very slow.

CHAIR MUNN: Yes, they are very slow, indeed.

MR. MARSCHKE: And I got 19; I can tell you the name of it, but I don't know what the --

CHAIR MUNN: There it is. Now, then, let's look at -- I'm showing only one finding, right?

MR. MARSCHKE: I'm showing only one finding, and it is closed. Maybe that is why we don't have a number to it, because it is only one.

CHAIR MUNN: That may be. It makes sense. And since the database is grinding away for me and not coming up with

anything, we may in this case -- there, I have something.

MR. MARSCHKE: I have, too. I don't see where it says anything was being attached.

CHAIR MUNN: Let's see if I can get the whole thread up.

MR. KATZ: What is there to do here, if it is closed?

CHAIR MUNN: Well, we want to make sure. The question was whether or not there was some sort of link or whether there was anything other the closure itself.

MR. HINNEFELD: Well, the last entry is a recommendation from SC&A that it be closed. That is from October of 2008. The reason that they recommended it be closed was that our side prepared what is called a detailed evaluation of the 1,771 coworker distribution.

So, that is too big. That detailed evaluation is too big to put in the

database to complete the database record. You have to link that analysis then.

MR. MARSCHKE: If you see on the October 1st, 2008, OCAS entry, it says table 2 and then in brackets it says, "See related link."

CHAIR MUNN: That is what we are waiting for.

MR. MARSCHKE: Yes, that is what we are waiting on, is that related link.

CHAIR MUNN: Yes, the link we are waiting for is --

MR. MARSCHKE: I guess, once the database is up, we will have to make sure we get all those links. I mean we have identified these three. The question is, are there any others that have links that are -- we will have to go back to the Access database, probably would be the easiest way to do it, and see if there are any documents in there. There was only a handful that I recall that need to be brought over to this SQL

database.

CHAIR MUNN: And the only reason we are carrying it is just to make sure that that link eventually occurs.

MR. MARSCHKE: That is my understanding of it.

CHAIR MUNN: Yes.

MR. HINNEFELD: Elyse, were you going to say something?

MS. THOMAS: Yes, I've been keeping track. I think these are the only ones. There's OTIB-19, OTIB-47-01 and -02, 57-02 and -03.

DR. ULSH: Wait. You just said some that I didn't say earlier.

MS. THOMAS: Oh, okay. Sorry. Yes, OTIB-19, 47-01 and -02, 57-02 and -03.

MR. SMITH: Could that be 51 instead, Elyse?

MS. THOMAS: No, there is also 51-01.

CHAIR MUNN: Yes, 51-01.

MR. SMITH: Okay.

MS. THOMAS: And Matt Smith has provided longer responses to 21-02 and -04. I think those were distributed to the Subcommittee, but we couldn't put them -- they were too long to include in the database. So, those I think would also be links.

CHAIR MUNN: Links.

MS. THOMAS: But, like I said, he is going to respond. That is an action item for next time.

CHAIR MUNN: I think perhaps, Elyse, I may communicate with you to make sure that the list I have is the same one that you have, and we will just carry an item of incomplete links that are the only thing waiting for some of these items.

MS. THOMAS: Yes. Okay. That would be fine.

CHAIR MUNN: All right. I will be in touch with you about them.

DR. MAURO: Wanda, on items like

this -- this is John -- do we assign these in abeyance because of the links or closed? How are we treating these?

CHAIR MUNN: They are closed.

DR. MAURO: Okay.

MR. KATZ: This is really strictly administrative, and we could just deal with this by sending a notice when the links are there and not really taking these up in Committee because it is really administrative.

CHAIR MUNN: No, I don't intend to take them up in the Committee once we have the list intact. But it is a good idea for us to remember that we still have linking to do. So, I want to make sure that my list agrees with the one that Elyse has. We will do that next time.

Although it is a little early, it seems to me a good time for a break right now, if that is agreeable with everyone. Let's take a 20-minute break and be back at 10 minutes to the hour.

(Whereupon, the foregoing matter went off the record at 10:33 a.m. and went back on the record at 10:51 a.m.)

MR. KATZ: Okay. We are reconvening. It's the Procedures Subcommittee.

Do we have folks back on the line?

CHAIR MUNN: Has Mark joined us, by chance, yet?

MEMBER LEMEN: I am back on the line.

CHAIR MUNN: Thank you, Dick.

MR. KATZ: Welcome, Dick.

CHAIR MUNN: That's good.

Still nothing from Mark?

MR. KATZ: No Mark.

CHAIR MUNN: No Mark.

Very good. Our next item that we have on our agenda is OTIB-70. And my notes say that both NIOSH and SC&A have been discussing the two outstanding issues. Which of you wants to lead off? Where are we with

OTIB-70 right now?

DR. ULSH: Well, I sent out an email in advance of this meeting kind of giving you the status on the two open items, 70-03 and 70-10.

Briefly, those deal with resuspension factors and the decrease in the activity factor that we assumed at 1 percent per day. We discussed this pretty extensively at the last Procedures Subcommittee meeting. We, NIOSH, agreed to review the approaches that were questioned by S&CA.

Also, a further development somewhat related is at the last meeting of the full Advisory Board, the Board referred the Norton Evaluation Report to the Procedures Subcommittee because the approaches that we used in these two findings in OTIB-70 were also used at Norton during the residual period.

I had said in my email that not only the Procedures Subcommittee, but SC&A had

been tasked to go ahead and evaluate the Norton ER. But I got an email from John clarifying that it was not his understanding.

MR. KATZ: They were not tasked on that.

CHAIR MUNN: Yes, they weren't.

DR. ULSH: All right. So, I was mistaken on that.

But, at any rate, this is an issue that is still undergoing active discussion between NIOSH and ORAU, and it is not resolved yet.

CHAIR MUNN: One of the questions that I had with respect to whether or not to assign the Norton documents to SC&A was whether it would not be more beneficial to address the two issues that we have outstanding before we undertake that.

It would seem to me that doing Norton prior to the time that we have finished our discussions with these two issues would to some extent be getting the cart before the

horse. We know that the findings are going to exist beforehand, that these two things, together with possibly others, have not been adequately addressed. But I don't know the feeling of the Subcommittee.

Paul?

MEMBER ZIEMER: Well, I think you have got to do Norton because the clock is on, right? Or, no, you already qualified them; this is the ER.

CHAIR MUNN: They have already qualified them.

DR. ULSH: Yes.

MR. KATZ: It's a Board issue.

MEMBER ZIEMER: Yes. Well, the 0070 is a Board issue.

MR. KATZ: No, but so is Norton at this point --

MEMBER ZIEMER: Yes.

MR. KATZ: -- because it has already been presented to the Board.

MEMBER ZIEMER: We already have

Norton, yes. I thought that they were trying to meet that deadline, but we already have that.

CHAIR MUNN: So, the issue before us as a Subcommittee is whether to authorize SC&A at this time to pursue Norton. I was just saying it seems to me --

MEMBER ZIEMER: Well, is that our purview?

MR. KATZ: It is your prerogative to do that. But it seems like if you have fundamental matters to sort out on OTIB-70, it doesn't make much sense to send SC&A down the trail.

MR. HINNEFELD: It would seem to me that it would be more efficient if we would develop what we are developing first.

MR. KATZ: Right.

MR. HINNEFELD: And since we know that Norton has been referred to this Subcommittee, specifically address Norton in addition to the general finding. And from

that point, then, there can be a decision about whether SC&A should do some additional work on it.

MR. KATZ: Right.

CHAIR MUNN: That would seem the logical process to me as well. Does that make sense? I'm getting nodding heads.

Dick, do you have a position on this?

MEMBER LEMEN: My position is I was nodding my head. You didn't see it.

(Laughter.)

MR. KATZ: I saw it, Dick.

(Laughter.)

DR. MAURO: Stu, this is John.

Just a quick question: when we last discussed this matter, I think there was conceptual agreement that coupling the resuspension factor with the rate at which material declines, for example, this 1 percent per day, and the various issues that go along with those parameters being somehow linked,

and also the fact that when you exhaust air from a room for your turnover, which ultimately is one of the mechanisms by which you remove material from the room, there were some questions remaining on the degree of recycling that might take place, whether the air is being drawn from the breathing zone or some other location.

The reason I bring all this up is I think we did talk about this. I think that we all agreed that these types of matters certainly need to be addressed. And as a result, that this is the path that is going forward in your review of OTIB-70.

So, I think, at least in principle, we all concurred that these issues need to be addressed, and after they are addressed, there is a very good chance that there would be substantial revisions to OTIB-70. And I agree that, then, that may very well cascade and have an effect on how Norton would be affected.

So, I think there is a process in place right now where we have identified the issues, and we all agree that they do need to be addressed. And I also agree that at the back end of the process, looking at these issues in conjunction with Norton and how they address Norton is probably the sensible and the most efficient way to proceed.

CHAIR MUNN: Good.

MR. HINNEFELD: Well, yes. Actually, Jim Neton has been engaged in this, in the TIB-70 issue, a lot more than I have. But I don't dispute what John said about a recognition on our part that there needs to be some reconsideration here.

CHAIR MUNN: Then I am going to note that the issues, the two outstanding issues, continue in discussion, and until we have a further report from NIOSH with respect to where we are going with those two, we are not going to take any action with respect to the Norton document.

If that's agreeable --

MR. KATZ: Sounds good.

CHAIR MUNN: -- then we will move on to the tracking responsibility for overarching issues. I put that in simply because we have never had a process here in this Subcommittee for our doing that.

And I am not certain where that responsibility lies. Jim has taken it under his wing to make sure that those issues remain alive and that they are on his list. But I have no feel for how those are being tracked or how we, as a Subcommittee, might from time to time receive information on them that might be pertinent to other things that we are doing.

I am open to any suggestions that anyone might have. I am uncertain as to what our authority is in this regard and uncertain as to what our responsibility is in this regard.

So, I am wide open to comment. It

is something I think we should look at because we seem to be the focus for most tracking issues. Certainly, as long as the database is primarily being used and being peopled by the work that we do, we should, in my view, have some connection with these overriding issues.

Has anyone else given that any thought? Yes, Paul?

MEMBER ZIEMER: Well, the overarching issues are issues from the point of view of procedures. I mean they are procedures that are --

CHAIR MUNN: Yes, they are.

MEMBER ZIEMER: -- overarching. So, it seems to me, with that sort of focus on it, it becomes our purview. It is one that we have to be cognizant of. So that, if you are reviewing a particular procedure, and recognize that it is either already covered or there's great overlap, you need to be aware of that. And we have tried to do that, to look at where the common issues were.

So, if there is a master list, I don't know if it is something that becomes part of the database or if we just have somebody keep a master list. Obviously, NIOSH, it is in their interest to have this for their own use. I don't know that we need to be redundant, but we would probably, as a minimum, want our contractor to have a list as well.

But, from a practical point of view for NIOSH, what are you doing in this? Is it something that sort of looks separate from what we do in terms of procedures review? Obviously, you are trying to eliminate redundancy and doing things twice and also having consistency.

DR. ULSH: Wanda, you are accurate that Jim Neton is tracking this. He has got a list of, I think it is more than 10 and less than 20, overarching issues that he is keeping track of that have come up.

And, Paul, you are also accurate

that, I mean, there are some parallels to procedures because overarching issues, by definition, are not site-specific. They apply to more than one site.

CHAIR MUNN: And they usually come out of procedures or findings that have been raised.

MR. HINNEFELD: Yes, I think some may have come out of DR review.

DR. ULSH: Yes. It is going to be difficult -- I don't know if I understood correctly if you are proposing that these be included in the database. That will be difficult to do because the database is document-centric. I mean it is based on a particular procedure.

If you are going to try to tuck a particular overarching issue into one, tie it to a procedure, it could maybe be tracked that way. But as a standalone entity, I don't know that that would --

MR. MARSCHKE: Could we make a

dummy document called "dummy overarching", a document called "overarching issues," and then put all these?

Jim Neton, at the last meeting, Jim listed, or I have a list here from my notes that he had of the overarching issues.

CHAIR MUNN: Yes. We have his slide.

MR. MARSCHKE: I mean we could make up some kind of a dummy document, put it into the database and just call it "overarching issues." Then, the document would only be blank or empty and just have a bunch of issues there.

DR. ULSH: I don't know. I would have to think because this is the first time I have heard this idea. I would have to think some more about it.

If the Subcommittee decides that that is the route you want to go, I can take it back and discuss it with the IT folks and get kind of their input on whether there would

be any programming issues with that or things that I am not thinking of with it.

CHAIR MUNN: I can't imagine that it would need to be the kind of interactive database that we have now. What I am suggesting is that we, as a Subcommittee, or certainly I as an individual, do not have any way other than checking the Board's most recent report from Jim as to what the overarching issues are.

DR. ULSH: Right.

CHAIR MUNN: And it seems to me that, since so many of them are developed from what we do here, it would be beneficial for us to be able to have instant recourse to something more cumbersome than checking minutes to try to see what those things are.

Or, if we have suggestions as to whether or not something should be added to that list from time to time, that we communicate those with Jim and make certain that our list includes that addition.

Yes, Paul?

MEMBER ZIEMER: Well, I was just going to ask this as a thought question. For example, let's say that an overarching issue that we know about is the resuspension issue. Okay? And there is at least a particular document, procedure, that deals with that. If other procedures deal with that, I think what you look to, I guess, is to make sure they are either consistent or that they refer to the parent procedure. Or if you are in a TIB, for example, or let's say a TBD, a TBD that deals with an overarching item, that that TBD refers to the parent document.

But how are you tracking this or how is Jim? Jim has this list of topics. Are they linked to, okay, this is covered by OTIB such-and-such?

DR. ULSH: No, I don't think so. It hasn't been developed to that extent. It is just a list of bulleted items --

MEMBER ZIEMER: Right now?

DR. ULSH: -- of the overarching issues.

MEMBER ZIEMER: Yes.

DR. ULSH: No, I don't believe that Jim is --

MEMBER ZIEMER: But, at some point, to be useful, you have to say, okay, where is it that we deal with this? What procedure, what procedures refer to this issue or make use of this issue?

I mean a lot of what you do is overarching, I guess. How you develop the coworker models, those are overarching.

DR. ULSH: Yes, I'm thinking now, Paul, it kind of depends on the nature of the issue, but a lot of times when we develop an approach to address a particular overarching issue, it comes out in a TIB.

MEMBER ZIEMER: Right.

DR. ULSH: And, then, I mean typically there is some examination of that particular TIB's impact on other TBDs and

other TIBs.

MEMBER ZIEMER: Right.

DR. MAURO: This is John.

We sort of had a conversation like this dealing with, when there is a new procedure for dealing with a particular subject, whatever it is, then the question is, how does that make it into all of the Site Profiles, the SEC petition reviews? This was like a process question. What assurance is there?

And the answer was training. That is, everyone at NIOSH goes through a training program where all of these new protocols come into play. When they come into play, everyone is apprised of these. Of course, during the QA process, there is a process to make sure that all of the new dose reconstructions that are being done, any new updates to a Site Profile, reflect the latest protocol that is maybe laid out in a procedure.

Now we are really talking about,

in my mind, the same sort of thing. What we are saying here is there is a list of overarching issues that are recurring themes that come up time and again in different procedures and in different Site Profiles and in SEC petition reviews.

I envision that eventually there will be some modifications to either existing procedures or there will be a new procedure which will explicitly address the overarching issue or there will be a series of White Papers that might come out of DCAS for consideration by the Subcommittee.

So, it is really, when all is said and done, this is just what we are really headed toward. We are early on in the development of some new procedures that will address what we are calling overarching issues. And it is going into the process for review and approval just like every other document, you know, new procedure that comes in.

So, I don't think there is anything special about this, except that because they are so recurring and we see them so many times in different places, we give them a name and we are trying to capture them. This is a judgment call. What is recurring so often that we decide to drop it into this new bucket that we are calling overarching issues?

But I think the process for issues for the development and closure of it is no different than what we are already doing.

CHAIR MUNN: I think that is probably true. I just want to know how we, as a Subcommittee, should be checking, should be tracking them, because it seems to me that we should be.

DR. MAURO: I think when White Papers come out, I think the next step in the process is, you know, well, I guess Steve came up with a suggestion that I agree with, a dummy procedure that we capture these that we

all agree upon are overarching issues, and add to them as we see them arise. There will be a judgment call and we would make a recommendation to DCAS that we think we just hit another overarching issue, and that makes it into the tracking system for this dummy procedure. And, then, track that and its closure just like we track any other.

MR. HINNEFELD: This is Stu.

I would like to suggest that we worry about this in DCAS. We decide how we are going to try to phase in. I am not fundamentally opposed to the dummy document in an existing database, but given our previous experience with trying to adapt an existing database to a new application, I don't think we need to decide right away if we want to go down that path. I think we should think about it, and it might need its own application. It doesn't sound like a very difficult one.

CHAIR MUNN: No, it doesn't.

MR. HINNEFELD: But, you know, if

you build it and all these things use the same data tables, all the information can be imported from wherever it comes up into whatever you build. I would like to suggest that we worry about it and we will develop a tracking system for the overarching issues.

CHAIR MUNN: And will you tell us what that is when you develop it?

MR. HINNEFELD: No, we're going to keep it a secret.

(Laughter.)

We may not have it ready really quick.

CHAIR MUNN: Yes.

MR. HINNEFELD: You know, our developers are busy on a lot of stuff.

CHAIR MUNN: I understand that. I guess my purpose in putting it on the agenda today is not to have a fait accompli, but to have people thinking about it and to be moving toward some identification of how we are going to track it. That would be very helpful.

MR. MARSCHKE: One thing. There was a number of issues that we have transferred, they were specific for different procedures that we have looked at. We have really transferred those to some of the overarching issues.

So, whatever tracking system we come up with, we have to make sure that it feeds back to those particular issues that are currently in the database. There are issues in the database which this has been transferred to --

CHAIR MUNN: Overarching issues.

MR. MARSCHKE: -- overarching issues.

CHAIR MUNN: Right.

MR. MARSCHKE: And we have to make sure that that loop is eventually closed, I guess.

DR. MAURO: In all due respect, Stu, to your position, I certainly understand why this is a matter that is within DCAS's

purview, but at the same time I think that the Subcommittee has, as Steve just pointed out, identified a number of overarching issues that the Subcommittee is concerned with.

I guess separate from the tracking and methodology of dealing with these overarching issues, I think that the Subcommittee also has an interest in tracking it for its own purposes. So, I mean, I would say that they both can be done.

CHAIR MUNN: Yes, I think so. And we will see what DCAS has to say after they have had a chance to kick it around their ballpark for a little while.

Thank you for taking a look at it, and let us know what the early thinking is. Whether that turns out to be the final solution or not, it is still would be helpful for you to let us know.

The next item, TIB-13, action status. It is going to be a rewrite of Findings 3 and 4 from SC&A, and NIOSH was

going to respond on 5, if my notes are accurate.

SC&A?

MR. MARSCHKE: I don't believe that we have done the rewrite, Wanda.

Bob Anigstein, are you still on the phone?

DR. ANIGSTEIN: Yes.

MR. MARSCHKE: I know I forgot to remind you that a rewrite -- I guess at the last meeting we had decided that we were going to rewrite the way we responded to a couple of our responses on TIB-13. Did you get an opportunity to do that?

DR. ANIGSTEIN: Well, you know, I have something that I did in January.

MR. MARSCHKE: For the January meeting.

DR. ANIGSTEIN: Are we talking about something subsequent to that?

MR. MARSCHKE: Yes. At the January meeting, we discussed what you

provided us.

DR. ANIGSTEIN: No, no. The latest I have -- give me one second, Steve. No, just looking at my folder, the latest file I have is January 7th.

MR. MARSCHKE: Right.

DR. ANIGSTEIN: So, there is nothing.

MR. MARSCHKE: We still owe you that, Wanda.

DR. ANIGSTEIN: Yes. You forgot to tell me about it.

(Laughter.)

CHAIR MUNN: Okay.

MEMBER ZIEMER: A question on this one. Is this TIB-13?

MR. MARSCHKE: TIB-13, yes.

CHAIR MUNN: Yes.

MEMBER ZIEMER: According to my notes, this is another issue involving Attila and MCNP.

MR. MARSCHKE: It is very similar

to 10, yes.

MEMBER ZIEMER: Yes.

MR. MARSCHKE: And it is very similar to an overarching issue --

MEMBER ZIEMER: It is between NIOSH ratios and the SC&A ratios generated by those two programs. So, it may be similar to what we did before. I don't recall.

There was a geometry issue as well.

CHAIR MUNN: But it is a different procedure, and therefore --

MEMBER ZIEMER: Right.

CHAIR MUNN: -- requires a different response for both of them. And apparently, we had -- I will expect that next time, Bob, okay?

DR. ANIGSTEIN: Sure.

CHAIR MUNN: Okay.

DR. MAURO: And you can't blame Steve this time, Bob.

(Laughter.)

CHAIR MUNN: No. We have to be specific here.

And with respect to item No. 5, does NIOSH have a response due?

DR. ULSH: I am furiously scrambling, trying to get in touch with Elyse, because I have nothing on 13-05.

Elyse, do you have any update on that?

MS. THOMAS: No, because, Brant, that is a DCAS document. It is a TIB, not an OTIB.

DR. ULSH: Darn.

(Laughter.)

MS. THOMAS: I'm sorry.

DR. ULSH: We're in the same boat, Wanda.

MEMBER ZIEMER: Five was the geometry issue, although my notes say that SC&A agreed that the effect was minor.

CHAIR MUNN: And my note said NIOSH had asked for an opportunity to respond.

MR. MARSCHKE: Yes, my note says, "Further explanation from NIOSH."

MEMBER ZIEMER: Yes.

MR. MARSCHKE: We will wait when we get the transcript and see what the transcript says.

DR. ULSH: I don't question that.

