THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
CENTERS FOR DISEASE CONTROL AND PREVENTION
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

convenes the

MEETING 13

SUBCOMMITTEE FOR DOSE RECONSTRUCTION AND SITE PROFILE REVIEWS

The verbatim transcript of the 13th Meeting of the Subcommittee for Dose Reconstruction and Site Profile Reviews held in Erlanger, Kentucky on Nov. 16, 2006.

C O N T E N T S

Nov. 16, 2006

TRANSCRIPT LEGEND

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P R O C E E D I N G S

(10:00 a.m.)

WELCOME AND OPENING COMMENTS

DR. WADE: This is Lew Wade and again, as always, I have the privilege of serving as the Designated Federal Official for the Advisory Board. This is a meeting of the Subcommittee of the Advisory Board. It's not a working group meeting, it's a Subcommittee meeting. It's been duly noticed in the *Federal Register* and again, as always, transcripts and minutes will be available. It's open to the public.

I am going to consider this a meeting of the old, quote/unquote, subcommittee. As you know, there was a subcommittee comprised of all Board members that looked at issues related to individual dose reconstructions and site profile reviews. The Board has commissioned a new subcommittee to replace that, that will be a subcommittee looking at individual dose reconstruction reviews. Since I don't have that approved charter in my hands, I think it's appropriate that I would convene this as the old subcommittee. It affects none of the business that will be done here.

The new subcommittee, for those that are interested, is going to be chaired by Mark Griffon, with members Gibson, Poston and Munn;

alternates Clawson and Presley. The old subcommittee was made up of all members of the Board. I would ask -- even as we deal with this as an old subcommittee, I would ask Mark to chair the proceedings, if you will be so kind.
Again, I think we'll go around the table here and introduce, and then we'll hear from people out in the -- in telephone land, so again, this is Lew Wade with NIOSH and the Advisory Board.

MR. GRIFFON: Mark Griffon with the Advisory Board.

MS. MUNN: Wanda Munn, Advisory Board.

DR. BEHLING: Hans Behling, SC&A.

DR. ROESSLER: Gen Roessler, Advisory Board, sitting in on this meeting.

MR. SHARFI: Mutty Sharfi, ORAU team.

MR. MAHER: Ed Maher, Ed Maher, ORAU team Task V manager.

MR. HINNEFELD: Stu Hinnefeld from NIOSH.

MR. CLAWSON: Brad Clawson, Advisory Board.

MS. HOWELL: Emily Howell, HHS.

DR. WADE: Now I would ask that other members of the NIOSH/ORAU team, OCAS/ORAU team that are out there identify themselves on the telephone, please.

MS. HOMOKI-TITUS: This is Liz Homoki-Titus with HHS.

DR. WADE: Welcome, Liz.

MS. HOMOKI-TITUS: Thank you.

MR. KATZ: This is Ted Katz with NIOSH.

DR. WADE: Always a pleasure to have you with us, Ted. Thank you.

MS. WINSLOW: This is Susan Winslow with the ORAU team, Task V.

DR. WADE: Welcome.

THE COURT REPORTER: Who was that?

DR. WADE: Susan Winslow with the ORAU team, Task V.

Other members of the NIOSH/ORAU team?

MR. FIX: This is Jack Fix, principal external dosimetrist, ORAU team.

DR. WADE: Welcome, Jack. What about members of SC&A?

DR. MAURO: This is John Mauro from SC&A.

DR. WADE: Welcome, John. We -- we heard your testimony yesterday. You are now a star.

DR. MAURO: Oh, okay, thank you.

MS. MUNN: Well, not "we"; some.

DR. WADE: Other members of the SC&A team?

MS. BEHLING: Kathy Behling from SC&A.

DR. WADE: Kathy, we miss you, but we're very glad that you're with us.

MS. BEHLING: Miss you, too.

DR. WADE: You add so much to our deliberations. Thank you.

MS. BEHLING: Thank you.

DR. WADE: Other members of the SC&A team?

(No responses)

What about other federal employees who are on this call as part of their employment?

MR. SAMPSON: This is Bob Sampson with GAO in Washington, Lew.

DR. WADE: Welcome, Bob. Nice to have you with us.

Any other federal employees on the call by virtue of their employment?

(No responses)

Is there anybody else on the call who would like to identify themselves?

MR. GIBSON: This is Mike Gibson. You got me on record. Right, Lew?

DR. WADE: I do, Mike. Thank you again for being with us. Mike is a member of the new subcommittee and, as all Board members, a member of the old subcommittee as well.

Other Board members, anyone else who wishes to identify themselves?