CHAIR MUNN: Well, since at this moment I am unable to get 5 to come up for me, I can't even tell you what it is.

MS. THOMAS: I can read to you from the database, if that would be helpful.

CHAIR MUNN: If you can read the database and we can't, that would be wonderful --

MS. THOMAS: Okay.

CHAIR MUNN: -- if you would read us items 3, 4, and 5.

MR. KATZ: Well, 3 and 4 --

CHAIR MUNN: Three and 4 are SC&A's to deal with.

MR. KATZ: Okay, but they haven't

delivered that. So, we don't need to go over that again, right?

CHAIR MUNN: Okay. And 5?

MS. THOMAS: Okay. For Finding 5, the original finding says, "Some discussion as to how the assumed worker height and placement of the dosimeter on the worker was obtained as well as verification that it creates a plausible upper bound for the claimant would benefit the analysis."

And, then, the NIOSH response just says, "Will be added on update. See also response to Finding 3."

And, then, the followup from the July 26th, 2010, meeting, "The Subcommittee instructed SC&A to review the NIOSH initial response and change the status to in progress."

MR. HINNEFELD: Chances are some things have happened since July --

MEMBER ZIEMER: Yes.

MR. HINNEFELD: -- and we just

don't have it in here.

MEMBER ZIEMER: On January 5th, we looked at it January 5th.

MR. MARSCHKE: The database has not been updated to -- SC&A provided or Bob provided some feedback that we discussed at the July or January 5th meeting --

CHAIR MUNN: Yes.

MR. MARSCHKE: -- that is not reflected in the database. And at the January 5th meeting, we were going to do some edits to those responses as well.

CHAIR MUNN: Yes. And so, we haven't done anything with them.

Now we have come to what we had scheduled for lunch. I hesitate to do that this early, although we could and come back earlier to start the PER reviews, if you wish to do that. Would you prefer to start looking at the PERs now and stop in the middle of that or would you prefer to do them all in one go, in which case we should go to lunch now, come

back, and do the whole thing starting at 12:30, rather than at 1:15? Which would you prefer, lunch now or lunch whenever we get a break from the PERs?

MEMBER ZIEMER: My preference is to go until noon.

MEMBER GIBSON: Yes. The afternoon gets pretty long anyway.

CHAIR MUNN: Yes, it does.

MEMBER GIBSON: So, if we break now, then --

CHAIR MUNN: And it is going to be long. We can almost be sure of it.

All right, let's undertake the PER reviews as they are shown on the agenda, the first one being PER-008, the modification of the IREP cancer risk model, the effect of combined lung model on non-compensable lung cancer claims.

Do you all have that document up?

We will wait for a minute or two to get those documents.

MEMBER LEMEN: Wanda?

CHAIR MUNN: Yes?

MEMBER LEMEN: I am going to have to play this by ear because my internet has gone out. So, I can't pull that document up. I don't know why the internet has gone out, but it has gone out throughout my whole system.

CHAIR MUNN: Oh, good heavens.

MEMBER LEMEN: So, I will just listen, and if I can make a comment, I will, but I will have to work it that way.

CHAIR MUNN: All right. We will just do the best we can with what we have got here.

Well, my file says it is damaged. That's always wonderful. There it is. We have it.

Now, John?

DR. MAURO: Yes?

CHAIR MUNN: We have in our PER formats here, we don't have an easy way so

that we can go to the findings one by one --

DR. MAURO: Okay.

CHAIR MUNN: -- and pull them up and start to talk about them.

DR. MAURO: Okay. We are on PER-008 now?

CHAIR MUNN: We are on PER-008, modification of the IREP cancer model.

DR. MAURO: Okay. That is an interesting one, and I am hoping Hans is on the line.

DR. BEHLING: I am.

DR. MAURO: Hans, it sounds like the way we are going to have to go is summarizing issues one by one and conceptually explaining it, and, then, we will take it from there.

So, Steve, it wasn't possible to load this up or you did load it, but you can't access it? Is that what the problem is?

MR. MARSCHKE: It was not possible to load this up.

DR. MAURO: Okay. So, it is just going ahead and taking it through its steps, Hans. You've got it.

CHAIR MUNN: Well, we all have access to the original document though.

DR. MAURO: Okay. The original document, our full review?

CHAIR MUNN: Your full review --

DR. MAURO: Okay.

CHAIR MUNN: -- is the document that we have, yes.

DR. MAURO: Excellent. Then, Hans can just reference the particular findings or sections as appropriate.

CHAIR MUNN: Absolutely. I personally am starting on page 5, Statement of Purpose. And you can go from there.

DR. BEHLING: Okay. The Statement of Purpose is the standard format and really is the same one that we use almost for every PER.

CHAIR MUNN: Yes, I was being

facetious, Hans.

DR. BEHLING: Let me just give you some basic background in terms of what this PER represents. It is somewhat different from the other ones, and you will see that as I discuss some of the issues that are contained in that report.

As I talk to you, I will talk about issues that are described on a specific page or in a specific table or exhibit, so as to accentuate some of the things that I want to talk about here.

Actually, I want to go at this point to page 7, where we talk about subtask 1 that says, "Identify the circumstances that necessitated the writing of OCAS-PER-008."

Currently, if you can just scan through that page on page 7, you will identify the fact that NIOSH has been using IREP for the first several years of dose reconstruction, and the NIOSH IREP model incorporates for many cancers a trend of

decreasing risk with increasing age for some cancers, but not for lung cancer.

So, what we have in this particular case is the NIOSH IREP model, which does not take into consideration the age of an individual at time of exposure nor the attained age at time of cancer diagnosis. And so, the excess relative risk is strictly a single value that serves as a multiplier when coming up with the PoC value.

As it turns out, approximately in 2003, the National Cancer Institute substantially updated the NIH IREP lung model. As a result of that update, some modifications were made.

In the revised NIH IREP lung model, the excess relative risk is adjusted for aging exposure up to the age of 30 and at the age of diagnosis up to the age of 50. So, it does make some adjustments, depending on what the person's age was at the time of the exposure as well as the attained age for the

cancer diagnosis. But it stops at the age of 50 for cancer diagnosis.

And due to the fact that these two particular models now existed, and due to the commitment that NIOSH has to mandate the reevaluation of advances in scientific knowledge, NIOSH looked at the NIH IREP model and realized that there were significant differences.

So that, when you entered the same set of data for a given cancer claim, lung cancer claim, into the NIOSH IREP versus NIH IREP, they produced significantly different PoC values. I guess in around 2004, the people at SENES were asked to look at that and provide detailed information that relates to what were the differences in those two particular models and provide a comparison.

As a result, the report by Apostoaei and Trabalka in 2004 provides some of the differences for those two particular IREP models. I included those in Exhibit 1,

which is on page 9 of the report.

And there are three tables in total. Tables 2, 3, and 4 are directly taken from that particular 2004 report issued by the SENES.

I hope that your printout also shows the differences in color between the NIH IREP model and the NIOSH model. In my copy, they appear in blue ink and red ink. I don't know if that will show up on your computer.

CHAIR MUNN: Yes, we have them.

DR. BEHLING: Okay. There are also differences between, the tables show differences for acute exposure as well as chronic exposure. Just for an overview, I want to point to the acute exposures on the lefthand side.

If you look, the first table identifies a person who was exposed at age 20 and was diagnosed with lung cancer at age 40. And NIH IREP is much more favorable for all profiles other than the acutely-exposed non-

smoker. So, that was one of the key differences.

In table 3 of Exhibit 1, however, we show that for exposures at age 40 and diagnosis at age 60, the NIOSH IREP model is more claimant-favorable for the non-smoker and select profiles of light smokers.

And lastly, in table 4 of Exhibit 1, you will see higher PoC values for the NIH IREP model for all profiles other than those involving the never-smoker.

So, in essence, you see situations where the IREP model defined by the NIH people gives you higher PoC values. And conversely, there are other profiles for which the NIOSH IREP model gives you higher PoC values.

And of course, that posed a dilemma because, by the time the PER was issued, we had already, obviously, had many, many lung cancers adjudicated that were based on the original NIOSH IREP model. And so, it became a situation where a decision needed to

be made.

And the recommendation by SENES, who had provided us with this particular comparison, was to either update the NIOSH IREP model or simply ignore the NIOSH IREP and defer to the NIH model. But that also would mean that certain cancers would be, certain profiles would actually have a lower PoC value.

A third suggestion that was offered by the SENES people was for NIOSH to seek the opinion of outside experts regarding the use of either one or both models. And as it turns out, NIOSH contacted several people, and I am talking here about people who are identified on the bottom of page 10 and subsequently in page 11.

These people included David Brenner, who is a Professor of Radiation Oncology and Public Health at Columbia University; Dr. Richardson, who is now a Board Member; Faith Davis and Jonathan Samet.

It seemed as if there was general consensus that perhaps the best thing to do is to really run both models and use the higher PoC value. Whichever model can generate a higher PoC value, use that for the adjudication of the claim.

Let me skip over to subtask 3, and that gives the summary of the PER as it affected those individuals who might be now affected when both systems are run or both models are run simultaneously.

If you look briefly on page 12, you will see that, based on the fact that NIOSH could not really determine how a given PoC value might change, they elected to assess all potential lung cancers that had been adjudicated up to that point in time with less than 50 percent PoC value. That number turned out to be 920 claims that met that particular criteria.

Of the 920 claims, 729 involve single cancer claims and 191 claims

represented two or more cancers, of which lung was at least one of the claims.

The evaluation also showed that, of the 920 claims, a total of 95 claims, now when both models were run, 95 claims of the 920 claims yielded higher PoC values due to the inclusion of the second lung model, the NIH lung model. And there were also four different claims that benefitted from inclusion of a bias correction factor that was also incorporated. Those particular statistics are cited in table 1, which is given on page 13 of my report.

To go a step further, of the 99 claims that now have a higher PoC value as a result of running both models concurrently and selecting the one with the higher PoC value, there are only 80 of the 99, only 11 claims actually showed a higher PoC value that was greater than 45 percent. That was the cutoff point for going beyond the cursory evaluation.

And as it turns out, among the 11

claims, most of those were obviously maximized doses. Initially, they were maximized doses, which, as a result of this reevaluation, had to be redefined in order to become more realistic and using a best estimate approach.

To come to the bottom line, and I show this in Exhibit 2, it is that, of the original claims, only claim No. 3 and claim No. 9 of the original 920 claims that represented the universe of claims were potentially impacted, that had been potentially impacted by PER-008, were now compensable. You can look at this particular two cases in table 2 on page 13.

The claim No. 3 was initially a best estimate. The initial PoC value of 46.14 percent was converted to 50.05 percent with the extensive modeling using the second model for assessing this one. So, in that case, claim No. 3 was converted to a compensable claim because it exceeded 50 percent.

The other claim is No. 9, which

was originally an overestimate, estimated as an overestimate at 44.6 percent. But, after reworking it, it ended up with a PoC of 52.08.

So, of the original 920 claims that were the universe of all claims that had to be reevaluated with the current models, only two actually received PoC values that now exceeded 50 percent and were now compensated.

As was already pointed out, I did not really talk about specific issues because there were certain things here that didn't really qualify for the standard format involving findings or issues that we have used in previous assessments of PERs. So, what I am about to talk about is something more of a subjective nature. So, I am at this point really coming down to the Section 4.1, where I had identified general comments regarding these two models.

And as I had already mentioned, when we compare the NIOSH IREP to the NIH IREP, the difference is that the NIOSH IREP

does not concern itself with either the age of an individual at time of exposure not the attained age of the individual when he was diagnosed with cancer.

In contrast, the NIH IREP model does, in fact, consider the age of exposure up to the age of 30 and up to the age of 50 for the age of cancer diagnosis. In other words, when we look at NIH IREP model for a given attained age, the excess relative risk decreases exponentially between ages of exposure between 15 and 30, but is a constant above this age interval. Similarly, for a given age of attainment, it decreases with age up to the age of 50. After that, the risk is essentially a constant.

Let me also briefly point out, just so that we can cover some of the pages here, what we did or what I did here was to actually verify some of the data that was presented in the 2004 report by the SENES. Those you will see as Exhibit 4 on page 15.

What I did was to actually go in there and say, okay, let's make sure that at least we have a confirmation of those numbers since they appeared in the original 2004 SENES report. We used the 50-rem exposure at age 20 and we also, then, ran the PoC calculation. And as you see, if you compare at the very bottom of that page 15, you see the 99 percentile value of 53.75 percent, which, actually, then matches the value, as was indicated in Exhibit 1, which was numbers of Probability of Causation generation by the SENES. So, we verified those numbers.

However, we also realized that that was a constant and did not include uncertainty as you would normally have to include. So, when you look at Exhibit 4, the same values that I have introduced in Exhibit 3, when you add to that an uncertainty, actually, the PoC value goes from, the 99 percentile PoC value goes from 53.75 percent to 61.44 percent. That would probably be the

more realistic value. Anyway, what we did, then, was to verify the fact that the original SENES report contained numbers that we were able to verify.

Going to the next section, 4.2 on page 17, I briefly discussed what my concerns were under the heading of "Limitations and Issues Regarding OCAS PER-008".

The opening statement I made is that the key limitation to SC&A's evaluation of OCAS-PER-008 is the fact that, for this reviewer, IREP remains essentially a black box. And what I mean by that is you can, obviously, put in your variables to define a PoC value, but you really do not have a full understanding of what the mathematical equations were that generated those particular numbers. That is saying it was never asked to look at either per se, and at this point all that we can say in behalf of our effort here is that we were able to reproduce the numbers that SENES generated, but beyond that we

really don't have any way of verifying that the actual mathematical equations as defined by Charles Lang in his 2003 and 2002 reports were actually met.

So, it is a conditional statement that we say that the 11 claims that were part of the final evaluation were probably correctly chosen, but it is a conditional statement because we really don't know what goes on in IREP because for us it is really just nothing more than a black box that generates an output for given inputs.

But the real concern is one that goes one step further between what is the IREP output generated for us, and that is discussed briefly in Section 4.3. I want to really spend as much time on that particular issue as anything else.

When you look at a PoC calculation, and it is defined, obviously, in 40 CFR Part 81, you have a very simple equation that says the PoC is nothing more

than a simple ratio in which the numerator is the radiation risk and the denominator is defined by the radiation risk plus the baseline risk.

From this simple equation, you realize that the PoC is not only driven by the organ dose, but also by the baseline cancer risk that defines a specific cancer. In this case, we are talking about lung cancer.

And it is also defined, and, of course, baseline risk is usually defined by attained age. And everyone knows that one of the principal risks for cancer is really age. As people increase in age, the cancer risk increases exponentially after the age of 40-45.

And as I have already said, the NIOSH cancer risk model, lung cancer risk model, really does not address either the age at exposure not the attained age of cancer diagnosis.

And so, what I did was to

essentially look at this and say, why is it that, if you go back to Exhibit No. 1, and I maybe want to ask you to go back to Exhibit 1 because I want to demonstrate a point here, Exhibit 1 was back on page 9.

If you look at the three tables, and the three tables are defined by a person who is exposed at age 20, diagnosed at age 40 with lung cancer, that's table 1. Table 2 is a person, a male person, who at age 40 is exposed and 20 years later is diagnosed with a lung cancer. And table 4 is, again, a person who is age 20, but instead of 20 years later, he is diagnosed with lung cancer at age 40.

And when you look at the tables, the three tables and compare the Probability of Causation for a person such that he would be exposed age 20, age 40, and diagnosed at age 40, 60, you realize the numbers remain a constant, which means that, somehow or other, the probability of a cancer, of having received dose that resulted in a radiation-

induced cancer obviously is a highly variable because you realize the baseline risk for lung cancer rises dramatically.

And so, what I did was to take, and just for comparison, identify in my analysis on page 18 two individuals. Individual one is exposed at age 20 and diagnosed at age 40. Individual two is exposed at age 40 and diagnosed at 60. Basically, nothing more than a shift of 20 years between exposure and diagnosis.

And when you look at the actual baseline risk for those two individuals, and those are defined in Exhibit No. 5, which is on page 19, and it is small print, but I am going to try, actually, to look at this.

In this incidence data for lung incidence for 2009, you will see for a person who is diagnosed between age 40 and 44, and we are talking about a male and all races, and you realize that the incidence, the baseline cancer incidence rate for a person between age

40 and 45 is 10 cases per 100,000 individuals.

If you, then, go to the person who is diagnosed at age 60, his baseline cancer risk, again, if you go into the -- let's see, column 1, 2, 3 -- the third column goes from 10 per 100,000, it now goes to 208.4 per 100,000. In other words, almost a 21-fold increase in cancer risk. That is strictly driven by the fact that a person at age 60 is 21-fold higher risk of having a lung cancer.

So, when you go back to the equation of PoC, and you can now compare the two, you realize that per unit dose our PC calculation using NIOSH IREP would suggest that, for a common dose of 50 rem, received at age 20 versus 40, the 40-year-old person would have a 21-fold higher risk of cancer induction by a dose of 50 rem as opposed to the 20-year-old. This would basically, then, comply with the PoC calculation as it is generated in Exhibit 1.

When I looked at that, I looked at

other documentation to see if there was any evidence that would suggest that the actual cancer risk, as a function of the age of exposure, would really be something that is supported by the scientific literature. And there are some documents that do suggest, and in fact, Dr. Brenner had written a few articles that would suggest perhaps there is a small increase in the risk per unit dose of cancer as a function of exposure age. But it would certainly not support a 21-fold difference.

And in fact, when I looked at the BEIR 7 report, they evaluated in the BEIR 7 report, and I am now on page 20 of my writeup, they made a few comments. They evaluated the total of 17 different models, and including the NIH model. They came away with the statement, and I read about two-thirds of the page down, the BIER VII states, "A recent analysis conducted for the purpose of updating radioepidemiologic, NIH 2003, the NIH

evaluated models of the form indicated above, but the ER was allowed to vary only over a limited range of exposure ages or attained age."

As I mentioned before, that model really only allows the age of exposure up to 30 and the attained age at time of cancer diagnosis up to the age of 50. After that, it is a constant. So, it really doesn't address the major shift in the baseline cancer risk.

And when you go back to Exhibit 5, which is on page 19, and just look down the column, the third column, as the baseline cancer incidence for lung cancer increases, as I said, at age 40 it is 10 per 100,000, at age 45 to 49, it is 26. As I said, we will skip a couple. I have already identified at age 60 that, based on cancer risk goes to 208 or 21-fold higher than the age at 40, and it continues to climb. Obviously, at age 80 to 84 or 94, whatever that is, it goes up to 441.7. That is the last entry.

And so, one has to realize that the risk per unit dose of radiation, it is going to be affected by the attained age, mainly because the baseline changes significantly. So, the PoC would have to reflect that, as suggested in the equation that defines PoC.

Let me go back to a table that is identified in the BIER 7. The BIER report has its own model. If you look at Exhibit No. 6 on page 21, you will see that under the heading of "Males", this is lifetime attributable to the cancer incidence. This table reflects a single acute exposure of 10 rem.

If you look at lung cancer, which is one, two, three, fourth row from under the males, you will see a change of lifetime risk for a single dose of 10 rem. And if you look at the age 20, the lifetime risk is 149 cancers per 100,000 individuals. If you go to age 40 at exposures, that number is reduced to

104, and so forth.

If you follow the column over to the righthand side, you see an ever-increasing number of cancers as a function of age at exposure. This is what you would really expect, mainly because a person of older age would have fewer years to develop cancer. So, as a function of time at exposure, age of exposure, that number should decline.

And this, obviously, is very much in contrast with the NIOSH IREP model, and less so, but still so, with the NIH IREP model. And so, what I concluded was perhaps both models are conservative. In other words, we are generating PoC values that are perhaps unrealistically high and perhaps compensated people that under more realistic conditions or models would have probably received a PoC value that is below the 50 percent value.

That, in my final statement, is something that was raised and reviewed by Dr. Lewis Wade. And he raises the question as to

the number of compensable lung cancers that, it seems to him at the time of his review, seems to be disproportionate.

At this point, I would be willing to say we need to look at this and open it up for discussion as to whether or not at least NIOSH IREP is a overly-conservative model, and perhaps even NIH IREP is excessively also conservative in assigning higher PoC values than perhaps the BEIR 7 model would suggest.

So, I will turn the discussion over to NIOSH and have their response.

MR. HINNEFELD: Well, I can offer this: I do know that Dr. Richardson, who is the Chairman of the Subcommittee on Scientific Issues, just formed at the last meeting, has age at exposure on the list of things that he wants to look at. So, it is a broader issue than this one PER. So, that is a sort of a scientific issue that is already there.

The attained age question, as I understand it, seems to be a result of,

essentially, the fact that NIOSH IREP doesn't adopt attained age, doesn't allow for attained age, is I believe a function of the selection purely excess relative risk as the increased risk from radiation exposure.

The excess relative risk means that this radiation exposure provides this excess relative to your risk anyway. And so, that is why the attained age will not have an effect, because you are strictly using ERR. If you use excess absolute risk or some combination of factors in some fashion between excess relative and excess absolute risk, in that case the attained age would be very pronounced in the calculations.

So, to me, I know the Science Subcommittee is interested in it or the Chairman is. I suspect it is going to go there.

Jim, I know, Jim Neton is aware that the issue is kicking around out there, not just because of the science team, but

because of other things.

And so, in my humble opinion, it is sort of irrelevant as to whether PER-008 did what it was supposed to do. And the issue, I don't think it will be dropped because I really confident that Dr. Richardson is interested in pursuing that question with respect to IREP in general, the IREP function.

CHAIR MUNN: Question, in the simplistic formula that is used to make the calculation that Hans was just talking to us about, is the basic risk figure the basic risk for all individuals or is it the basic risk factor for smokers?

MR. HINNEFELD: Which are you talking about?

CHAIR MUNN: Back on page 18.

MR. HINNEFELD: Are you talking about the incidence? I don't know.

Hans, do you know that?

DR. BEHLING: Let me see. Where are we here, 18?

MR. HINNEFELD: This is, do you mean 19, incidence data? Or which number are you talking about?

MEMBER ZIEMER: The rad risk value for lung cancer, I think you are asking about, right?

CHAIR MUNN: Yes. Correct. The rad risk over rad risk plus the baseline risk. My question is whether the baseline risk that is used in that calculation is a baseline risk for all individuals or is it a baseline risk for smokers?

DR. BEHLING: Wanda, I am talking about this report for 2009. It involves males of all races. In other words, it probably includes not only the different individuals from ethnic backgrounds, but also smokers and non-smokers. It wasn't really there to give you an absolute number. But it is just to show you that, when you talk about baseline risk, it advances exponentially after the age of 40. As I showed here, between the age of

40 versus 60, you have a 21-fold increase in the baseline risk.

And what that would suggest is that, if we were to come to the understanding that the PoC value as calculated currently under NIOSH IREP were to be true, we don't have to realize that a person who is exposed in the nuclear environment at age 40 is 21-fold higher at risk for developing a cancer than the person at age 20.

I don't believe our current regulations that allow for dose limits would necessarily agree with that assumption, that a 40-year-old person in a nuclear environment is 21 times higher in risk for a given dose of radiation than a 20-year-old.

MR. HINNEFELD: Yes, now, Hans, I was wrong. I think Wanda was asking about the previous page, the PoC calculation on 18, page 18. That is the standard formula for Probability of Causation.

IREP treats smokers and non-

smokers differently. In fact, it treats -- there are several categories of smokers, depending on how much they smoke. So, that is the general formula, and I don't know exactly how the smoking adjustment is made. I think I could find out. But, sitting here today, I don't know.

CHAIR MUNN: Well, it isn't necessary. It is purely an academic question.

MR. HINNEFELD: But that calculation for lung cancer in IREP is done according to the smoking category: never smoked, former smoker, light, and, then, there's like, I think, three categories of current smokers.

MEMBER ZIEMER: So, it may have a different baseline for each of those?

MR. HINNEFELD: The easy way to think of it is that the baseline risk will be different for each of those.

CHAIR MUNN: Thank you.

MEMBER ZIEMER: Could I also ask,

Hans -- this is Ziemer -- on that example on page 18, is this one where you took, the dose is all given the first year of the 20-year period?

DR. BEHLING: Yes, it was an acute exposure.

MEMBER ZIEMER: Yes, got you.

DR. BEHLING: Just to simplify things --

MEMBER ZIEMER: Sure. I understand.

DR. BEHLING: -- I took the simplistic model for showing the difference.

MEMBER ZIEMER: Right. Yes.

DR. BEHLING: That is, a single 50-rem exposure --

MEMBER ZIEMER: Right.

DR. BEHLING: -- much like you would expect in a criticality accident where you had two workers; one was age 20 and the other one 50. And miraculously enough, 20 years later each of them was diagnosed with a

lung cancer and, then, coming up with some Probability of Causation that would suggest that the 40-year-old exposed individuals had, in essence, a 21-fold higher risk for lung cancer, based on the PoC that we calculated.

MEMBER ZIEMER: Now these are just hand calculations here, correct?

DR. BEHLING: Well, it is a simple --

MEMBER ZIEMER: Yes, right. If you plugged the same numbers into IREP and assumed the acute situation --

DR. BEHLING: Yes, but the IREP number is the one you see there of 53.75 percent. It is the one that comes out of the table at Exhibit 1. If you go to Exhibit 1 --

MEMBER ZIEMER: Oh, I got you.

DR. BEHLING: -- you will see that number.

MEMBER ZIEMER: Okay. So, you are saying the IREP number is the same?

DR. BEHLING: Yes. If you look at

Exhibit 1 on page No. 9, you will see for the never smoker who is exposed at age 20 and diagnosed at age 40, 53.75 as the PoC value. That same number applies in table 3 of Exhibit 1, which is a 40-year-old who is diagnosed at age 60, and it is the same PoC, 53.75 percent. That was the whole intent of including Exhibit 1 that shows you have a constant PoC value regardless of age of exposure.

MEMBER ZIEMER: Got you. Okay. Thank you.

DR. BEHLING: And as I said, I went through the literature. I have read all kinds of different reports and journal articles that do suggest that there might be a slight impact on age of exposure that tends to, per unit dose, tends to raise the risk of lung cancer, put you in a dose as a person advances by age, but nothing close to the numbers that I generated here as my illustration or example.

And it certainly is not supported

by the BEIR Committee in their report.

MR. HINNEFELD: Well, all I can say is I know it is, this question, this technical question, will be actively considered by the Science Subcommittee, the Science Issues Subcommittee, and, that is, you know, the outcome of PER-004.

The outcome of that discussion will affect the operation, if it affects anything, it will affect how IREP runs. IREP has always run the way it runs now.

So, not just lung cancer cases, theoretically, but everything run so far would be affected by some sort of change with respect to either attained age or age of exposure.

And so, to me, for the specific purposes of PER-008, it is not really a relevant issue. Although I am not saying it is not a relevant issue in general, I am saying it is not relevant to PER-008.

DR. BEHLING: Yes, and I didn't

want to get into that, but I have looked at several cancers, and the same problem exists for others, including lymphomas.

MR. HINNEFELD: Yes. Yes.

DR. MAURO: This is John.

So, what we really have is a bifurcation here. One is that we are basically reinforcing, through this just through happenstance, and reviewing this particular PER, we ran into this issue, which sounds like to be one of the more universal, global concerns to many people. And it is under investigation.

But with respect to the PER itself and our review, it sounds like we have a favorable review. In other words, did we find anything about the protocols that they are adopting, notwithstanding this fundamental issue were, in fact, performed appropriately. I guess, do we have issues that we think need to remain open other than this overarching issue?

DR. BEHLING: No. As I concluded on page 24, and I have stated conditionally, and I will read it.

"The selection of the samples that aren't affected by OCAS PER-008 for audit by SC&A may at this time be premature." because of the issues that I just raised.

On the other hand, in my second paragraph I say that, "On the assumption that the Subcommittee may dismiss SC&A's concern and accept OCAS-PER-008 in its present state, the selection of DRs for audit is limited to the following eight claims." And I explain why claims 1, 2, 4, 5, 6, 8, 9, 10, and 11 would be the ones that should be selected for review, should be simply accepted in PER-008 in its present form without further concern.

DR. MAURO: So, what I am hearing, Wanda, is SC&A's recommendation is that there are no issues other than the overarching issue, and it is up to the Subcommittee whether you would like to direct us to do any

case studies, you know, the ones that Hans just pointed out.

Or is that something that we leave to the DR Subcommittee. I know that selection of cases for -- because we are really not finished until we actually go through the exercise of checking cases. So, I guess that is where we are in the process.

CHAIR MUNN: In my mind, that part of our overview is very distinctly in Mark's Subcommittee.

MR. KATZ: The one thing that this Subcommittee decides is whether you need to select cases or not.

CHAIR MUNN: Yes.

MR. KATZ: Because in some PERs there is really not a lot of value to be gained by selecting cases and running them. And we have decided that at least on one PER already --

CHAIR MUNN: Yes.

MR. KATZ: -- not to bother.

CHAIR MUNN: Yes.

MR. KATZ: So, that is in these hands. But, then, if you decide you want to check cases, that is when the DR Subcommittee picks up the ball and does that selection.

CHAIR MUNN: As I said, that is clearly their job to do.

DR. MAURO: Let me ask Hans, Hans, based on your identification of those cases -- and we really didn't talk about this -- it means that there is something of benefit here to actually reviewing some of the cases or --

DR. BEHLING: Yes, and, John, this will not really be affected by whether or not NIOSH IREP or NIH IREP generated that number. Because most of these cases, as I have pointed out, of the 11 cases, if you go back to -- where is the table? Most of these were maximized doses initially.

And so, what we were positing, auditing more so than anything that involves IREP, because, as I mentioned before, IREP is

a black box. You only have an option of putting in a certain amount of parameter data that, then, generate a PoC. We don't really have a way of changing any of that.

So, unless somebody made an error in the input, there is nothing really to audit. What is more likely to be subject to an auditing, a review of those cases, is that most of those who were maximized doses were now converted to a best estimate. So, we would, in essence, be doing a dose reconstruction audit in a traditional sense.

DR. MAURO: Right, right. So, the only benefit of doing a case right now would be to see if, in fact, a dose reconstruction that was performed in support of these cases, as revised in light of the redo, was, in fact -- it would be a classic DR review.

DR. BEHLING: Exactly.

DR. MAURO: Right. Okay. Got you.

And I guess that would not be

unlike other -- well, it becomes pretty straightforward. It is a classic DR review not unlike any other DR review we do.

MR. KATZ: Right. But that would, then, be extraneous really to the purpose of doing these audits.

CHAIR MUNN: It would be. Yes, I cannot see that it has any real bearing on this particular group of cases, simply because the PER is --

DR. MAURO: I'm sorry to interrupt.

There is nothing about the DR that this procedure changes.

CHAIR MUNN: No.

DR. MAURO: It is not like we -- and so, in a funny sort of way, the only thing that really needs to be -- you know, this is an unusual circumstance. There really is nothing about what I'm hearing in this particular PER that has any effect on how you go about doing dose reconstruction.

CHAIR MUNN: No, no.

DR. MAURO: So, really, I guess unless some things different, I would say there really is no need to do any cases.

CHAIR MUNN: It seems to me that the purpose in having you audit the PER is to assure that NIOSH has performed its actions appropriately. And this review, as I see it, substantiates that that is the case.

That being the case, since it is not within our purview to begin to consider any changes to IREP, if that is going to happen, that will certainly come out of Dr. Richardson's bailiwick and not ours.

Then, I don't see that we have further action here with respect to this particular PER.

Do the other Members feel differently? Dick, do you have an opinion?

MEMBER LEMEN: My opinion is that I think you're right, Wanda. I think that we should go ahead and look at this in the new

Scientific Subcommittee, which I am a member of, too. So, I agree with you.

CHAIR MUNN: Then, for purposes of our Subcommittee, we will accept this review of our contractor of PER-008 as being acceptable, not providing any findings that require any further action on our part. It will be a closed issue for us, with the understanding that the scientific issue it being taken up by a Working Group.

MR. KATZ: So, it is closed.

CHAIR MUNN: It is closed.

We have not addressed the issue of how we are going to handle these on our database, but that comes later this afternoon. We will do that after lunch.

MEMBER ZIEMER: Well, does that mean we don't look at this any further?

CHAIR MUNN: That means that we don't look at this particular issue, this PER, any further.

It has raised a scientific issue.

The scientific issue is being addressed by another Working Group. Our work is done. SC&A's work on this particular item is done for us.

If they are going to be charged with any further action, it will be from the other Working Group, from the Working Group rather than --

MEMBER ZIEMER: Yes, I just think this one interesting conclusion that says that the current models may be excessively or it may be attributing much more Probability of Causation to people of ages above 30, I think is what it is saying. Then, you can justify, based on the science.

Suppose the Scientific Issues group in looking at this finds out that or determines that this is true. I mean, would NIOSH go back -- or I guess the IREP model might be modified. If that occurred, what would be the process?

MR. HINNEFELD: Well, if the

outcome --

MEMBER ZIEMER: Because, obviously, you don't come back to old cases that maybe were compensated and wouldn't be under the new one.

MR. HINNEFELD: Correct.

MEMBER ZIEMER: So, that is a moot point there.

MR. HINNEFELD: If IREP is modified -- and are you postulating that the modification might result in uniformly downward PoC?

MEMBER ZIEMER: Not uniformly, but you will notice a similar conclusion.

MR. HINNEFELD: Okay. It could go up or down, yes.

MEMBER ZIEMER: The model generates excessively high PoC values --

MR. HINNEFELD: If, in fact, IREP were modified so that PoCs, well, if they changed, we would not open the compensated cases. If there is a chance that a PoC could

have changed upward, we would open --

MEMBER ZIEMER: Right.

MR. HINNEFELD: -- the ones that could change upwards, if we can distinguish. It is not easy on an electronic -- the reason that the lung model was chosen to be run both ways was that it is not easy to distinguish from reading the facts of the case whether it is going to go up or down. So, it is just easier to run them all with both models and use the higher number.

Depending upon what the fact is about what changes with IREP, it may or may not be possible to choose the cases that you know will go up. So, we may end up running all the non-compensable cases again, all 18,000 of them.

MR. KATZ: Well, yes. I mean I think it might even be more complex than this, Stu, because NIH owns a version of IREP, and ours is built largely out of what they have built. If there is a problem with IREP,

depending on where that problem resides in these models, you may have a problem that you would have to work with NIH on.

MR. HINNEFELD: In fact, NIH, might -- you know, we may not be free to act. You're exactly right. We may not be free to act entirely on this because NIH participates in this. It would be, I think, statutorily difficult to be in conflict with NIH. We, in fact, have made some revisions that are not incorporating in today's NIH IREP, but none of them really, you know, they are not conflicting in any particular way. It is like an enhancement or something. Generally, it drives what PoC numbers up. So, we are comfortable with doing that.

But I don't know. We may not be completely free to act. Because, realistically, this sounds, you know, when you are talking about attained age, it seems like the difference between excess relative risk and excess absolute risk. That, to me, sounds

like that is the question.

MEMBER ZIEMER: Yes, and you might find out that actually the differences are not what they appear to be here.

MR. HINNEFELD: Yes. The declining lifetime risk, you know, the one table that shows the declining lifetime risk with age, I think you have to approach cautiously. It is for the reason that Hans mentioned. If your lifetime risk of this exposure as you age goes down, a contributor to that declining risk is that you die of something else first. As you get older when you are exposed, you die of something else first.

That has little to do with our program because people only get into our program when they get cancer. So, they didn't die of something else first.

So, the adjustment of that declining risk factor in terms of age of exposure won't necessarily -- you know, the

part that is attributable to the aging and dying of something else first isn't really translatable to our program.

CHAIR MUNN: Well, I was just happy to see that in the SEER table, after age 85, the geezer factor kicks in.

(Laughter.)

MR. HINNEFELD: If you made it that long --

CHAIR MUNN: If you made it that long, then there is a precipitous drop in the numerical total of persons.

MR. HINNEFELD: Well, it is a fact that the older you are, the longer your life expectancy.

CHAIR MUNN: Yes, that's true.

MR. HINNEFELD: And so, Jenny is sorry.

CHAIR MUNN: Yes.

MR. HINNEFELD: Of all the people in the room.

CHAIR MUNN: Yes. So, this item

is closed for us.

And we are on our way to lunch. We will reconvene at 1:15.

MEMBER LEMEN: Wanda?

CHAIR MUNN: Yes?

MEMBER LEMEN: I will probably be late getting back because there is something I have to do.

CHAIR MUNN: All right.

MEMBER LEMEN: But I will try to rejoin you, but it probably will not be until around 2:30.

MR. KATZ: Okay.

CHAIR MUNN: That will be fine. We will look forward to hearing from you at 2:30.

MEMBER LEMEN: Well, I have been so brilliant this morning, and I just can't imagine --

MR. KATZ: Yes, we are basking in the sunshine. Thank you.

(Laughter.)

CHAIR MUNN: Bye-Bye.

MEMBER LEMEN: Bye.

(Whereupon, the foregoing matter went off the record for lunch at 12:15 p.m. and went back on the record at 1:14 p.m.)

A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

1:14 p.m.

MR. KATZ: This is the Dose Reconstruction Subcommittee of the Advisory Board. We are reconvening after lunch break.

MEMBER GIBSON: It's Procedures.

MR. KATZ: Procedures. Sorry. Not Dose Reconstruction. Let me correct that.

(Laughter.)

Let me check on the line to see who we have. We are not expecting Dr. Lemen. He will be back with us in about an hour.

But how about Mark Griffon?

(No response.)

Okay. How about the NIOSH ORAU and SC&A folks? Are you back on the line?

DR. BEHLING: I am back on the line.

MR. KATZ: Hans, welcome.

How about you, John Mauro?

(No response.)

Okay. Do you want to just get

started?

CHAIR MUNN: I think before John comes back, we --

DR. MAURO: I am back on the line.

CHAIR MUNN: Oh, good.

MR. KATZ: Oh, there you are.

CHAIR MUNN: Good. Thank you, John.

MR. KATZ: Hi, John.

CHAIR MUNN: We just wanted to, I think we should discuss a little bit, before we start PER-18, we need to talk a little bit about how we are going to handle these PERs on the database. We have touched on it a couple of times, but we never have actually made any real decision about how we are going to do it.

As you know, in the past, especially when we were reporting on our activities, we reported in chronological fashion. We had groups of procedures that we had attacked at approximately the same time. That is pretty much how we reported on our

progress in terms of chronological issues.

PERs are likely to be an entirely different thing and are likely to come at us from time to time without the same kind of grouping that we are fortunate enough to have on this one.

It is my suggestion that we begin another grouping, not as a chronological grouping, although there is no reason why we couldn't think of it in those terms, that will keep a record for us of where we are with the PERs and which ones we have addressed, and what findings we have outstanding.

Does anyone have any other concept of how we should handle PERs in our personal tracking system? Does that meet your requirements for what we are going to need to do?

MEMBER ZIEMER: Couldn't you just sort for PERs based on the document number?

CHAIR MUNN: We can.

MR. MARSCHKE: We can -- I don't

know. I mean we are designing the database. We can design it to do -- I don't know what the capability would be.

CHAIR MUNN: Well, one of the capabilities that we specifically asked for from our last discussion was that we not lose that chronological identifier because we had our previous three groups in a chronological group.

MR. MARSCHKE: Yes, we have asked, during our February 17th meeting, we have asked that the summary table that we used to get with the old Access database, we be able to reconstruct that summary table.

CHAIR MUNN: Yes.

MR. MARSCHKE: So that we should be able to get. The current database has this search capability up in the upper righthand corner. And if you put "PER" in that search box, it should pull up all the PERs that have been reviewed, not necessarily in chronological order or anything like that, but

it should pull them all up anyway, so that you would be able to see. I am working my way there, and I will see if that really -- that works.

CHAIR MUNN: Well I am thinking in terms of progress reports, and progress reports seem, for my mind, much easier to deal with if we continue to deal with them in groups of some sort. We have dealt with them in groups of chronology before. I am suggesting that we simply establish a group for PERs, beginning with current dates.

At least we will get them on the database. We will put them on the database. How we will do that we can think about and not rush to judgment on what might be best.

MR. MARSCHKE: Some of the PERs that were reviewed originally, on the original contract, we did some PER reviews under the original three main groupings of reviews.

CHAIR MUNN: There are a few on them.

MR. MARSCHKE: But they don't seem to be showing up in the database. We have to make sure we get those over. Now basically with the new contract, we have the specific task, which is to really go out and do PER reviews. That is what Hans has really been taking a lead on and doing those.

If you want to handle those differently or if you want to put all the PERs in one spot, we can do whatever design you want.

DR. MAURO: What are we doing about -- I mean we have OTIBs, we have got TIBs, we have got PROCs. We have got all of these different labels for things that we have been reviewing in an ongoing way for six years now.

CHAIR MUNN: Yes.

DR. MAURO: Why are PERs different? I mean I know that they are different, but I mean, can't we just track them --

CHAIR MUNN: Yes.

DR. MAURO: -- like we drop another PROC or an OTIB or a TIB --

CHAIR MUNN: Yes.

DR. MAURO: -- into the database? Somehow we were able to do all of those others. Why would this somehow create a challenge that we are going to have difficulty with?

CHAIR MUNN: We did not record the others the way I am suggesting that we make sure we get all of them recorded. That is one of my concerns. We want to make sure that we don't lose anything along the way here.

DR. MAURO: Well, we have got to load them. I guess I misunderstood the question. I mean all the PERs that were done, you know, there may be 10 of them all together, I don't know, since the beginning of this contract --

CHAIR MUNN: Yes.

DR. MAURO: -- where we did a

review. They all need to be loaded into the database and tracked --

CHAIR MUNN: Yes.

DR. MAURO: -- just like we load every PROC and OTIB and TIB we track.

CHAIR MUNN: Correct. Correct. They do need to be and have not been.

DR. MAURO: Yes. Oh, that is a problem. Now how we do that, I don't think we do it any differently than we have done anything else, unless there is a reason.

First, I was thinking we should be able to, if we could sort on them, you know, a PER, like Steve just said. I could see why you would want to look at PERs separately. They are sort of like a different animal.

CHAIR MUNN: Well, but, John, I am hung up not necessarily on the PERs, but on the fact that the PERs are the first group of -- this little batch of PERs here is the first time we have had a new grouping of anything that we have looked at in quite some

time.

We have been following activities that came to us in three groups, three chronological groups, much earlier in the program. We haven't been adding new material to the database.

Now I am proposing that we make sure that not only what we are looking at currently, but the PERs that we have looked at in the past are appropriately loaded into the database. I am hung up on the fact that, even though we can sort on them, I would like to have them in an easy reporting group which we have not done with any other type of report in the past.

DR. MAURO: That's true.

CHAIR MUNN: In the past, everything has been chronological.

DR. MAURO: Okay. Now I see where how you are thinking, and I have to agree. We would like to be able to say something about PERs as a group of six, ten, twelve, and where

we are on those separate --

CHAIR MUNN: Exactly.

DR. MAURO: -- from everything else.

CHAIR MUNN: Exactly. Exactly.

DR. MAURO: Yes.

MR. MARSCHKE: You may want a separate summary table --

DR. MAURO: Yes.

MR. MARSCHKE: -- which, basically, prints them out by document category, prints out how many PERs have been reviewed, how many issues that were raised, and what the status of those issues is, how many PROCs have been reviewed, how many OTIBs have been reviewed.

Otherwise, if we go -- if we go with kind of like a combined table where we have some of them are being grouped chronologically, but others are being grouped by their type of document, that might be, you know, that would be more difficult to do or

more confusing to the reader.

CHAIR MUNN: That is why I am raising the topic. But you understand that in my view PERs are a different kind of animal anyhow. They are not a procedure.

DR. MAURO: Yes.

CHAIR MUNN: And the other things that we have been looking at have been procedures, and they have come to us in groups. These are not procedures, and they will not come to us in groups. They will dribble along from time to time.

These are overviews. They are reviews. They come close to being audits on how procedures have been handled in the past. So, in my mind, that is an entirely different thing than what we have been reviewing in the past.

DR. MAURO: I agree. I agree.

CHAIR MUNN: And there's, therefore, no real reason why they shouldn't be broken up as separate. But if you have no

objection, if no one has any real objection, I am just proposing that we begin with the PERs that we have here today, make sure that they are factored into the database, and then add the ones that have been done in the past that we have already done and have not recorded.

DR. ULSH: It is our intention to load every document NIOSH generates. Okay. Wait. Let me back up.

Not every dose reconstruction, for instance, but every TIB, PROC, report, PERs, all into the database, whether the Procedures Subcommittee has reviewed those or not. That way, the universe of NIOSH documents is in there. And when the Procedures Subcommittee picks up a new document to review, well, then, that document was just assigned to the Procedures Subcommittee.

I am not sure I followed everything that you are asking, but I am wondering if that addresses your concern.

MR. MARSCHKE: It is more of a

summary. How do you get -- that will get the document in.

DR. ULSH: Yes.

MR. MARSCHKE: And we will be able to track it and see when all the issues have been resolved. But I think Wanda is looking more towards how do you get a summary out.

Because when you want to show progress being made to someone, you want to get a summary table out. And previously, we have been doing a summary table chronologically.

MEMBER ZIEMER: Well, plus, you have had a summary table for all procedures. You want to have a parallel thing for the PROCs. And if you can do that with the existing database by simply saying, okay, I will sort on PROCs, get the universe of them, can you generate from that a summary table, numbers, progress, on the subset? Then you are okay. Otherwise, everything else is mixed in with it.

CHAIR MUNN: Well, with the new one, we can sort on almost anything we want to.

MEMBER ZIEMER: I would think so.

CHAIR MUNN: But my concern is that we --

MEMBER ZIEMER: And group them, too.

CHAIR MUNN: Yes. But my concern is that the age of these items and how long we have been dealing with them is also of concern and has been one of the factors in our reporting up to this point.

MEMBER ZIEMER: Right. But I would think, if you could sort on them -- you have the list of PROCs -- you could also have the dates as another item that shows up, right?

CHAIR MUNN: Yes. We have asked that it not be dropped, yes.

MEMBER ZIEMER: Right.

CHAIR MUNN: Because the first

iteration of new approach to the database dropped it. And we have asked that that not happen.

MEMBER ZIEMER: Okay.

CHAIR MUNN: Yes. All right, I think --

MEMBER ZIEMER: Could I also ask, in that relationship, though -- it is easy to identify these. They are all, I think, DCAS or OCAS. Which are they?

MR. HINNEFELD: Whatever you want to call us.

(Laughter.)

MEMBER ZIEMER: Well, I think the ones we have now are OCAS, but --

MR. HINNEFELD: We prepared all the PERs.

MEMBER ZIEMER: Okay, but they will all say "PER" in the identifying thing?

MR. HINNEFELD: Yes, yes.

MEMBER ZIEMER: Now the associated SC&A documents, such as this one we are

talking about here, the PER-18 review, does that show up as a document in the database?

CHAIR MUNN: It has not in the past. That is one of our concerns. And therefore, that is where our findings would come from.

MEMBER ZIEMER: Right.

CHAIR MUNN: So that's why this will want to appear in the database.

DR. MAURO: The fact that we are moving to an Access database, the times I have used Access, you have all these fields that you could sort on and do just about anything you want. So I guess what I am getting at is that there really are no constraints. Certainly, anyone there that has more familiarity with Access than I do -- I don't think there are any -- once you have loaded the data associated with a review of a PER such as what we have just done into the database, as it currently is, I believe you have the wherewithal -- and you have all these

different fields that you think are important separated out -- you could generate any report you want. You could say, "Give me a review of the PER or, first of all, break out all the PER reviews, the data." And you get a report. Here they are.

And you may actually pose questions. How many issues are there associated with the group called PER? I mean I used Access like that for something completely different, and it has almost unlimited capability.

Am I overgeneralizing here? I think this is an easy problem.

CHAIR MUNN: I don't think you are overgeneralizing from what I know, John. This is actually an administrative nit. I don't want us to waste our face time here on it. I just wanted to bring it up.

And we can -- if no one has any real objection, I will suggest that we just go ahead and begin to populate a PER section in

the database. And if we choose to address it in some other way later, that is fine. I just want to get general agreement that we need to go ahead and do that and get started.

MEMBER ZIEMER: I have one other question.

CHAIR MUNN: Yes.

MEMBER ZIEMER: On the SC&A review documents for these, such as the Los Alamos one, John or Steve, does the SC&A code number tell us that it is a PER review, or do you have to look at the title? In other words, I am looking at SCA-TR-PR210-0018. And the 0018 there -- if I just had the number, would I know that it was a PER review?

MR. MARSCHKE: What does the PR stand for in that title, John? Do you know?

DR. MAURO: Well, this, the PER that we are using there -- I wish Nancy was on the line, whether she uses that for others, or is that PER unique to PERs. I believe it is unique to PERS.

MEMBER ZIEMER: This says PR.

DR. MAURO: Oh, it is PR? No. So then, no. PR would be -- no, that is probably just a generic number she has been assigning to all these.

So we do have a problem because what we are saying is we don't have a field right now. As we're -- the methods by which we are loading this information into the database does not allow us to separate out a field called PERs.

MR. MARSCHKE: No, no, no, no.

MEMBER ZIEMER: Well, we do for the OCAS part.

DR. MAURO: But SC&A -- now, Steve, I think you --

MR. MARSCHKE: We don't have a unique document numbering scheme, is what our problem is.

DR. MAURO: Okay.

MR. MARSCHKE: And that basically if we were to -- this basically says that we

reviewed a document and it has got a number on it. It is an SC&A document. It's a TR, it is a PR, and it was issued in 2010, and it is for document number 18.

Now if we reviewed two documents 18, if we reviewed PER-18 and we reviewed OTIB-18, we would have a problem in trying to assign a document number.

DR. MAURO: So we do have a problem. So even if we loaded it up today using our standard methods for loading up, populating the database --

MR. MARSCHKE: Well, that is not populating the database. The database is all populated based upon NIOSH's numbers.

MEMBER ZIEMER: Right now.

MR. MARSCHKE: The database is all NIOSH documents. So it is not a problem in populating the database. It is a problem in SC&A assigning document numbers.

MEMBER ZIEMER: So they can link it more directly.

MR. MARSCHKE: So that we can link it more directly to -- you know -- what we want to be able to do is look at this document number and say, "Oh, this document number has something to do with PER-18."

CHAIR MUNN: Yes.

MR. MARSCHKE: Right now we can say, "Well, this document number has something to do with one of the NIOSH documents which is numbered 18," but we don't know if it is a PER or an OTIB or a PROC or what. So we have got to get a little bit more unique in the way we number our documents.

DR. MAURO: Yes.

MR. MARSCHKE: So that when they pick it up, they know what it is talking about.

DR. MAURO: Yes.

CHAIR MUNN: But we can talk about this offline.

MEMBER ZIEMER: Right. I just wanted to raise it.

CHAIR MUNN: Yes.

MR. MARSCHKE: The other thing, I mean we did mention -- actually, I think John Mauro had the idea, when we came back from the February 17th meeting, is that we should, just like all the NIOSH documents are going to be available in a directory somewhere and be available to the database, what might be a good idea, to have all the SC&A documents in a directory somewhere where they also would be available to link into the database. So that we could pull up the document, the SC&A documents, from the database.

CHAIR MUNN: I thought that was what that website that refers to contractor-generated documents was for.

DR. ULSH: Well, yes, but it would be nice to, if you are inside the tracking database and you are reviewing PER-18, there is a link there that you can pull up NIOSH's PER-18. It would be nice if there was also a link there where you could pull up SC&A's

review --

MEMBER ZIEMER: Right, right.

DR. ULSH: -- of PER-18.

DR. MAURO: Yes.

DR. ULSH: I am trying to remember our meeting. I think --

MR. MARSCHKE: I don't think that came up at the meeting. Actually, John, I think, actually thought of it and told me about this idea after the meeting. And I might have sent it to you in an email that I sent after the meeting, the day after or a couple of days after the meeting.

CHAIR MUNN: Let's talk about it after the meeting or by telephone or something, rather than right here, right now. Because Hans is on deck and is ready to talk to us about PER-18, right? Right?

(No response.)

DR. MAURO: Hans, are you on the line?

(No response.)

CHAIR MUNN: Did we lose him?

DR. MAURO: I could try to reach him on my cell, make sure he is calling in.

CHAIR MUNN: Maybe he doesn't know he is on mute.

MR. KATZ: He was on when we first got started.

DR. MAURO: Oh, okay. We might have lost him somewhere along the way.

DR. BEHLING: Can you hear me?

CHAIR MUNN: Yes.

MR. KATZ: Yes. Yes, now we do.

CHAIR MUNN: Now we can.

DR. BEHLING: Okay. I don't know what happened to my phone. I think my earpiece got disconnected from the phone service. So, anyway, I'm here.

CHAIR MUNN: Too much technology.

DR. BEHLING: Yes, at least for me. You know, I am kind of a dumbbell when it comes to high-tech gadgets.

CHAIR MUNN: Somehow I find that

hard to believe, Hans.

DR. BEHLING: Oh, believe it. Believe it, Wanda. That's why I'm still married to Kathy. She is my safety --

(Laughter.)

Let me start out by giving you a quick overview. The PER-18 was issued on -- let's see here -- July 31st, 2007. That happened to come a month after there was a revision to the TBD-6 for the Los Alamos National Laboratory. As I said, that was issued a month earlier, May 30th, 2007.

And those revisions in the TBD were strictly the result of an internal review by NIOSH itself. In other words, SC&A had very little to do or nothing to do with those revisions. It was an internal review that prompted that particular revision, that, then, prompted the PER-18.

And the principal impact of the revision involved modifications to the neutron-photon ratios that we will discuss

here shortly. And in addition to the neutron-photon ratio changes that occurred in Revision 1, another modification was a change in the energy distribution for photon radiation at the Technical Area 53.

And just for summary purposes, if everyone has a copy of my review that was issued in September 2010, I will try to point out certain things that I will be talking about in order for you to get a better understanding of what the issues are.

I would like to at this point refer you to page 8 of my report, which contains Exhibit 1. As you will see in Exhibit 1, the changes, on top of Exhibit 1 you see the Revision 0, which is the original recommendation for neutron-photon ratios in Los Alamos. And below that is Revision 1. So you can do a one-to-one comparison between the two.

One of the first things you will realize is that the neutron-to-photon ratio in

behalf of Revision 0 was defined in terms of a minimum as well as a maximum value for neutron-photon ratio -- dose ratios. In Revision 1, those changed to median and 95th percentile value.

In addition, you will see in Revision 0 there were only three neutron source types: a plutonium facility, criticality experiments, and other operations. In Revision 1, we had a new category, and that was really nothing more than separating plutonium facilities into those that were exposed to -- that worked with plutonium-239 as opposed to those areas where plutonium-238 was the dominant form. And so you have a fourth category.

By segregating the plutonium facilities into those that predominantly involved exposure to 239 versus 238 involved, obviously, a condition for assigning neutron-photon ratios, which we will discuss under Finding No. 1.

Exhibit 2, which is on page 9 of my report, shows you, again, the original photon distribution on top and the subsequent photon assignment that appeared in Revision 1. And what you see there really is the separation of what you had initially of 30 to 250 keV at 5 percent of the mix and greater than 250 keV, 95. All of a sudden, it was converted to a 1 percent of photon that was below 30 keV, 9 percent between 30 and 50 keV, and 90 percent greater than 250 keV. So those were the major changes that defined Revision 0 to Revision 1.

Let me quickly go over to page 11, where we talk about neutron-photon ratios for plutonium-238 versus plutonium-239. As I have mentioned to you, in Exhibit 1 it shows you, obviously, the two were combined. In subsequent revision, they were separated.

What I found was that this separation of assigned neutron-to-photon ratios between Revision 1 versus 0 was

prompted by a document that I enclosed in my review. It is Exhibit 3, which is identified on page 12.

And I should have possibly underlined it, but in Exhibit No. 3 you have a memorandum that is dated November 9th, 1972. It defines for plutonium-239 workers a dose that had a range from 0.3 to 1.7 neutron-to-gamma ratios.

Those you will see in Exhibit 1. These are the revised numbers. For the 239 fluoride ones, you had a high neutron-photon ratio of 2.8. And again, you will see that in Exhibit 1. For the plutonium-238 workers, they observed an average neutron-photon ratio of 3.9 and all the way up to 5.5.

And you can look at these numbers and identify them in Exhibit 1 because these are the numbers that they elected to use as median and 95th percentile value, as shown on page 8 on Exhibit 1.

Now the question that I sort of

had with respect to this issue is that this single memorandum defines the neutron-photon ratios for all times. And yet, this memorandum is really a moment in time that was dated 1972.

And so the question I have, or at least it is a conditional finding, is that -- is what is the credibility that this particular document should represent neutron-photon ratios for all time periods? Obviously, we are dealing with a moment in time that defines that particular neutron-photon ratio, as defined in Exhibit 3 and the memorandum that I have identified as such.

So that is Finding No. 1. It can be really expected that these neutron-photon ratios apply for all time periods. Until some verification exists, one has to at least look at these numbers in somewhat skeptical terms.

The next one, the next issue, centers around neutron-photon ratios that are defined for the criticality experiments that

were conducted. And as I have stated in 3.1.2 on page 13 of the report, between 1946 and forward there were a total of 20 different criticality assemblies at the TA-18 laboratory that were performed. We know that. It is a matter of record.

And in 1968, a study was conducted, I think, to assess several methods for determining the dose that may be received by workers for no more than five different criticality assemblies. And it was these five criticality assemblies that were evaluated for assessing the neutron-photon ratios for people exposed to neutrons in criticality experiments.

And those, you will see, while there is a table 1 on page 14 that identifies those five different criticality assemblies, and you will see that hydro, which is the fourth, is the one that was really selected, and that has an energy distribution as defined in column two.

What happened with the hydro experiment is that they allowed measurements using dosimeters, both film badges and TLDs. And you will see in Exhibit No. 4, which is also taken from the report, you will see numbers that were selected for defining the neutron-photon ratio.

And I will point out to you on page 15 or Exhibit 4 the No. 3 assembly, which is hydro. You will see in column one, two, three, four, in column five, numbers that involve on plastic man front. Those are the numbers.

And I have to inform you that the numbers you see there, the first one -- a difference of 6 meters, and it gives you a gamma-to-neutron ratio of one. These numbers are gamma-to-neutron.

Then as I will point out in a few minutes, for us to really make use of those data, we have to convert them to neutron-gamma ratios. So you have to look at these numbers

and invert them -- so it is difficult.

You see that the measurements were all the way out to 19.8 meters. And beyond that, NIOSH used extrapolation means to establish neutron-photon ratios.

So of the 20 assemblies, critical assemblies, that were used at Los Alamos National Laboratory, five were assessed in this particular study. Of the five that were assessed, NIOSH selected the hydro critical assembly as a way to come up with neutron-photon ratios.

And the numbers you see in column No. 4, that is, on plastic man front, are the numbers that were actually used. In addition to those numbers, NIOSH extrapolated those numbers to 100 meters.

Those conversions you will see are reported or identified in table No. 2 on page 16. So what you just saw in Exhibit No. 4 has been introduced as table 2 on page 16 of my report.

You will see, obviously, the original gamma-to-neutron ratios in column No. 2, and then in column No. 4 I converted those to neutron-gamma ratios, which is really what we would like to make use of in establishing what the TIB Revision 1 incorporated.

And you will see the two numbers that were used in the revised TBD are the two numbers at 50 meters and 100 meters. Those two numbers correspond to a neutron-to-gamma ratio of 1.7 at 50 meters and at 100 meters 2.8 neutron-photon ratios. Okay?

So those were the numbers that were, in fact, selected for the revised neutron-photon ratios involving critical assemblies.

So the question that I have in looking at the data that was at least available among the five assemblies is that, yes, the hydro critical assembly was, in fact, the one that had the largest distance that approached the 1500 meters that NIOSH used.

But, at the same time, the neutron-photon ratios that you might generate from other assemblies might have been higher, even among the five assemblies that were assessed for this particular purpose. I don't know what the other 15 critical assemblies might have contained, but even for confining our attention to the five assemblies that we do have, if we do look at some of the other assemblies, you realize that there were other critical assemblies for shorter distances that are potentially higher than the hydro.

For instance, in the critical assembly called Jezebel, and that is the first one, you will have a gamma-to-neutron ratio of 0.199 meters. Of course, that converts to a neutron-to-photon ratio of 5.26. So there, for instance, is an example of a neutron-photon ratio involving the critical assembly Jezebel that would have generated possibly a significantly higher dose.

Assuming, again, the extrapolation

method that NIOSH uses, I don't know what the neutron-photon dose ratio would have been at 50 and 100 meters, but intuition tells me it would have been considerably higher than the ones that were selected on behalf of hydro. So that is Finding No. 2.

I am now in Section 3.1.3, Neutron Ratios for Other Operations. As it turns out, between 1943 and `49, LANL workers were not routinely monitored for neutrons at all. Thereafter, neutron exposures were measured by five different neutron dosimeters for various time periods.

And so prior to 1979, recorded neutron dose was likely underestimated because they used NTA film or were not considered reliable.

So starting in 1979, the albedo neutron TLD was introduced and was calibrated by means of boron trifluoride proportional counter. We have some faith in that particular set of measurements. So post-1979,

we seem to have some understanding of what the exposures might have been.

However, what was done -- and I looked at the data -- in fact, if you go to table 3 starting at page 18, you see the data that was used up to 1979. We considered them not usable.

And then starting with 1979, which starts toward the bottom of the page 18, you have, obviously, neutron-gamma ratios that are considered reliable. And you can see in the very far column, starting in 1979, the ratios start out at 0.402 and they oscillate back and forth. You see various numbers, some of which approach 2 and peak out in 1995 with a ratio of 2.968.

So what really strikes you is that over the period between 1979 and 2004, the neutron-photon ratio varied significantly from as low as 0.4 all the way up to approximately 3, which suggests a seven-fold difference from year to year.

And the question now is should it be okay to take a person who may have had an exposure time for occupational exposure defined by his working years at the facility that is defined by a 26-year average value as opposed to year-by-year change, as may be possible when you do have that data.

And so Finding No. 3 raises the question is a single median and 95th percentile N/P ratio that represents 26 years of data appropriate for all people who may have been exposed during very select years where the neutron-photon ratio may have been considerably higher than the value, the average value, median value and 95th percentile value, for the 26-year period?

And it certainly would require a little more work, but certainly would change the dose values for select people who may have been exposed differentially during various periods of time where the neutron-photon ratio was significantly different from the value as

used currently in the TBD Revision 1.

Finding No. 4, what I did, I looked at actual numbers for 1995. And again, if you go to page 19, for 1995, I selected that year because it had a very, very high neutron-photon ratio, as I mentioned. As you go across the column for 1995, there were a total of 12,448 employees.

And you see, obviously, the person rem for photons and neutron doses, and you realize those are very, very high neutron doses that year and that the ratio between 175,000 person millirem of neutrons versus 59,000 yields a ratio of approximately 3 -- in terms of neutron-photon ratio.

And one of the things that NIOSH has done for selecting other operations was to use paired annual dosimetry data for all LANL workers that were monitored post-1979 for penetrating dose to neutrons and photons.

And one of the things that I looked at were the selection criteria. First

of all, there were two things that I felt were perhaps not necessarily correct.

The whole issue of "other," they essentially used all neutron exposures regardless of whether it was defined for plutonium-238, 239, or criticality. And so all others really does not incorporate those. So all others should have had a more restrictive population of workers in order to be more accurate in assessing what that neutron-photon ratio is.

Secondly, the issue that I identified was the criteria for selecting paired neutron-photon ratios. What NIOSH did, in order to select the neutron-photon ratios, was to say one must have at least 50 millirem of photon exposures as well as 50 millirem of neutron exposures.

And as it turns out, when those particular criteria are used, for the year 1995, the median -- I calculated the median arithmetic and the 95th percentile neutron-

gamma ratios that correspond to 2.26. I am reading at the bottom of page 19.

You have neutron-gamma ratios of -- - 2.26 for the -- arithmetic mean is 2.4, and then the 95th percentile was 8.01 neutron-photon ratio, respectively.

And these values seem to make sense when you look at the figure of 6.3 in the TBD. But I still believe that this may be a misrepresentation of things because what you really wanted to do is to measure the neutron exposures for people -- or find the neutron exposure of people who were never measured really for neutrons.

And one of the things that I did was to say, okay, let's use the two criteria, 50 millirem for photons, minimum of 50 millirem for photons, 50 millirem of neutrons, and used those paired numbers and come up with the values.

What I found was -- let me go check here. There were a total of 500 -- I'm

on page 20 -- there were a total of 597 paired worker doses which met that criteria.

I haven't read this for a while. I have to quickly here collect my thoughts here.

No, but they were -- when you use 50 millirem as -- of photon and 50 millirem neutron, and lock in on those two requirements for selecting paired values, you only end up with 188 individuals who met this criteria. So of the 12,488 monitored from 1995, only 188 individuals had exposures that were at least 50 millirem photon plus 50 millirem neutron.

When you, for instance, say, well, let's think about whether or not this is a fair criteria, and say what if you had people who were exposed to neutrons, as I already showed for 1995, the neutron-photon ratio was truly a value approaching three. In other words, your neutron-to-photon ratio would suggest that neutron exposure was considerably higher, three times as high as the gamma dose.

Is it fair to use paired neutron-photon values that each have the same common value of 50 millirem when, in fact, you already know that exposures to neutrons was higher?

When you exclude the criteria of 50 millirem for photons and say let's take only those people who had a monitored dose or a documented dose of 50-millirem neutrons for that year, but not restrict the photon dose to anything -- everything, including zero, would be counted. And when you do that, you end up going from 188 pairs to 597 paired workers.

Those are -- let me see here -- those are in attachment 1, I believe. Attachment 1 gives the paired reading for neutron-gamma ratios. You will see that starting on page 25, and that extends from page 25 to 29.

Going back to page 20 of my report, when you pair neutron doses that were at least 50 millirem or greater with photon doses below 50, they were 166 paired with

neutrons that were greater than 50, but at photon doses of only 10 to 49; they would have been excluded entirely.

If you say let's go look at all photon doses, including zero, you include a total of 240 workers in addition. Those workers are defined in attachment 2.

And one of the things that you will see in attachment 2, and I will ask you to look at page 37 to 42, you will see neutron-gamma ratios that start very high. You will see doses of photons that this first entry you have a ratio of 9.14 neutron-gamma ratio, where the deep photon dose was only 14 millirem and the neutron dose was the 128. This, obviously, would have never been introduced as a means of establishing neutron-photon ratio because these individuals would have had a photon dose that was less than 50, which was the selection criteria.

But even more surprising, I will ask you to turn to page -- where are we here?

To page 37. If you go to page 37 of my report, all of a sudden, you see the decreasing number of people with a photon dose. They end up being reported as having no photon dose at all, as you will see in the first column. You will see nothing but zeroes, nothing but zeroes for the photon dose. And, yet, you will see increasing doses of neutron doses in column No. 4, starting with 50 millirem, and it continues and continues.

If you go from page 37 to 48, to 49, to page 40, 41, all the way up to page 42, so you have all these people whose photon dose was recorded as zero. They had no photon dose. And, yet, when you get to the very bottom of that list on page 42, you will see people who may have had neutron doses as high as 644 millirem, as the third from the bottom on that page. Neutron dose of 644 millirem, but no photon dose.

What the point here is, it is

probably not correct because you have a large number of people who should have been perhaps identified as -- with neutron exposures, but on a basis of having no photon doses, you have nothing to multiply with. So that any neutron dose that you would have experienced ends up being assigned as nothing because they have no photon dose.

And so my finding in this case was that we employed the wrong criteria by selecting paired neutron-photon values that each required to have as a minimum a 50-millirem dose. If we would have extended the photon dose to less than 50, inclusive of zero, you would end up with a very, very different neutron-photon ratio. Let's see if I can identify what that number is.

Yes, the mean value, if you go to page 42, the mean neutron-photon ratio, if you include all of these individuals, inclusive of those with zero, the neutron-photon ratio would have been 3.72.

So I believe that there are deficiencies here that involve the selection criteria for paired neutron-photon ratios that perhaps should include photon doses that were below 50 millirem, including zero. Because, clearly, as you see in attachment No. 2, there were loads and loads of people whose neutron dose was substantially greater than 50 millirem in 1995 and, yet, their photon doses were recorded as below 50. And on behalf of those numbers, they actually have no photon recorded dose.

My last finding involves the fact that the photon doses as cited in -- the changes in photon doses, as cited in Exhibit 1 -- 2, on page 9, where we briefly discuss the changes from the 30 to 250 that was broken into less than 30, and the numbers, the percentage values change -- I am referring to Exhibit 2 on page 9 -- they were never explained.

So my final Finding No. 5 is that

there is no explanation for the changes in photon energy that is defined in the Revision 1 of the TBD. It would be nice to have an explanation as to what prompted those photon changes. So that summarizes my five findings.

CHAIR MUNN: So you have five findings in all. We'll need to pick them out. Do we have anything that we want to discuss regarding Hans's report and what we have seen here?

MR. HINNEFELD: Well, it seems to me that the findings that Hans has are really against the Site Profile, you know, because the Site Profile changed. The reason this PER was written was the Site Profile was revised. And since the Site Profile was revised, we have looked at cases that have been reconstructed with the old version and did something, you know, we recalculated a number of them in order to see what would change based on this new Site Profile.

Now Hans's comments relate to the

support -- they actually pertain to the things that are in the new Site Profile. So you can deal with this how you want. I mean we can respond to them here, but we really ought to be responding in comments against the Site Profile.

And then for the subsequent question of doing cases, are you going to check some -- ask the DR Subcommittee to check and see were the reworked cases done appropriately almost isn't relevant, if we are going to pursue findings against the Rev. 1 Site Profile.

Okay? Does that sound logical to anybody but Ted? He's nodding his head.

CHAIR MUNN: Yes.

DR. BEHLING: Let me just make a comment. The only one that I think would be exempt from your comment, Stu, was the issue that is defined in Exhibit 3. That is, can you take a single memo dated November 9, 1972 and that memo defines neutron-photon ratios

for plutonium-239 versus 238, and assume that it applies to all time periods? Because that was one of the major changes, I guess, in the revision of TBD Revision 1.

MR. HINNEFELD: Okay. But, even then, I mean that was done in Rev. 1 of the Site Profile, right?

DR. BEHLING: No, I did not -- I was not a party to the review of the TBD 0 or 1. So I can't -- I am pretty sure that this memo may have been included, even in Rev. 0. I don't know.

MR. HINNEFELD: Okay, but, still, it pertains to the Site Profile. The Site Profile says, based on this memo, we are going to use this M/P ratio or these M/P ratios?

DR. BEHLING: Yes.

MR. HINNEFELD: And so that, again, perhaps that would be a finding, then, against the Site Profile which says to use that.

I think it doesn't change the

validity of the finding. It doesn't change any of that or the need to address these findings. It is just that, for my way of thinking about it, these are findings against the Site Profile, and to pursue additional, you know, the normal routine on the PER thing would be, with the cases, would be kind of irrelevant at this time.

MR. KATZ: We sort of talked about this before in a way, this sort of -- as sort of a process question. I mean, is this a case where SC&A did not review the original TBD and the changes in the TBD were not resultant of the Board's findings on the original TBD?

MR. HINNEFELD: I don't remember what gave rise to this, to be honest.

DR. BEHLING: You know, can I ask everyone to go back to page number 6 of the report? And I did make mention of that very briefly in the bottom of the page in the last paragraph, where I talk about that the changes to TBD-6 were prompted solely, and I quote,

"were prompted solely by formal internal and NIOSH review comments," unquote.

MR. HINNEFELD: Okay.

DR. BEHLING: And then I also stated, "This further implies that any comments/findings that SC&A had submitted in its review of TBD-6, Rev. 0, involving 2008, were not instrumental with regard to the need for a PER.

So I did acknowledge that up front, that our review of TBD-6 was not instrumental in the writing of this PER.

MR. KATZ: Thank you, Hans. That is actually really helpful. It is just because we have two different situations. We have situations where we have a PER that arises out of the Board's review, and this is a different animal really. It is a PER that is arising out of DCAS's internal evaluation. So then it all makes a lot of sense, actually, that you are getting these comments on the TBD in effect that are comments on the

PER, but that all makes sense.

DR. BEHLING: And I agreed with Stu that these issues were technical issues that should have been addressed in Revision 1 of the TBD.

MR. HINNEFELD: Okay. Now Los Alamos is under consideration, and there is a Los Alamos Work Group.

MR. KATZ: Yes.

MR. HINNEFELD: The thought occurs these findings could all be handled by the Los Alamos Work Group or we can thrash through them here.

MR. KATZ: In a way, it makes more sense for these to go there because, really, this is sort of like a TBD review in a sense. I mean it sort of, as you are saying, since there's not agreement on the method that was applied for the PER in the first place, there's no point in going further with this as a PER review. It is really a TBD review issue.

MR. HINNEFELD: Yes.

MR. KATZ: It is just like a mini-TBD review. It is a portion of the TBD that is taken on.

MR. HINNEFELD: The neutron-photon ratio portion --

MR. KATZ: Right.

MR. HINNEFELD: -- of the Site Profile is what was reviewed here.

MR. KATZ: Yes.

MR. HINNEFELD: And so, to me, that is the logical place where this group is dealing with Los Alamos in its entirety. Of course, it only really deals with Los Alamos after 1975. To the extent that this N/P ratio applies before 1975, I would suggest we leave it alone because if it is not feasible to do an N/P ratio, then the non-presumptives are going to lose that neutron dose, so we got to get a neutron dose for unmonitored people. We have non-presumptive cancers pre-`75.

But, to me, this Subcommittee

could kind of be shed of the findings by handing them to Los Alamos.

CHAIR MUNN: It seems to be almost an unquestionable assumption that the Los Alamos Work Group really should be handling this. Regardless of what we did, we would have to be doing it in such close cooperation with what they are doing that it would appear to simply complicate things if we did not have them addressing these issues as well.

Shall I take it as an action item to refer these, refer this document to the Los Alamos Work Group with our indication that we have reviewed it ourselves, have discussed it with SC&A, and request that they take the responsibility for these five findings?

MR. KATZ: Mike and Paul?

MEMBER ZIEMER: That makes sense. There is no SC&A review of the Los Alamos Site Profile?

MR. HINNEFELD: Well, right now, we are in reviews of Evaluation Reports. I

don't know where the Site Profile --

MEMBER ZIEMER: No, but --

MR. HINNEFELD: There was a Site Profile review --

MR. KATZ: At one point.

MR. HINNEFELD: -- at one point.

DR. MAURO: Yes. Yes, there was a Site Profile review, and I don't know where we are with the ER.

MEMBER ZIEMER: But were these issues raised there?

MR. KATZ: Yes, that is the question, John. Is this sort of a duplicate of -- were these issues already raised when the TBD was reviewed by SC&A?

DR. BEHLING: No, no. No, I am pretty sure that the level of detail that I went into here was not -- and I'm not that familiar with our own review, but I am pretty certain that it would be very unexpected for me to realize that somebody else identified the same issues.

MR. KATZ: So this really is sort of like a second SC&A review of the TBD?

DR. BEHLING: Yes, it would be a supplementary review of the TBD.

DR. ULSH: It depends on which revision of the TBD was reviewed. If it was Rev. 0, the issues that Hans comments on would not have been attached.

MR. KATZ: Oh, exactly. Right.

John, do you know whether SC&A reviewed Rev. 1 or Rev. 0 of the Los Alamos?

DR. MAURO: I don't have an answer for you. I'm sorry. I can look into it and check with Joe --

MR. KATZ: Okay.

DR. MAURO: -- on where we are.

Hans, when you started, you had indicated that your review came out shortly before the revised version of this came out. I guess I was a little confused on, again, exactly -- so the review that you performed was this revision? This goes right back to

your beginning.

DR. BEHLING: No. No, John, what I stated is that the PER-18 was prompted by internal -- NIOSH internal formal review that made these changes, as shown in Exhibit 1 and 2, to the neutron-photon ratios, et cetera, et cetera.

DR. MAURO: Yes, okay.[

DR. BEHLING: And they did not include or address any of the issues that might have been identified by SC&A of the TBD review. I don't know, to answer somebody's question who raised it, did SC&A review Revision 0 or Rev. 1. I don't know. But it would be very unlikely that our review of either one would have probably addressed the issues that I raised here.

DR. MAURO: I hear you. I wish I could give you a definitive answer. I can't.

MEMBER ZIEMER: Well, it just seems to me that whichever the answer is that we need to couple this with what SC&A has done

before. If there was a review -- and, Hans, why do you think no one would have addressed this before?

DR. BEHLING: Because no one is as thorough as I am.

(Laughter.)

MR. KATZ: I was ready for that.

(Laughter.)

MEMBER ZIEMER: We just wanted to get that on the record.

(Laughter.)

CHAIR MUNN: The website shows two SC&A reports. One was a review of the ER preliminary issues, availability of bioassay records. And the other is the Los Alamos National Laboratory Site Profile review --

MR. KATZ: August 2006.

CHAIR MUNN: -- August 2006.

DR. MAURO: Yes, it goes all the way back. And the last one you made reference to, these were issues -- was that relatively recent?

CHAIR MUNN: April of 2010.

DR. MAURO: Yes, okay. Good. That's what I thought. I think it is active now with Joe, the ER.

CHAIR MUNN: That was with respect to an SEC.

DR. MAURO: Yes, with respect to an SEC, exactly.

DR. BEHLING: You know, I am reading again on page 6, and I didn't highlight it and that's why I didn't read it. But what I stated in that is that, "This further implies that any comments/findings that SC&A submitted in the review of TBD-6, Rev. 0" -- so, apparently, Rev. 0 was initially evaluated by SC&A or reviewed by SC&A. So it was Rev. 0.

MR. KATZ: So it wouldn't have captured this, anyway.

DR. BEHLING: No.

MR. KATZ: Right. Well, it makes sense to me. Certainly, it seems like all

your Subcommittee Members agree that this belongs in the Work Group's court.

CHAIR MUNN: All right. If we don't have any objection, then, I will draft an email for the Los Alamos Work Group and transmit this document to them with a brief comment about our discussion here.

DR. MAURO: Hans, I've got a question to you. These findings and observations that you have reported here in the PER, have you been in touch with Joe at all recently regarding these matters? Has there been some interaction there?

DR. BEHLING: No, I have not talked to Joe.

DR. MAURO: Okay. We have got to take care of that. These are going on, and I know Joe is actively involved here. I just want to make sure that -- it will certainly be picked up by the Work Group, but it would be good for Joe to make sure that he is sensitive to the issues that you have raised.

DR. BEHLING: Yes. No, as I said, I have been pretty much working in isolation. I have not conferred with Joe on this issue.

DR. MAURO: Okay.

CHAIR MUNN: Shall I copy Joe?

MR. KATZ: Oh, he is part of -- it will go to the whole Work Group.

CHAIR MUNN: Okay.

MR. KATZ: So then for the sake of completeness, there doesn't need to be a followup with cases in this situation.

CHAIR MUNN: No.

DR. MAURO: No.

CHAIR MUNN: When we do include this on our database, though, we will show it as transferred to the Work Group.

MR. KATZ: Right. I mean, should the Work Group, at the end of the day, should that Work Group conclude that these methods are good, then you could follow up with the cases on this PER, but it would be premature at this point.

CHAIR MUNN: Yes.

DR. ULSH: Is it the case that whatever the LANL Working Group decides, they are going to get back to this Subcommittee, so that we can --

CHAIR MUNN: Supposedly.

MR. KATZ: Yes, we will need to coordinate that, exactly.

CHAIR MUNN: That's what's supposed to happen whenever we transfer.

MR. KATZ: Yes, that's good. Probably something to address in your transfer memo.

CHAIR MUNN: Yes, I will do it.

MR. KATZ: I think you have done that before with other transfers.

CHAIR MUNN: Yes, I have.

All right. Can we move on, then, to PER-20?

MR. KATZ: PER-20?

CHAIR MUNN: PER-20.

MR. KATZ: Who's carrying the ball

on that?

DR. BEHLING: Well, that's mine again. Yes, our review of PER-20 was submitted in March of 2009. I think this is going to be a short one because John tells me that an SEC has been issued for Blockson. The three issues that I identified in my review may all become a no-issue issue as a result of the SEC petition. So I am not sure if it is worth actually discussing it.

DR. MAURO: Why don't you just quickly identify the issues? I believe when we last spoke, Hans, each one of those really become moot.

DR. BEHLING: Yes, because of the particular impact it has on the type of cancer. The three issues, quite frankly, are, very briefly, the following.

For Building 55 workers' exposure to uranium may have involved, at least this is the finding, may have involved low solubility or Type S uranium compounds, which would

obviously impact principally the lung tissue.

Number two, equally, the lower solubility uranium material, if ingested, would imply the assumption of a lower F sub 1 value, which was the second issue, meaning the uptake from the gut into the bloodstream.

And thirdly, estimate of indoor radon concentration -- surrogate data that are considered inappropriate result in low exposure values, and I think that was thoroughly discussed, the use of the Florida phosphogypsum plants.

So as far as I am concerned, based on the SEC status that has been awarded to Blockson, all three issues really are of little or no consequence.

DR. MAURO: Yes, the radon is what triggered the SEC. The Type N/Type S issue which you bring up only has -- they are using M. And the Type S issue that basically you are raising only has applicability to respiratory cancer and perhaps thoracic, some

of the lymphomas, all of which are covered.

So in a funny sort of way, what we have here is some technical issue that has not been resolved, that particular one, the M/S issue, but it becomes moot since any individual that has such a cancer will be compensated under the SEC.

The question really becomes are there any non-presumptive cancers that could be affected by any of these issues? And then, of course, it warrants some discussion because it will affect how you are going to deal with workers who have one of those non-presumptive cancers.

But I guess what I just heard is that -- now the second issue had to do with ingestion?

DR. BEHLING: Yes. And, in fact, if you want to just briefly go over it for those who have that report available, I can sort of, in a very, very brief way, summarize the issues by pointing out the Exhibit No. 2

on page 17 of my report. If everyone takes a few seconds here to bring up the report, go to page number 17 and look at Exhibit No. 2.

DR. MAURO: And as you go over these, you know, perhaps, Stu, the folks there could -- whether you believe any of these issues have play for non-presumptive cancers.

MR. KATZ: Well, I am not sure, John, that it is only an issue of non-presumptive because it is also an issue of anyone without 250 days.

DR. MAURO: That's true. That is absolutely true. Okay. There you go. All of a sudden this is right back --

MR. KATZ: Because they are not in the SEC Class, either, if they don't have 250 days of employment.

CHAIR MUNN: But they also are not covered by the statute, are they?

MR. KATZ: Yes. You can have a day of exposure and you're covered --

DR. MAURO: You're absolutely

right. The only one that goes away really is the radon one because radon, it can't be reconstructed.

MR. KATZ: Right. That is clear. Right.

DR. MAURO: That is clear. The M/S issue, though, you are absolutely right, if it is less than 250 days, you are still going to have to reconstruct this person's exposure, and if it's -- and the M/S issue might have applicability to a lung cancer that a person may have gotten who was there for less than 250 days and, therefore, is not compensated under the SEC.

You have got it right. Okay.

CHAIR MUNN: However, you know, some of us are fairly familiar with Blockson and what has transpired there. And the question that comes to my mind immediately is do we, in fact, have claimants with low periods of employment at the Blockson plant?

MR. HINNEFELD: I don't know, and

I don't think I can run that query here today.

MEMBER ZIEMER: But you may have in the future.

MR. KATZ: You may. You may have a claimant, I think.

MEMBER ZIEMER: When was this report distributed?

DR. BEHLING: The date on this is March 2009.

MR. MARSCHKE: Nancy Johnson sent out a version of it on January 14th of this year.

MEMBER ZIEMER: Oh, January 14th?

MR. HINNEFELD: Yes, that was distributed to us.

MR. MARSCHKE: That was distributed.

CHAIR MUNN: That is when we got it.

MR. MARSCHKE: Yes, I think -- with the PA-cleared version of it.

DR. MAURO: Oh, okay.

CHAIR MUNN: The effective date of the report was March 2009. We received it in January.

DR. BEHLING: Are we still interested in going over at least the first two issues?

CHAIR MUNN: Well, it probably would be wise to get it on the record, Hans.

DR. BEHLING: Okay. I will keep it short. Maybe I will skip all the preliminary stuff and ask you to go to page 15 of the report. Under Section 4.2 is issue one, and it identified NIOSH's -- solubility -- Type M for uranium and its use for converting urine excretion data to inhalation quantities for Building 55 may be inappropriate.

And in that section, for those who are already on the screen looking at Section 4.2, there is a direct quotation that comes out of the TBD. It states the following at the bottom of that quotation.

"Based on these processes and the results of various studies that have been summarized by Rucker, et al, Type M material is used to derive intakes from bioassay results."

I looked at the Rucker report and also looked at ICRP data. What I ended up coming up with is that perhaps the Rucker report does not necessarily endorse this.

If you go to page number 16 after those series of itemized numbers 1 through 6, starting with the paragraph with the wording, "Regarding NIOSH's basis for assigning solubility class type M for uranium, SC&A reviewed the cited reference and came to a different conclusion." The reference is Rucker 2001.

What happened was that the DOE standard guide of good practice for occupational radon detection range had identified uranium oxide as Class W. However, in 2000, the DOE standard was replaced by a

2004 DOE standard with the same title. In table 2-11, DOE 2004 classified this uranium oxide compound as Class Y. So, it underwent a change from a Class W to a Class Y.

And if you go to the next page, which I identified as Exhibit 2 on page 17, you see the ICRP default F sub 1 value and also the inhalation -- if you look at the uranium compound, you will see inhalation Type S and a default F sub 1 value of 0.002, which is obviously a factor of 10 lower than the one that is assumed for ingestion. That applies to highly insoluble compounds UO2 and U3O8.

So these are the default values as cited in ICRP-68, both for the solubility default value as well as the ingestion F sub 1 value. So that was really the basis for those two items, those two issues that I identified in behalf of this PER.

DR. MAURO: Wanda, this is John. This goes back quite some time. When we first discussed Blockson, there were so many issues,

if you remember. Of course, it all ended up with the radon model.

But one of the first issues that we brought up had to do with the Type S/Type N, but at that time we all agreed that this was a Site Profile issue.

CHAIR MUNN: Yes, we did.

DR. MAURO: And as a result, we put it in the parking lot.

CHAIR MUNN: Yes.

DR. MAURO: It really never came out of the parking lot. But at the time that we talked about it -- this goes back a number of years -- Jim Neton was there. And Jim said, well, listen, I agree because, as a matter of practice, whenever you are dealing with U3O8, the yellowcake, he agrees that the practice that is used is the one that is more limiting for the cancer of concern, M or S.

But he said in this particular case at Blockson, where we are dealing with phosphate and the separation of that material,

his experience, and basically, the position he took at the time is that he felt that -- felt strongly that really this is an M situation, not an S.

CHAIR MUNN: Yes.

DR. MAURO: And we agreed to -- you know, at that point, that was the position that Jim had mentioned. And we could probably go back to the minutes, all the way back, and actually find that conversation.

But then it really didn't go much further than that because you put it in the parking lot for the SEC. So I guess we're, in effect, resurrecting it at this time.

DR. BEHLING: Yes, and, also, I would like to point to not only the ICRP default values, but if you go to page 18 of my report, I provide the summary of a report that NIOSH makes reference to, but then dismisses. And that is the 1984 Eidson and Damon study.

And if you look at table 8 at the bottom of page 18, you will see various

empirical data in terms of picocuries per cubic meter that they observed for a total of five different activities. And for the lowest level of activity, identified here as no activity, you have a median value of 27 picocuries per cubic meter and a maximum of 34 picocuries per meter. Okay?

And if you go on to the next page, on page 19, I have provided -- gave an explanation as to what that implies. If you use the lowest median air concentration of 27 picocuries per cubic meter, as defined for the no activity measurement, the daily inhalation intake of 259 picocuries per day of uranium is basically more than three times the 95th percentile value of 82 picocuries per day provided by NIOSH from the urine data, which suggests that we are using the wrong solubility.

And somewhere in the middle of that page 19, I gave you an estimate of what the difference is between Type S and Type M.

As you see, in the first year you would have 664 picocuries per day if you assumed Type S and only 109 for Type M. So you have more than a sixfold difference, depending on which solubility class you select.

And the Damon study would suggest, based on what I showed you here, that we are somewhat underestimating the -- likely to underestimate the solubility class. It should be Type S.

CHAIR MUNN: Well, I think we had some question -- I could be wrong about this, but I thought we had some question as to the applicability of the Eidson and Damon study because of the type of uranium mills in which their data were gathered.

DR. ULSH: That is on Hans's page 19 of 25.

DR. BEHLING: Yes, I quote a statement here that NIOSH dismisses discrepancy and quote the following statement.

CHAIR MUNN: Yes, I think the Work

Group also was of that similar mind because these phosphate plants were so different in their exposure rates than many of the packaging plants were. But that is just reinforcing what you are saying here, I guess. But at the time, I guess, personally, I still would have some reservation about that.

DR. BEHLING: But, Wanda, we need to go back and let me point out on page 18 the no activity -- you know, it was described in the Eidson and Damon document as a no activity, it includes timely, "no other activity is occurring or has occurred for at least two hours prior." That would suggest you have a very nominal air concentration.

CHAIR MUNN: Yes.

DR. BEHLING: And if that already exceeds the 95th percentile -- if the median value of 257 picocuries per cubic meter exceeds the 82 95th percentile value. I was looking at this and saying I am being very, very unconservative in making this comparison,

using the lowest concentration that would suggest 257 picocuries per cubic meter as opposed to 82 generated at the 95th percentile value that NIOSH used. I have a tough time justifying the dismissal of the study.

CHAIR MUNN: Well, I won't argue it at this point.

MEMBER ZIEMER: Well, I have a question on this review. Maybe I need to go through it more carefully, but on a PER review, we are reviewing what NIOSH has already agreed to based on -- are we not? The parameters for the Program Evaluation had previously been agreed to, had they not, the reasons for changing?

MR. HINNEFELD: We do a PER -- we only do a PER when there is a change that we have adopted.

MEMBER ZIEMER: Right.

MR. HINNEFELD: Now that can be an agreed-to change --

MEMBER ZIEMER: Or it may be --

MR. HINNEFELD: -- or it may be one that we did on our own.

MEMBER ZIEMER: I got you. Okay.

MR. KATZ: Like we just talked about with the last one.

MEMBER ZIEMER: Right. Okay. So was this one that you adopted?

MR. HINNEFELD: This was one that we adopted. As I recall --

MEMBER ZIEMER: Yes. I'm sort of saying are there new issues being raised that should have been raised before. Or was this not -- wasn't there some agreed-to Blockson parameters on which the PER was based originally?

MR. HINNEFELD: If I am not mistaken, this PER was written at the time that it became necessary to add the non-uranium exposure because --

CHAIR MUNN: Yes, that is when there was a big fuss about --

MR. HINNEFELD: -- the original

designation of the site was Building 55, and Building 55, by the time the material got to Building 55, it was essentially the phosphoric acid product that had already been stripped from the phosphate rock.

MEMBER ZIEMER: Okay.

MR. HINNEFELD: And so all the other non-uranium --

MEMBER ZIEMER: So the issues that are raised here weren't issues that were available to be reviewed prior to this?

MR. HINNEFELD: Correct.

MEMBER ZIEMER: I was just looking at a process thing.

MR. HINNEFELD: Yes. Yes, I believe that is why this PER was done. I know we did a Blockson PER for that reason. I don't know if this --

MEMBER ZIEMER: No, and it is sort of the question why weren't the issue raised previously because there had been a Blockson review, but it is at that change in the site

description or the covered area, right?

MR. HINNEFELD: Certainly, we did a PER for that reason. I am trying to remember if this is the one or not.

DR. MAURO: But, notwithstanding the motivation for the PER, the issue regarding S and M that we just talked about was one of the very, very first issues that were raised early on. And, basically, NIOSH doesn't agree. And, you know, basically, we agreed to disagree.

And I think you went forward with your PER -- I'm sorry -- with your revisions to Blockson's Site Profile and the entire process. Under the position, no, it is appropriately M and not S. And so notwithstanding the fact that this issue was on the table, I think it was NIOSH's judgment, and to this day, that, no, you still feel strongly that it is M and there is no possibility that it could be S.

So I think it is a judgment made

where we agreed to disagree on this issue. And it hasn't gotten that much attention because we were so much focused on thorium issues and radon issues and the other matters that the PER did tend to.

MEMBER ZIEMER: Well, the reason I raised the question, though, is, I mean, in principle, we can agree to disagree. In essence, if the issue was closed, I don't think it is fair to raise it again. That's all I am saying. If it wasn't closed, it is fair game.

DR. MAURO: Yes, it was not. I can tell you that issue was never closed. And, Wanda, you may recall a number of occasions when we were sort of in the home stretch of resolving all our SEC issues. I did make mention that, notwithstanding the fact that we resolved, in my mind, what the SEC issues were, which we did, I did want to point out that we still did have this S and M issue that is still on the table for a Site

Profile.

That came up on occasion from time to time as a reminder. But we were so engaged in the SEC that that really was sort of put on the back burner and stayed there until today.

MEMBER ZIEMER: So that actually was an issue that the Blockson Work Group didn't close out, is what you are saying?

DR. MAURO: That is correct.

MEMBER ZIEMER: Now that being the case, then I would raise the next question is who closes it out, if it still is in play, in order to handle the non-presumptive cancers or the less-than-250-day people? Is it the job of this group to do that? Because it is not so much a procedure anymore; it is a Site Profile issue.

DR. MAURO: Right. Right, but our position has always been, one, if there is an active Work Group for a Site Profile, then, it is transferred. I believe the Blockson Work Group ended when the SEC was granted. I am

not sure.

CHAIR MUNN: It is dead on arrival.

DR. MAURO: Yes. So it does come back into our lap.

MR. KATZ: No, we can resurrect the Blockson --

MEMBER ZIEMER: Well, yes. Wanda wants to keep it. She is grasping for the power here.

(Laughter.)

CHAIR MUNN: No, thanks. No. No, you don't want to --

MEMBER ZIEMER: Were you on that one, too, Wanda? Okay.

MEMBER LEMEN: This is Dick. I am back for a while. I am just back for a while.

MR. KATZ: Welcome back, Dick.

CHAIR MUNN: Welcome back, Dick.

MEMBER ZIEMER: No, it is just a process issue.

CHAIR MUNN: That PER was -- no

this is the old one.

MR. KATZ: But it is the Work Group that has the context about the site discussions --

CHAIR MUNN: Yes.

MR. KATZ: -- to finish an issue that they have raised. Who was on that Work Group?

CHAIR MUNN: Well, I was. Gen was. Mike was. And Dr. Melius was. And Mark came along to carry the water.

MR. HINNEFELD: This is Stu. What do we know about this Eidson and Damon data from 1984 on the packaging stations, the yellowcakes, don't those numbers for no activity seem inordinately high?

CHAIR MUNN: It seems like it.

MR. HINNEFELD: If I am doing this conversion right, that is almost 60 dpm per cubic meter, right?

MEMBER ZIEMER: Which table are you looking at?

MR. HINNEFELD: I am looking at table 8, and that is on page --

MEMBER ZIEMER: I see it, yes.

MR. HINNEFELD: That is essentially 60 dpm per cubic meter. I am pretty sure the DAC derived air concentration for Class Y uranium --

MEMBER ZIEMER: This is --

MR. HINNEFELD: Picocuries per cubic meter.

MEMBER ZIEMER: Oh, yes, right.

MR. HINNEFELD: I am pretty sure if we were going back to Class Y, 44 dpms per cubic meter is the derived air concentration, I mean the limits, the statutory limit. I don't know. They just seem surprisingly high to me, that they'd have much activity with nothing going on.

CHAIR MUNN: Well, I thought we talked about it back then.

MR. HINNEFELD: I wasn't really in those meetings. Jim was in there, but I

wasn't really in the Blockson meetings.

MR. KATZ: Yes, Wanda, Mike, Dr. Melius, Jim --

CHAIR MUNN: Jim and Jim, yes.

MR. KATZ: And Brad was an alternate.

CHAIR MUNN: Yes. And we are routinely split 50/50 on our findings. So what is the suggestion here? You are suggesting that the Blockson Group be reconstituted for the purpose of addressing the S and M issue?

MEMBER ZIEMER: Well, it sounds to me like the findings here are not that the PER was inappropriately administered, but that there is some underlying issues with the Site Profile on which the PER was --

MR. HINNEFELD: You will have a Site Profile. You add a Class; you still have got a Site Profile -- non-presumptives unless the 250 day was --

MR. KATZ: I think this goes to

the Work Group. I mean, otherwise, you lose the --

MR. HINNEFELD: I'm glad you suggested it.

MR. KATZ: -- context of the Work Group.

MR. HINNEFELD: Brant suggested it to me, and I wouldn't bring it up because I didn't want to give it to Wanda.

(Laughter.)

Not because I wouldn't have wanted to --

MR. KATZ: Wanda gets it either way; it is just who she gets as company.

CHAIR MUNN: Yes, and it only hurts.

MR. HINNEFELD: Okay. Have you got a cheerful note on that --

CHAIR MUNN: No.

MR. HINNEFELD: -- we are going to hand that one back to Tom, I guess.

CHAIR MUNN: The question, then,

is --

MEMBER ZIEMER: Well, is it something we can handle easily here, I mean --

MR. HINNEFELD: Well, there is a lot of stuff that goes in this. Y and S are really not the same. The old Class Y and the new Class S are really not the same in terms of what the mathematical excretion curve, what the excretion curve looks like because, well, the new one, S, the model is far more complicated. And so when you draw it out, it and Y don't really look that similar.

MEMBER ZIEMER: Is this an overriding issue?

MR. HINNEFELD: It is just the three categories, you know, there are three categories. So everybody assumes they sort of align, and they would align more than across an alignment. Although I have heard people say that the old Class Y looks more like the new Class M than it does the new Class S.

So, I mean, there is more to this

than just saying, well, it used to be the third category, and I think there will be debate about that. I think you will also find a lot of literature and some people who have experience who say that U3O8, depending upon how it originated, doesn't behave like UO2 that has been high-fired and treated for fuel.

I know of at least a couple of classes of uranium -- papers, at least one that shows it pretty clearly between the old M and the old S, not really fitting S at all, but a little more retained than the old M.

So, to me, it is not cut and dried that because a single thing says it can be Y or it can be S, that you automatically put it there in all circumstances.

MR. KATZ: Well, here's what I suggest. If this is --

MR. HINNEFELD: And it is not an easy issue, I don't think.

MR. KATZ: If this is an issue that sort of gets to fundamental health

physics matters versus site-specific expertise about Blockson, if it is there, then it can stay here. If it is about sort of fundamental health physics determinations versus having to know a lot about site-specific circumstances, then it seems like it is perfectly good to stay here and not resurrect Blockson. But if it really relies on understanding a lot about Blockson, then it would be more appropriate to send it there.

MR. HINNEFELD: It requires a piece of both. I think it's -- but the specific conditions that existed at Blockson and the specific conditions under which the U3O8 was produced I think are probably more important than the basic --

MR. KATZ: Okay. Well, then --

DR. ULSH: There are -- if I understand correctly, there were originally three findings, this Type S versus Type M. There was an ingestion one that I don't have all the details.

MR. HINNEFELD: Well, the ingestion just has -- it is the same one, I believe, that if you have a different -- was it F2 -- goes along a different absorption fraction from the gut, applies to a different solubility.

DR. ULSH: So two related issues, but --

MR. HINNEFELD: But it is essentially the same issue in two exposure pathways.

DR. BEHLING: And, again, I want to point out the ICRP default values that I enclosed as Exhibit No. 2, which, according to ICRP Publication 68, does define a Class S for inhalation and an F sub 2 value of 0.002 for ingestion. So it is really a classification that is a default value defined by ICRP-68.

DR. ULSH: Okay. So if you want to call that one issue or two --

DR. BEHLING: Well, they are interrelated, obviously.

DR. ULSH: Two issues. Those both can be referred to Blockson or not.

MR. KATZ: Yes, I think so.

MR. HINNEFELD: I wouldn't do one without the other.

MR. KATZ: Right, right.

DR. ULSH: And then the third was radon, which we have agreed is not an issue anymore.

MR. KATZ: No longer. It's gone.

MR. HINNEFELD: We will get the right people involved in it.

CHAIR MUNN: Tom and --

MR. HINNEFELD: It might be Dave Allen. It might be -- well, Jim -- Jim was involved in Blockson.

CHAIR MUNN: Yes, he was.

MR. HINNEFELD: When you get into internal dosimetry, we rely a lot on Dave Allen, although Tom is almost as good.

MR. KATZ: Okay. We can resurrect the Work Group on the website, too.

CHAIR MUNN: So we have two -- you had three findings, right? Or do we just have two?

MR. HINNEFELD: We only got two left. We had three. We have two left.

MR. KATZ: Radon is moot.

MR. HINNEFELD: One of them was radon.

CHAIR MUNN: Yes.

MR. KATZ: Radon is moot.

CHAIR MUNN: Okay.

MR. KATZ: Maybe it is business they can get done within one meeting.

(Laughter.)

CHAIR MUNN: Right, the same way we did radon, yes. Exactly. And in precisely the same manner. It is a foregone conclusion. Okay?

Very good. Then we -- to summarize, we had no -- with respect to the PERs, we had no action with respect to PER-8. That is closed. The issue is going to

scientific issues that was raised there. And so it is not our problem.

PER-18 --

MR. KATZ: That transferred to LANL.

CHAIR MUNN: -- is transferred to the LANL Work Group with an explanation.

PER-20, we will reconstitute the Blockson Work Group, and we will deal with the two findings that were identified in that document. Correct? Well, the three outstanding ones that were in that document.

DR. BEHLING: Yes. Wanda, it is Finding No. 1 and 2.

CHAIR MUNN: Yes.

DR. BEHLING: Three was the radon, and it's been resolved.

CHAIR MUNN: Right. I will remember that.

MR. KATZ: Findings 1 and 2. Thanks.

CHAIR MUNN: Very good. Now that

having upset my digestive system no end, can we please take a 15-minute break here. We are almost due for it anyhow. Let's be back at 10 minutes after 3:00, at which time we will undertake the review of the 14 two-pagers.

If you have not looked at them before, please look at them very quickly now because we are, despite all our best efforts, going to have to talk about some of the changes that were on those draft tracking sheets that you got. Okay?

MEMBER LEMEN: This is Dick. I will call back in at a quarter after, correct?

CHAIR MUNN: Ten after.

MEMBER LEMEN: Ten after?

CHAIR MUNN: Right.

MEMBER LEMEN: I will call back in then.

CHAIR MUNN: Thanks, Dick.

MR. KATZ: Okay. I will put the phone on mute.

(Whereupon, the above-entitled

matter went off the record at 2:54 p.m. and went back on the record at 3:12 p.m.)

MR. KATZ: Okay. We are reconvening the Procedures Subcommittee.

CHAIR MUNN: Have we picked up Mark yet?

MR. KATZ: The two-pagers.

Mark, do we have you with us?

(No response.)

How about, Dick, are you back on?

MEMBER LEMEN: I am back on.

MR. KATZ: Great.

CHAIR MUNN: That's good.

I am going to suggest that what we do is address these in the same order as the communication that forwarded them to us, Nancy Johnson's --

MEMBER LEMEN: A general suggestion before we start on that?

CHAIR MUNN: Yes, sir.

MEMBER LEMEN: Since these are going to be two-pagers, and I looked at these

to see if we could get them down to one page, a lot of them we probably can. But when we print these up and submit these, is it possible -- this may be a technical question nobody can answer -- is it possible we could print these on two sides, so that we only have one piece of paper?

MR. KATZ: Well, Dick, these are going to live on the web. They are not really for hard copy --

MEMBER LEMEN: If they are going to live on the web, I guess that would be fine.

MR. KATZ: Yes.

MEMBER LEMEN: But if they are not going to live on the web, and we ever decide to print them up, I would like to see them on one page.

MR. KATZ: Right. But these really are not handouts.

MEMBER LEMEN: They will never go into handouts?

MR. KATZ: No, I don't think so. I mean not unless someone were to request a copy of one of them, but no.

MEMBER LEMEN: Well, I can see people requesting them, and if they do, that is my suggestion.

MR. KATZ: Yes. But, I mean, for most people, they would just download them. If someone asks us to send them a hard copy, we would.

MEMBER LEMEN: Well, if you do send them a hard copy, I would just suggest you put it on one page with double-sided printing.

CHAIR MUNN: Yes, I think we can do that. For the most part, they are just going to be on the web.

MEMBER LEMEN: That's fine.

CHAIR MUNN: Okay.

MEMBER LEMEN: I knew that, but I also know that we will get requests for them and we will be sending out hard copy of them.

CHAIR MUNN: Okay.

MEMBER LEMEN: And I also know people will print them out as hard copies.

CHAIR MUNN: Yes, yes. Yes, they do. No question about it.

MEMBER LEMEN: That's all.

CHAIR MUNN: All of our efforts notwithstanding, we still are going to have to discuss some of these.

I want to thank SC&A for doing such a good job of getting us close to where we need to be, especially with these first 12. I am hoping that we can definitely get through the first 12 and, with any luck at all, we may be able to take a look at the additional two, PER-3 and OTIB-3.

But, just for the record, let's start with TIB-2, tritium calculations with IMBA. Let's try our best not to do what we have done before, which is beat these to death. But there are one or two matters of just process that we want to take a look at.

I hope we can as we are going through these.

I will give you as we are looking at them a couple of suggested changes that I had as I was going through them one last time. Most of them are nits and not of any real consequence. There wasn't anything that I saw in any of these that did have specific technical consequences. It was just our continuing concern with trying to make sure that they flow and that they are as easily readable as possible.

Did anyone encounter any technical issues that you had grief with when you were going through them?

We are still just doing clerical work here, but for the most part I think we are just about done.

On TIB-2 --

MEMBER ZIEMER: Hang on a minute.

CHAIR MUNN: -- tritium calculations with IMBA.

MEMBER LEMEN: Is that TIB-2 or

are you on ORAUT-Procedure?

CHAIR MUNN: No, this is tritium calculations with IMBA, OCAS-TIB-002, Rev. 0.

MEMBER LEMEN: There is another IMBA one, too, that is 002, right?

CHAIR MUNN: No.

MEMBER LEMEN: Well, I don't know what I am looking at then.

MS. THOMAS: I think Procedure 2 in IMBA also.

MEMBER LEMEN: That's what I thought.

MS. THOMAS: So, I think you are right.

CHAIR MUNN: PROC-2, that is PROC-2. That is talking about --

MEMBER LEMEN: No, it's Procedure 2.

CHAIR MUNN: Yes. Use of integrated modules for bioanalysis?

MEMBER LEMEN: Yes.

CHAIR MUNN: Yes. Yes, on the

list of things that we have in front of us, that is No. 10. We are starting with OCAS-TIB-002.

MEMBER LEMEN: Well, what is the date of the transmittal? Maybe I have got the wrong --

CHAIR MUNN: The date of the --

MEMBER LEMEN: Mine is March 2nd, 2011.

CHAIR MUNN: And mine printed out without a date on it.

MR. MARSCHKE: January 1st -- oh, January 21, 2011, the transmittal letter from Nancy --

CHAIR MUNN: From Nancy.

MR. MARSCHKE: Those are marked up.

DR. OSTROW: This is Steve Ostrow.

I think Wanda distributed to the Board all these on March 10th.

CHAIR MUNN: Yes.

MEMBER LEMEN: Okay. I have got

March 2nd. Let me see if I can find March 10. I thought she did, too.

CHAIR MUNN: Yes, I sent everything out.

MEMBER LEMEN: Well, you are very good person.

MR. KATZ: Well, there was a later batch from SC&A. Maybe that is what --

CHAIR MUNN: Well, that may be confusing the issue.

MR. KATZ: -- Dick is --

DR. OSTROW: We sent out a batch last week also.

MR. KATZ: Yes, right.

CHAIR MUNN: Yes. Ignore that batch from last week. That is --

MEMBER LEMEN: I found one from Wanda dated the 9th, March the 9th. Would that be it?

DR. OSTROW: That could be it.

MEMBER LEMEN: I think that is right because it has got 1 through 14, the

first one being TIB-2.

CHAIR MUNN: That's it. You got it.

MEMBER LEMEN: But there is a problem with that.

CHAIR MUNN: What's that?

MEMBER LEMEN: There is no attachment to it. It just lists them.

MR. KATZ: But Wanda sent a series of emails, and one of them included --

MEMBER ZIEMER: No, Wanda didn't send it. She referred to it and said that SC&A was sending it.

MEMBER LEMEN: It says, "Attached are two-page summaries." However, there is no attachment on mine.

MEMBER ZIEMER: The note I got from Wanda said that they were being distributed by SC&A, not by her.

CHAIR MUNN: They had already been distributed and should have been in everybody's box.

MR. HINNEFELD: Are these the 14 that were sent to the entire Board?

CHAIR MUNN: These are the 14 that were sent to the entire Board.

MR. HINNEFELD: Yes. Okay.

CHAIR MUNN: And they were sent specifically to --

MEMBER LEMEN: Well, go ahead. I don't have any technical comments on them, but --

MR. HINNEFELD: Ted attached them to an email on March 2nd.

MEMBER LEMEN: I have Ted's March 2nd email in front of me, but there, again, is no attachment to that one, either.

MR. KATZ: Well, it was attached to my email.

MR. HINNEFELD: That one showed up on my email, my March 2nd.

MEMBER LEMEN: I know, Ted. Go ahead and say. I am listening. I use an Apple.

CHAIR MUNN: I do know for a fact that the attachments are on the copy that Ted sent on your CDC email.

MEMBER LEMEN: I'll find it. Don't worry.

CHAIR MUNN: They are listed there.

I had absolutely no comment at all on this one with one minor statement. We, in all of these, frequently used TBD over and over again. Even though we all know what we are talking about with TIB, it is very repetitive when you read it. I have a tendency to go back and check to see where did it first say TIB. Where did it first say TIB?

In this particular case, on the last sentence of the third paragraph, we talked about several things here, but then it says "the TIB". Does anyone object to my changing that to "this TIB"?

MEMBER ZIEMER: This is the third paragraph?

CHAIR MUNN: The third paragraph, the very last sentence.

MEMBER ZIEMER: "The TIB"?

CHAIR MUNN: "The TIB". What was I saying? Was I saying "TBD"?

MR. KATZ: "TBD", but it doesn't matter.

CHAIR MUNN: If no one has any objection, I am going to say "this" because we many times say "the", "the", "the".

MR. KATZ: That's fine. This is just decent English, and that's fine.

CHAIR MUNN: Just decent.

MR. KATZ: Just let me, again, just make the point, though, that I think you can make those editorial copy edit changes without getting approval or blessing from anyone.

CHAIR MUNN: I think we can, too --

MR. KATZ: You don't need to do that here.

CHAIR MUNN: -- certainly, in the future intend to do that.

MR. KATZ: Yes.

CHAIR MUNN: But, as I said, this is our transition, meaning I hope we are not going to do this in the future.

Now the next one that we have --

MEMBER ZIEMER: Hold, hold, hold. I've got some comments on this.

CHAIR MUNN: Yes, sir.

MEMBER ZIEMER: Two things. Actually, there's three. I think we are putting back in acronyms. We were trying to eliminate them all.

CHAIR MUNN: Yes, we were.

MEMBER ZIEMER: Now we are putting them back in. I just want to make that comment because I see them appearing more, instead of less.

CHAIR MUNN: And I would prefer to just go ahead and spell it out.

MEMBER ZIEMER: I would, too. Or

just say "the Bulletin" or whatever it is.

CHAIR MUNN: "The procedure."

MEMBER ZIEMER: Yes. But here's the comment: the first sentence of the third paragraph --

CHAIR MUNN: Yes?

MEMBER ZIEMER: -- actually, for everyone's benefit, I want you to know it contains a dangling participle.

CHAIR MUNN: Oh, no.

MEMBER ZIEMER: I'm showing you what that is.

It says literally that the organs are using the models, at the end of the sentence. That is how a dangling participle works. "Internal doses to the body or particular organs using the models." You see, the subject of a participle phrase has to be right in front of it. I know that is not what they mean.

So, the way you fix it is to say, "facilitate the calculation of internal doses

by using the models." The doses aren't using the models.

CHAIR MUNN: Now is that the --

MEMBER ZIEMER: The first sentence in the second or the third paragraph.

CHAIR MUNN: Okay. Now the first sentence in the second paragraph --

MEMBER ZIEMER: No, the first sentence in the third paragraph.

CHAIR MUNN: Well, that is a continuation of the sentence above it. "A computer code, i.e., computer program, called IMBA (Integrated Model for Bioassay) is used to facilitate the calculation of internal doses using the models and assumptions recommended by the ICRP."

MEMBER ZIEMER: It says the internal doses are using the models. They are not.

MR. MARSCHKE: Calculation of internal doses using the models.

CHAIR MUNN: Can we say "by using

the models"?

MEMBER ZIEMER: Yes, that is what I am suggesting.

CHAIR MUNN: Okay. Okay?

MEMBER ZIEMER: And these are editorial. Then, at the very end, the second resolution, "agreed with Finding 2, inspection," and so on. The contractor verified the procedure, and so on. And, then, they say the procedure will be modified. Well, if they verified it and everything, it sort of says, why does it have to be modified? Is it because it was cumbersome?

CHAIR MUNN: I think so.

MEMBER ZIEMER: So, the modification is to make it less cumbersome? Because, I mean, otherwise, why does it -- they have confirmed that it works. I mean the finding was that it was cumbersome.

So, they confirm that it works, gives the correct results, and, then, it says the procedure will be modified in the future,

future revision. We can say, well, why are you modifying it if it works okay?

CHAIR MUNN: To make it simpler.

MEMBER ZIEMER: Okay.

CHAIR MUNN: Can we say, "the procedure will be simplified in a future revision."? Would that --

MEMBER LEMEN: Why don't we just say, "the procedure may be simplified in future revisions?" Or leave the sentence off completely?

MR. KATZ: Yes, I would go with you on that, Dick. Leave it out completely. It has no really substantial importance.

MEMBER ZIEMER: Well, if it is resolving the finding, the finding is that it is cumbersome, not that it is wrong.

MEMBER LEMEN: Why bring that up? That just confuses the reader.

MEMBER ZIEMER: Well, that is what Finding 2 up above says. That is the finding.

MEMBER LEMEN: I know.

MEMBER ZIEMER: It is cumbersome.

CHAIR MUNN: Okay.

MEMBER ZIEMER: So, we say, okay, we are going to make it less cumbersome.

CHAIR MUNN: It has been removed.

MEMBER ZIEMER: Okay.

CHAIR MUNN: Okay? The next one is TIB-006, interpretation of external dosimetry records at the Savannah River Site.

This is one of those which we had comments from -- no, we didn't. This one was quite straightforward. I saw nothing problematical on it.

MEMBER ZIEMER: Well, I think Dr. Richardson made some comments on this or somebody did.

CHAIR MUNN: He made comments on 7.

MEMBER ZIEMER: Somebody changed "calculation" to "estimation".

CHAIR MUNN: On?

MEMBER ZIEMER: The third line.

Oh, wait a minute. Do I have the wrong one? Which one are we on?

CHAIR MUNN: TIB-6.

MEMBER ZIEMER: Yes, I grabbed the wrong one. TIB-6? Okay, sorry. No, I am good on it.

CHAIR MUNN: I was good on that one, too.

Any problem with 06 as is?

(No response.)

If not, it is going out the way it is.

The next one is TIB-007, and this is the first one of which Dr. Richardson did have comment, starting with "the use of improved radiation dosimeter in 1971, workers with significant potential for neutron exposure were adequately monitored."

"I disagree with this statement in the current context. Adequately monitored means very different things in different contexts. The dosimetry program may have been

adequate for radiation protection purposes. Whether it is adequate to derive adequate and precise time, varying individual doses for all workers employed from 1971 onward for the purposes of deriving risk assessments, is a different matter."

And the sentence with which he took issue was, "Starting in 1971, an improved radiation dosimeter was used at SRS," he says.

MEMBER ZIEMER: I think I agree with that. The fact that it was an improved dosimeter doesn't confirm that they were adequately monitored. It could be a procedural issue. The old 7 says that they were adequately monitored. I don't know if that would logically follow.

It may be sufficient just to say that an improved dosimeter was used starting at that date. I see his point. I think, to me, it makes sense.

CHAIR MUNN: All right. I guess my question more had to do with the second

sentence than with that one.

MEMBER ZIEMER: In that paragraph?

CHAIR MUNN: I did not understand why intermittently might have been taken out, as it seems to be a reasonable statement, exposed to neutron radiation and not monitored. Since exposures were not thought to exceed the DOE criterion, I didn't see any reason to remove the word intermittently. Certainly, SRS workers were carefully monitored.

MEMBER ZIEMER: I think he saying, if you are suggesting that they might not have been monitored, then it doesn't matter whether it was intermittent or not if they weren't monitored, right?

CHAIR MUNN: Well, I don't know whether that was his correction or whether it was --

MEMBER ZIEMER: Before, it said, "might have been intermittently exposed and not monitored".

CHAIR MUNN: "Might have been intermittently exposed to neutron radiation and not monitored", yes.

MEMBER ZIEMER: And I think he is saying, well, if they weren't monitored, then whether it was intermittent or not doesn't make any difference, I guess is the point. I don't know.

CHAIR MUNN: Well, "I also questioned the low level neutron radiation. I have not gone back to look at the original document."

MEMBER LEMEN: Don't you think he might mean "and/or not monitored?"

CHAIR MUNN: Well, whether he does or not, I am willing to let it stand as is.

MEMBER LEMEN: You're taking a stand, huh?

CHAIR MUNN: Well, that's fine with me. The one question that I had had to do with the preceding paragraph and the argument with respect to underreporting or

underestimating a worker's actual neutron dose because it seemed to me that underreporting was correct.

MEMBER LEMEN: Underreporting is correct.

CHAIR MUNN: I think so, too.

"Radiation monitoring technologies and practices changed over time at the SRS. Prior to 1971, the personal neutron dosimeter may have underreported", not "underestimated", I think.

MEMBER LEMEN: I agree with you.

MEMBER ZIEMER: Yes, and it has to do with the lower limit of detection, I think. So, it is an underreporting issue.

CHAIR MUNN: It is an underreporting of a worker's actual neutron dose.

MEMBER ZIEMER: Let me ask a revision question to that, because in almost every case I think Dr. Richardson has changed the words "determine dose" to "estimate dose",

and I am not that comfortable with using the word "estimate", although I guess we use it when we talk about best estimate, don't we?

CHAIR MUNN: Well, I would prefer not to use "estimate", either, because we are --

MEMBER ZIEMER: "Estimate" has a different connotation. We are calculating --

CHAIR MUNN: We are calculating doses.

MEMBER ZIEMER: And even where we use indirect methods, it is a determination. Anyway, I have a bit of a problem, and there's a number of these that have all been changed to "estimate."

CHAIR MUNN: And I would prefer not to do that.

MEMBER ZIEMER: He didn't like the word "determine."

CHAIR MUNN: Well, he did not like the word "assigned," either.

MEMBER ZIEMER: How about

"calculated?" "Provides guidance to calculated doses?" Or maybe it is not always calculated. See, we are not always calculating them, either. We are sometimes --

MR. KATZ: But, I mean, you do use best estimate. You use estimates for all of the doses presently. Whatever method you use, it is a best estimate or it is an overestimate or it is an underestimate.

CHAIR MUNN: But, again, that is one of those words that can make a great deal of difference to the layperson, where we might understand that fully. Yet, the ordinary person reading this, who does not have the background in what we have done and what is done --

DR. OSTROW: Hi. This is Steve Ostrow.

Let me tell you my reasoning for this. I changed all to "estimate". My reasoning is a person actually received a dose which has a certain value. Calculations or

readings on different radiation monitoring devices are estimates of what the actual dose actually was.

CHAIR MUNN: That's true.

DR. OSTROW: That is the reasoning I used.

CHAIR MUNN: Yes, and, as I said, in this forum, I would not disagree with that. I am thinking in terms of the forum that this document is going to see, which is an entirely different audience.

I would find "calculate" to be reasonable. Do you find any grief with that, Steve?

DR. OSTROW: No, Wanda, I understand your reasoning. "Calculate", "determine" are fine, something that sounds a little more definite than "estimate."

CHAIR MUNN: Do you have any problem with "calculate?"

MEMBER GIBSON: I don't know that I do, but I just don't know if that is -- I

mean we are just trying to figure out what David was referring to here.

MEMBER ZIEMER: Well, I thought David -- no, Steve says he is the one that changed it.

CHAIR MUNN: This wasn't Dave. This was Steve Ostrow who changed it.

MEMBER GIBSON: Oh, I'm sorry. No, that's fine.

CHAIR MUNN: He is trying to simplify.

MR. HINNEFELD: If we are ever talking about a document that is providing guidance to what we do, you can use the generic term "reconstruct" because we do dose reconstruction.

MEMBER ZIEMER: Right.

MR. HINNEFELD: Now that is not useful in every -- depending on how you are using the word.

MEMBER ZIEMER: Maybe that would work better here then, "guidance to

reconstruct neutron doses."

CHAIR MUNN: Well, again, that is a fairly complicated word.

MR. HINNEFELD: Well, again, everything we send is a dose reconstruction.

MEMBER ZIEMER: Well, see, that infers a calculation.

MR. HINNEFELD: Okay.

MEMBER ZIEMER: How about just using the "original determined dose?" That is pretty --

MR. HINNEFELD: We really don't have a horse in the race.

MEMBER ZIEMER: It is to make it understandable to laypeople.

CHAIR MUNN: "Determine neutron doses," okay. Very good.

The next item is OTIB-004, estimating the maximum plausible dose for workers at Atomic Weapons Employer facilities.

Again, comments from Dr. Richardson, and his question, the first one,

"believed by who?" "NIOSH really needs an explicit procedure to serve as the basis for making this determination."

The sentence reads, "In cases where, before performing a dose reconstruction, it is believed that the worker's cancer is likely not caused by radiation in the work environment. The maximum plausible dose is estimated for the claimant."

MEMBER ZIEMER: Well, I think it is a good argument. In other words, a priori, if you haven't made a dose estimate, what would make you believe that the worker's cancer wasn't caused by radiation?

So, you have to have some basis, I think is what he is saying here. And just to say that, well, that is because somebody believed that is a little bit of maybe hard to swallow.

I think it would be good, and maybe he is suggesting this, if you could sort

of in very succinct terms say that, based on -- and it has to be some sort of criteria -- based on an initial evaluation of the worker's job, or whatever it might be, that it is expected that his cancer may not have been caused by the work environment, that you do this process, something that is simply not somebody believes it. It sounds like it is based on some kind of an evaluation.

MR. HINNEFELD: It is most likely based on cancer type for your uranium facility. That is what makes you think this is a candidate for OTIB-4 is the cancer type.

MEMBER ZIEMER: So, you could say something that, based on a preliminary review of employment type and cancer type, it appears likely that the cancer may not have been caused by radiation, but you do this.

MR. KATZ: What about just saying, "based on an initial review of the case"?

CHAIR MUNN: Based on initial review, in cases where it appears that the

worker's cancer is likely not caused by radiation in the work environment, the maximum plausible dose is estimated for the claimant." Period. "Overestimating the claimant's dose should result in a higher calculated probability that a claimant's cancer was caused by work-related radiation exposure."

MEMBER ZIEMER: I like that.

CHAIR MUNN: Okay? Very good. We will do that.

Further down the road, in Finding 6, we use the word "parameters" here again. And we talked about parameters before as being one of those technical-sounding words that are unclear to other people.

Does anyone have any problem with changing that to "factors?"

MEMBER ZIEMER: Yes, that's good.

CHAIR MUNN: "Guidance is not claimant" --

MEMBER ZIEMER: "Factors" is good.

CHAIR MUNN: -- "is not claimant-

favorable in instances of unknown factors."

And in Finding 9, oh, this is one of those cases where we keep saying "TIB" over and over again. Notice, in almost every one of those findings, "the TIB is incomplete", "from data in the TIB." "Some data in the TIB are inconsistent with data in another TIB."

MEMBER ZIEMER: And in Finding 9, AWE facility, we don't need to say "AWE" there.

CHAIR MUNN: Well, and it says --

MEMBER ZIEMER: We are already talking about AWEs. Just say, "the facility."

CHAIR MUNN: "From a particular AWE facility."

MEMBER ZIEMER: Yes, but just say, "From a particular facility." The whole thing has to do with AWEs. So, why do we have to say "AWE?"

CHAIR MUNN: Okay. I am going to revise that a little bit.

And, then, in Finding 10, it says,

"The TIB identifies a breathing rate based on the assumption of a light worker scenario which may not be claimant-favorable in some instances and should be evaluated in detail."

Is "and" the correct conjunction there? Or is "but" the correct conjunction?

"Which may not be claimant-favorable in some circumstances which should be evaluated in more detail."

MEMBER ZIEMER: I think it is sort of like "and, therefore, should." It seems to me the "and" is correct.

CHAIR MUNN: Okay.

MEMBER ZIEMER: Or "and, therefore" maybe.

CHAIR MUNN: Very good.

MEMBER ZIEMER: Do people understand what a light worker is?

CHAIR MUNN: I doubt it, but I can't think of a simpler way to say it.

MEMBER LEMEN: Why don't you say "the light worker activity" or something like

that? That's what it is, isn't it?

CHAIR MUNN: Well, we could use "activity" instead of "scenario."

MEMBER LEMEN: Yes. I mean that is what you are describing, a person that is not --

CHAIR MUNN: Yes.

MEMBER ZIEMER: "Light work activity?"

CHAIR MUNN: "Light worker activity."

MEMBER ZIEMER: "Light worker" or "light" -- well, what is light --

MEMBER LEMEN: You could just say "light activity."

MR. MARSCHKE: The "light activity scenario." I agree with --

MEMBER ZIEMER: Just "light activity?"

MEMBER LEMEN: Yes.

MR. MARSCHKE: "Light worker" is a guy who changes lightbulbs.

MEMBER GIBSON: No it's not, that's an electrician.

(Laughter.)

CHAIR MUNN: I will say, "based on an assumption of light activity."

MS. THOMAS: "Light worker" is ICRP terminology. That is where that comes from.

MEMBER ZIEMER: That's why we don't want to use it.

(Laughter.)

CHAIR MUNN: Yes. Exactly. We will say, "on the assumption of light activity."

And under "Resolution of Findings," No. 2, there is a reference to another OTIB that means, I think, nothing to any of us. We would all have to look up that OTIB-0058.

I suggest eliminating that reference and just saying, "remove a passage in the new revision to be consistent with

other guidance documents."

MEMBER ZIEMER: I'm good with that.

MEMBER GIBSON: Yes.

CHAIR MUNN: Okay. Then, now we are on to OTIB-008, standard complexwide conversion factor for overestimating external doses measured with thermoluminescent dosimeter.

And we have a comment from Dr. Richardson. "Isn't it either a measurement of exposure with a filter to simulate attenuation and provide an estimate of dose or a dose is actually measured in tissue?"

And I don't know whether I am comfortable with that or not.

"Actually, a particular methodology to estimate the worker's doses is based upon availability of actual measurements of external exposure. One popular type of personal radiation detector was worn by workers on" -- that's okay.

"A particular methodology to estimate worker's doses is based on availability of actual measurements of external exposure." That's okay. Yes, I was reading it improperly.

MEMBER ZIEMER: Well, yes, he is trying to distinguish between the definition of exposure, which is ionization in air.

CHAIR MUNN: Yes.

MEMBER ZIEMER: This is dose, which is an agent absorbed in tissue.

I mean I don't think the importance is important to a layperson reading this.

CHAIR MUNN: No.

MEMBER ZIEMER: But, with his revision, it still reads okay, I think.

CHAIR MUNN: Yes. To the layperson, "exposure" means "what was I exposed to?"

MEMBER ZIEMER: Right.

CHAIR MUNN: But measles, whooping

cough, exposed.

In the second paragraph, I have circled something here that I didn't like.

"This Technical Information Bulletin," and its name, "provides guidance on how to apply reasonable overestimating, claimant-favorable, complexwide, encompassing all" -- that is just much too cumbersome a statement.

"This TIB," and its name, provides guidance on how to apply reasonable overestimating assumptions for interpreting recurring doses for monitored workers complexwide during the time period when the DOE laboratory accreditation program applied."

That is a cumbersome sentence, and I don't propose that we unencumber it here. But if you have --

MEMBER ZIEMER: Well, a quick suggestion: I don't think the layperson reading this, that it matters that it is complexwide.

CHAIR MUNN: No, I don't think so.

MEMBER ZIEMER: And I don't know that they know what the complex is anyway.

CHAIR MUNN: Right.

MEMBER ZIEMER: So, why not eliminate the "complexwide and covered facilities" and just say, "overestimating assumptions for attributing doses to workers?" Why would we need the "complex?"

CHAIR MUNN: We will simplify it.

And in the next sentence, where it says, "The TLD analysis selects a reasonable overestimate of external radiation dose for cases that are judged to be," I would like to say, "probably not compensable" instead of "likely non-compensable."

That is, "The dose reconstructors believe..." And again, Dr. Richardson says, "It would be useful if NIOSH would lay out explicit procedure used to triage claim cases and make a preliminary determination of whether a claim is likely to be compensable.

That procedure should be employed first, and this procedure only implemented if the first triage procedure indicates."

That is not anything we can do about in this Subcommittee. It is a suggestion from him.

MEMBER ZIEMER: Was this parenthetical thing already in here? It says this "believe" again.

CHAIR MUNN: It says, "The dose reconstructors believe...," though. He asked earlier, who believes this? And this one very clearly says, "The dose reconstructors believe that any claimant cancers would probably not have been caused by covered on-the-job exposure to radiation sources."

MR. MARSCHKE: Isn't this the same as the one that you have already changed where --

CHAIR MUNN: No.

MR. MARSCHKE: -- you put the preliminary -- I mean, why do they believe it?

CHAIR MUNN: Well, we could include the kind of thing we said before, which is --

MR. MARSCHKE: That is what I meant.

CHAIR MUNN: Okay. Down in the summary of finding results, there, again, we get into multiple uses of TIB. I would like to either call it, change some of them to say, "The guidance in this TIB" and change some of them to say, "This" --

MEMBER ZIEMER: Bulletin?

CHAIR MUNN: -- "Bulletin", "This procedure."

And in the "Resolution of Findings", where in the second line on the next page, it says, "Agreed that the TIB", I would say, "Agreed that this document" and, as appropriate, PROC-6 "need to be addressed to revise the findings."

MEMBER ZIEMER: Do you think we need to give the whole thing on Finding 3? Or

can we just say, "The TIB does not identify a hierarchical position among these several competing procedures?" I mean I know the finding says that, but the rest of this stuff is, for example, is that of any help to the layreader?

CHAIR MUNN: No, and would make them wonder where to go to find PROC-6 besides which.

MR. MARSCHKE: And do you want, in the "Resolution of Findings," below that you refer to PROC-6 --

CHAIR MUNN: Yes.

MR. MARSCHKE: Do you want to take that out as well?

CHAIR MUNN: Yes. I will say, "This document and others as appropriate that need to be revised...."

Fewer numbers, fewer procedures --

MEMBER ZIEMER: Fewer acronyms.

CHAIR MUNN: Yes.

The next item we have is 15,

Bayesian methods for estimation of unmonitored Y-12 external penetrating doses with a time-dependent log-normal model.

My guess is that the name of the procedure itself will send most people away.

I had minor clerical comments. On the very last line of the first paragraph, it says, "Site personnel who have no or limited monitoring data." It seems to me that is backwards. It should say, "have limited or no monitoring data."

And down under "Summary of Findings," the second line there, "reviewed the TIB," I would like to say, "this Technical Information Bulletin," spell it out.

In Finding 2, I want to spell out "limit of detection" instead of calling it "LOD."

And on the next page, on the "Resolution of Findings," I would like to say, "Therefore, the findings with respect to this document are no longer relevant" rather than

"to this OTIB."

MR. KATZ: These things you can do without permission.

CHAIR MUNN: Yes. I just wanted to tell people what I am doing.

That is No. 15. It is okay?

Then, we are now down to OTIB-0022, guidance on wound modeling for internal dose reconstruction.

I had no comment --

MEMBER ZIEMER: It looks good.

CHAIR MUNN: I had no comment with anything except that I intend to spell out "TIB."

And OTIB-0028, validation of thorium annual dose conversion factors.

MEMBER ZIEMER: There is an "estimation" used in line 3 that maybe we can put that back to "determination" or something.

CHAIR MUNN: Or use "calculation", as was there originally.

MEMBER ZIEMER: Or "calculation."

CHAIR MUNN: And down toward the bottom of that paragraph, there is another one of those things. "To show" has been taken out, and I suggest that we not take it out.

"This Technical Information Bulletin," and give its name, "provides documentation to show that IMBA meets the recommendations of the ICRP with respect to values called dose conversion factors for radioactive thorium isotopes."

I propose in Finding 1 to change "TIB" to "document".

MEMBER ZIEMER: On Finding 2, I think the parenthetical thing could be confusing, "required when there is a chronic over time intake." It sounds like the intake occurred after hours or something than "over time intake."

CHAIR MUNN: Let's say, "chronic over a period of time."

MEMBER ZIEMER: Yes.

CHAIR MUNN: And "acute," then,

will be "all at once."

MEMBER ZIEMER: "All at once" would be better, yes. The "at once" --

CHAIR MUNN: Okay.

MEMBER ZIEMER: -- or "in a short interval of time" or something like that.

CHAIR MUNN: Yes.

MEMBER ZIEMER: And, then, in Finding 4, "particles with a diameter," it is either "particles with diameters" or it is "a particle with a diameter." I think it is "particles with diameters." Usually, it is a distribution.

CHAIR MUNN: Okay. I looked at that and wondered if there was any way that we could get away from that, and I don't see that we can and maintain the sense of what is being said there.

And the footnote seems to be fairly clear to me.

"Characterizes the size of tiny, liquid aerosols", that is probably

appropriate.

The only other change that I had was the very last paragraph. I said, "Note that since the issuance of Rev. 1, NIOSH decided that this TIB should not only treat other radioactive isotopes in addition to thorium." Period. "NIOSH subsequently" --

MEMBER ZIEMER: Wait a minute. "Not only?"

CHAIR MUNN: No, take out the "not only." "Note that since the issuance of Rev. 1, NIOSH decided that this TIB should treat other radioactive isotopes in addition to thorium."

MEMBER ZIEMER: Oh, okay.

CHAIR MUNN: Period.

MEMBER ZIEMER: Okay.

CHAIR MUNN: And "NIOSH subsequently rewrote the TIB as Rev 2. and renamed it "Validation of DCAL" -- and I have no idea myself what "DCAL" means; I don't know whether anyone else would -- "Annual Dose

Coefficients."

Steve, do we know what DCAL means?

DR. OSTROW: I did at the time I wrote that.

(Laughter.)

MR. HINNEFELD: Which number are we on here?

CHAIR MUNN: We are in the final paragraph.

MR. HINNEFELD: Of which OTIB now?

CHAIR MUNN: Can you find out what that is and email me?

MR. MARSCHKE: Twenty-eight.

CHAIR MUNN: Thirty. Isn't it?

MR. MARSCHKE: OTIB-28, I think.

DR. OSTROW: Yes, OTIB-28.

CHAIR MUNN: Okay. Sorry. I am looking at two things at the same time. Right. You're right.

If you will find out what that is and send it to me, I would appreciate it.

DR. OSTROW: Okay. Do any of the

OCAS people know what it is? It is their procedure.

MR. HINNEFELD: Give me a second. This is now TIB, is it OTIB-28?

CHAIR MUNN: That is OTIB-28, Rev. 2.

DR. OSTROW: Yes.

MR. HINNEFELD: Okay. I don't know if anybody on the phone does.

CHAIR MUNN: Anybody? We are wide open to any information.

(No response.)

MEMBER ZIEMER: Well, they can get that to you.

CHAIR MUNN: They will find it and get it to me.

Now we will go to OTIB-30, external coworker dosimetry data for the Hanford Site.

Under Finding 1, I am going to change some of that "TIB" stuff to "Technical Information Bulletin" and insert the title of

OTIB-52 in front of it.

In Finding 2, I don't think "radiation attenuation" is something that will make sense to most people.

MEMBER ZIEMER: I had exactly the same comment.

CHAIR MUNN: So, I suggest that we say, "The procedure does not provide the data or references from which needed information can be obtained to make corrections for the reduction of electron radiation caused by clothing."

No, that is, again, a dangling participle. Put the "caused by clothing" -- the "reduction of electron radiation caused by clothing". "Reduction of electron radiation that is caused", "that is provided by clothing."

MEMBER ZIEMER: Okay.

CHAIR MUNN: Okay?

And under Finding 1, the second sentence, I am going to remove "furthermore".

DR. MAURO: Wanda, I just looked up "DCAL" on the web, and it is an EPA program called Dose and Risk Calculation Software.

MR. HINNEFELD: It is a dose calculation software.

DR. MAURO: Yes. I am out looking at the web, and it says, "Dose and Risk Calculation Software (DCAL)." Or just call it "dose calculation software."

CHAIR MUNN: Okay. Thanks.

DR. MAURO: Okay.

CHAIR MUNN: Appreciate that.

Under Finding 1, I am going to take out "furthermore," and I am going to try to figure out if we can write out some of the -- well, maybe not. I hate to deal with those OTIB numbers in there.

And there is still a third OTIB referenced in Finding 2, the title of which needs to go in. I will work with those and make them better.

MEMBER ZIEMER: On Finding 2, it

is inconsistent with Finding 1 on how the word "staff" is used. It is either a collective noun which is singular or it is not. In Finding 1, it is a collective noun, "the staff is familiar."

In Finding 2, it has been changed to "the staff are aware."

CHAIR MUNN: I would prefer to leave it "is."

MEMBER ZIEMER: I would, too. Either that or say, "staff members are aware" or "staff is aware."

CHAIR MUNN: Well, let's say, "staff is."

MEMBER ZIEMER: And, then, the second sentence in there, then, would be "The staff has been instructed..."

CHAIR MUNN: And I will get the title of OTIB-17 in there.

Now we go to PROC-0002, on which I have no marks.

MEMBER ZIEMER: "Estimate."

CHAIR MUNN: "Use of integrated" --

MEMBER ZIEMER: "Determine radiation dose," third line.

CHAIR MUNN: Okay. "Use of integrated modules for bioassay analysis," and in the third line, are we going to say "calculate?"

DR. ULSH: "Determine" is what we have been using.

MEMBER ZIEMER: "Determine," I think.

CHAIR MUNN: I have no other comments.

MEMBER ZIEMER: Okay.

CHAIR MUNN: Next is PROC-4, scheduling telephone interviews.

Under "Resolution of Findings," I may go back to using the whole title, "Computer-Assisted Telephone Interview" instead of using "CATI."

We have space to do it. It is not

a problem.

No problems with that?

MEMBER ZIEMER: No.

CHAIR MUNN: That brings us to No. 12, performing telephone interviews, with which I find no fault.

Item 13 is performing and reporting dose reconstruction, OCAS-PR-003, Rev. 0.

I have several scratches on mine.

On the third line -- no, on the second line, I have inserted the word "radiation" in front of "dose." So that it reads, "This procedure, performing and reporting dose reconstruction, OCAS-PR-3, deals with the administrative process for radiation dose reconstruction for claimants."

"In addition, it establishes that uncertainties concerning dose or data quality" -- I reverse them -- "be handled in a claimant-favorable manner and sets thresholds for when a sufficient level of analysis is

reached or additional effort is warranted."

Then, I have nothing else to say until the bottom of the second paragraph. I questioned whether "in hand" was appropriate, whether "available" was better.

"The procedure also addresses notification protocol in the event that dose reconstruction cannot be completed with the information available, and lists the letters and record management required for each case."

MEMBER ZIEMER: Yes, that is probably better.

CHAIR MUNN: Under Finding 1, I suggested using the words not clear rather than ambiguous. "The procedure is not clear in identifying individuals" --

MEMBER ZIEMER: How about "does not clearly identify?"

CHAIR MUNN: Okay. "Does not clearly identify individuals who are responsible" -- very good.

And Finding 2, I suggest that we

change "could" to "should." "Could" could be applied to almost anything. That was a recommendation to organize it better, I think.

Finding 4, I took out "a few." It didn't appear to be necessary. "The procedure contains inconsistencies and lacks the level of detailed guidance of other procedures," "provided in other procedures," rather than "some other procedures."

In Finding 5, "Guidance is limited regarding conducting dose assessments for," I said "potentially" rather than "potential" "low or high probabilities."

And under "Resolution of Findings," item 2 --

MEMBER ZIEMER: Oh, wait. Before you get there, in Finding 11, there is an extra semicolon sticking in the middle of the sentence. "Restrictions on the use of the data sources."

CHAIR MUNN: Yes, there is a comma there that isn't needed there. MEMBER

ZIEMER: Is it a comma?

CHAIR MUNN: Well, it has a dash. It used to be a dash and, then, it kind of -- whatever, it doesn't belong there. I am going to say "these data sources."

And under "Resolution of Findings," I took out the black part. So that it says, "Develop more specific procedural guidance." because that is all we really and truly need to say.

"In response to the findings identified above, NIOSH" did three things. "Developed more specific procedural guidance." "Cancelled the procedure." Done.

And last, we have ORAUT-OTIB-0003, Savannah River Site tritium dose assessments. Assignment. Pardon me. Not assessment, assignment.

We have done some work on this in the past. And I think I have no additional markings on my copy here.

MEMBER ZIEMER: Actually,

originally, we put in this section describing the fact that tritium has to be taken into the body in order to cause exposure or to cause dose, basically.

CHAIR MUNN: And we still have it.

MEMBER ZIEMER: Why is that --

CHAIR MUNN: We still have it in there.

MEMBER ZIEMER: Well, the copy I have here, it is all marked out.

CHAIR MUNN: Well, that sentence reads, "The TIB," and its name, "provides guidance on how to estimate doses to workers at Savannah River Site from internal exposure to tritium, which can appear in several different forms, through inhalation, ingestion, or skin penetration."

Oh, I see what you mean. That one sentence there, "The radioactive properties of tritium are such that it poses no problem for causing exposure when outside the body." "Radiation doses to workers occur only if

material is ingested, inhaled, or otherwise absorbed into the body."

Yes, I don't know why those two sentences came out. And that first one got so long.

MEMBER ZIEMER: There is an "estimate" in here again, too.

CHAIR MUNN: Yes. I see that. It appears we need to do a little bit more work on that sentence, on that section right up there. Let me do that. Let me rework that a little bit and send it -- I will try to go up to my room as soon as we are done here and send that to everybody, to see if you think it is okay.

MEMBER ZIEMER: Yes. Even the part that says that it is a radioactive form of the element tritium, or hydrogen, has been deleted.

CHAIR MUNN: Yes.

MEMBER ZIEMER: And that is a key thing.

CHAIR MUNN: That was a key thing, absolutely. Yes. Let me rework this paragraph. I will do that and try to get it to all of --

MEMBER ZIEMER: This is one of the first ones we did, and I think we --

CHAIR MUNN: Yes, I thought we had it really nicely cleaned up.

MEMBER ZIEMER: It seems to have morphed.

CHAIR MUNN: Yes, it seems to have fallen back into a hole somewhere. Let me look and see what I have on my computer already.

Redo and send out. I will get it to you today or tomorrow. And if you want to change that, then please let me know right away because I would like to get these in some kind of shape to ship out to Ted and let him deal with them.

I think I was getting tired by the time I got here.

It will help if I get a clean copy in front of me, too. This is a bit marked.

Are we content?

MR. HINNEFELD: I think we are so content we're numb.

(Laughter.)

MEMBER LEMEN: I'm fine.

CHAIR MUNN: That's good. Thank you, Dick.

And thank you again, Steve. We appreciate it.

DR. OSTROW: You're welcome.

CHAIR MUNN: Okay. You are all aware of the fact that you have, as we mentioned earlier this afternoon, received a whole new set of these two-pagers.

MEMBER ZIEMER: Yes, 15 fresh ones.

MR. KATZ: We need to send those out to the rest of the Board.

CHAIR MUNN: We will do that.

MR. KATZ: I will do that.

CHAIR MUNN: Okay. I, frankly, have not had an opportunity to go over those yet.

MEMBER ZIEMER: I just got them.

CHAIR MUNN: I don't know whether anyone else has.

If the rivers don't rise, then I would anticipate that you will look at those and send me any gas pains that they give you, because at our next meeting I would hope that we would have certainly no more than we have spent today on two-pagers and, hopefully, even less.

MR. KATZ: Less. And, John, are you still on, John Mauro, or Steve?

DR. MAURO: Yes, I am.

MR. KATZ: Yes. For the kind of generic changes that have been made today, which you will see when we send these over to Stu to post, but like calling a "TIB" a "bulletin," et cetera, if you would just in the future for the rest of the ones that you

deliver make those generic changes, that they don't have to be corrected --

DR. MAURO: Good idea. If I could just make a little list of some of those things -- we have a handful of folks that work on those.

MR. KATZ: Right.

DR. MAURO: It's good to get that around so everybody that is working on these is aware of it.

Steve, if you are still on the line, that is something that would be helpful.

MR. KATZ: Right. So, I will send you what I send over to Stu for posting on the web; I will send that to you as well, so you guys can look at that to be certain that you have followed these kind of things.

DR. OSTROW: That's great. We have a few people working on these, but I actually do the final editing of all of them, trying to get them completed. So, if I can see the latest batch that we revised today, so

that we can carry that to the other new ones --

MR. KATZ: That sounds great.

CHAIR MUNN: Super. All right.

The only other item I have is administrative detail. To me, that means, when are we having our next meeting, if you have your calendars out?

MR. KATZ: I think we need, DCAS needs to figure out what sort of timeframe they can work on actions first. So, unless we plan it way out, I would suggest we don't schedule it right now, until we have some feedback from them.

CHAIR MUNN: Well, I am looking at mid-June or well into June, anyway. Is that not far enough out for you?

MR. HINNEFELD: It is hard to day.

MR. KATZ: We need to have Stu and Brant -- there are things going on right now that are --

CHAIR MUNN: Can we tentatively

pencil in a date?

MR. HINNEFELD: Well, I will tell you what.

CHAIR MUNN: It is easier for --

MR. HINNEFELD: If, in fact, then we say we won't be ready, we will be able to change it then?

CHAIR MUNN: Yes. Right.

MR. KATZ: Because that has been a problem in the past.

MR. HINNEFELD: We have done it in the past, and then it is, no, we are going to meet anyway.

CHAIR MUNN: That is because you have such a hard-nosed Chair.

(Laughter.)

MR. HINNEFELD: That is why I was saying it while we have the Chair here. So, if we pencil in a tentative date in mid-June and we say, "Look, we have not gotten anything. We don't have enough to do a day's worth of meeting. We would like to postpone

it." -- we will give you some notice. It won't be like a week before.

MR. KATZ: Well, it can't be a week before because I need a whole month before I have to put in a Federal Register notice.

MR. HINNEFELD: Yes.

CHAIR MUNN: Yes.

MR. HINNEFELD: So, a month before, we will be able to say that, look, if we don't think we are going to have it, if you want to pencil it in on those criteria, then we will pencil one in.

CHAIR MUNN: Well, you see, I am trying to be nice here because this is March and I am talking about June.

MR. HINNEFELD: And I am talking about so many things.

CHAIR MUNN: Yes, we know you have got all kinds of stuff, including the St. Louis meeting.

MR. HINNEFELD: Which, by the way,

we are going to be in St. Louis. It would be nice to have something on Weldon Spring, we fully appreciate that. We intend to have a substantial meeting on May -- what is that, the 3rd, 9th, whenever we are having it? We are going to have a substantial meeting because we are going to have some products available in April.

MR. KATZ: We have the same kind of pressure with Fernald.

MR. HINNEFELD: And we are going to have the same kind of pressure with Fernald and with Pantex.

MR. KATZ: And with Pantex.

MR. HINNEFELD: And maybe Savannah River, which has a huge amount -- the problem with that is there is so much stuff available on Savannah River.

MEMBER ZIEMER: All under the Continuing Resolution, huh?

MR. KATZ: Yes. That is really a real factor in all this, too.

MR. HINNEFELD: And at least somebody in Washington, some people in Washington think that this time there will be some sort of symbolic shutdown after April 8th, just to make a point.

And so, who knows what happens after that?

CHAIR MUNN: How about if we said July?

MR. HINNEFELD: I can't guarantee anything. I say pick a date. Pick mid-June, if you want, but we still may not be able to get there.

CHAIR MUNN: I understand that, and there is a lot between now and June. And you're right, it is big stuff.

If it would be better for us to look at July from the outset, then I have no problem with that.

MR. HINNEFELD: Let's see, somewhere in July? Somewhere out there is an APS meeting. Where is that?

DR. ULSH: It is in June.

MR. HINNEFELD: The last week in June?

DR. ULSH: The 26th through 30th.

MR. KATZ: That is another reason to not pencil June in.

MR. HINNEFELD: Certainly, we want to do late June. Of course, on the other hand --

MR. KATZ: What about the week of July 11th?

CHAIR MUNN: Yes, we have a telephone conference on the 11th.

MR. KATZ: We have the teleconference on the Monday.

CHAIR MUNN: On the Monday.

MR. KATZ: What about Tuesday?

CHAIR MUNN: How about Wednesday?

MR. HINNEFELD: How about the Wednesday?

CHAIR MUNN: Yes, Wednesday or Thursday would be --

MR. KATZ: That is Wednesday, the 13th.

CHAIR MUNN: Okay.

MR. KATZ: Okay. Let's go July 13th.

MEMBER LEMEN: The 13th doesn't work for me, but the 14th would.

MR. KATZ: Oh, the 14th then.

CHAIR MUNN: Okay.

MR. KATZ: July 14th, that is Bastille Day.

CHAIR MUNN: That's what?

MR. KATZ: Bastille Day.

(Laughter.)

CHAIR MUNN: Oh, wow. To the mattresses!

MR. KATZ: July 14th, okay.

CHAIR MUNN: Does anyone else have anything that needs to go on our calendar that needs specific callouts for attention?

(No response.)

If not, then there are several

things that I still have from our January meeting that we didn't include on today's procedure list, which will probably fill up. But it isn't likely that you will be getting an action item or agenda list for a while. So, if you have something that you want --

MR. KATZ: The sooner the better, actually.

CHAIR MUNN: Yes.

MR. MARSCHKE: Yes. The agenda helps a lot, receiving the agenda to see what is on it.

CHAIR MUNN: Yes, I know it does. Yes. So, we will see what we can get to you within a reasonable period of time.

And unless I hear anything to the contrary, this meeting is adjourned.

MR. KATZ: Thank you, everybody.

CHAIR MUNN: Thank you all.

(Whereupon, at 4:26 p.m., the proceedings were concluded.)