(No responses)

Okay. Again, I won't go through a detailed conflict of interest discussion, but I will ask that if there are any members of the NIOSH or ORAU team who are conflicted at particular sites, I think it would be good for you to identify those conflicts, and then the same with SC&A,

just so we can have that as background for discussion, depending upon cases we might discuss. So let's start here --

MR. HINNEFELD: This is Stu Hinnefeld with NIOSH. I'm conflicted at the Fernald site, also called Feed Materials Production Center, and I'm conflicted for a short period of time at Lake Ontario Ordnance Works.

MR. MAHER: Ed Maher, I'm not conflicted at any DOE sites.

MR. SHARFI: Mutty Sharfi, I'm conflicted at the Mound site.

DR. ROESSLER: Gen Roessler, I have no conflicts.

DR. BEHLING: Hans Behling, no conflicts.

MS. MUNN: Wanda Munn, conflicts at Hanford.

MR. GRIFFON: Mark Griffon, conflict at Nevada Test Site and Oak Ridge, Paducah, Portsmouth when steelworkers are the named petitioner.

MR. CLAWSON: Brad Clawson, conflicted with Idaho.

DR. WADE: Okay. On the phone we'll deal with ORAU/NIOSH team members.

MS. WINSLOW: Susan Winslow, conflicted with Hanford.

DR. WADE: Anyone else have conflicts they need to report?

MR. FIX: Jack Fix, conflicted with Hanford and Idaho.

DR. WADE: Thank you, Jack.

MR. GIBSON: Mike Gibson, conflicted with Mound.

DR. WADE: Anyone else on the line who needs to identify conflicts?

DR. MAURO: Yes, John Mauro, conflicted with Savannah River.

DR. WADE: Okay, just as a background for us all to understand. And as I proudly say, Lew Wade, no knowledge, no conflicts. I'm uniquely qualified to do what I do.

Okay, Mark.

FOURTH SET OF CASES

MR. GRIFFON: And I can't follow up on that very well. Okay, we're -- the focus on this meeting I think is going to be the -- well, I know is going to be the fourth set of cases. The matrix that we have provided from NIOSH I think the end of last week -- does everyone have -- have the latest version of the matrix?

DR. WADE: We have an extra one here if they need...

MR. GRIFFON: For those on the phone, if you don't have one I think we can manage to get it by e-mail. Right?

DR. WADE: Correct.

MR. GRIFFON: All right, yeah.

MR. HINNEFELD: E-mail (unintelligible).

MR. GRIFFON: This has -- this -- SC&A produced

this from their initial report, which really I think we -- we need to know -- to remember there's a lot more than this short statement behind the findings, so the initial report provided -- I think in April or so, Hans, is that correct?

DR. BEHLING: Well, the report was -- at least the date I have on my report in my recall, I think that's the correct date, was issued on April -- in April of 2006, so --

MR. GRIFFON: April 2006 and then the matrix -- NIOSH included responses on this and we got that, like I said, the end of last week, I believe. So we're taking our -- our first stab at sort of looking at the finding and NIOSH's response and -- and resolving these issues.

The -- just to -- to close out, I know at the last -- I think it was at the last Advisory Board meeting I talked about the second and third set of cases and a -- a draft letter that we voted on at the last meeting, and I did say that I was going to -- that there was some -- there were some discrepancies in the numbers of SC&A's report and -- and what we listed in the letter. I think we've resolved those, but I don't have final copies of those, but those'll certainly be ready to -- to bring back to the Board at the next full meeting, so -- so we want to get those

letters out, but that'll close out the second and third set.

Now we're on to the fourth set of -- of case reviews, and I guess the best thing -- the way we've always approached this is just to sort of start with a summary of the finding and then an understanding of NIOSH's response and discussion if we need it. So I'll start with -- although the only other thing I would ask for is -- for me it would be helpful to have a listing of the finding or -- or the case numbers as identified in this matrix versus the ID numbers. I don't want to say them -- I don't want to necessarily say the ID number on the record, but do we have a listing of that? That would make it a lot easier to -- to track through --

MR. HINNEFELD: I have not generated that list.

MR. GRIFFON: Okay.

MR. HINNEFELD: It'd be a simple thing to generate, but I have not --

MR. GRIFFON: Yeah, it'd be fairly simple. I just -- I was trying to match them up this morning and sometimes --

MS. BEHLING: I also have a list -- this is Kathy Behling -- I can e-mail that.

MR. GRIFFON: You have a list right now that you can e-mail, Kathy?

MS. BEHLING: Yes, I can do that during a break.

MR. GRIFFON: Okay, that would be helpful. All right, so we'll start with --

DR. WADE: Just -- now you'll send that to Mark and you'll send it to Stu?

MS. BEHLING: Yes, I will.

DR. WADE: Yeah, but no one else. Okay.

MR. GRIFFON: Yeah, yeah, we don't want to float the IDs all over the place.

DR. WADE: Does anybody else want this?

MS. MUNN: No, I'll just read Mark's.

MS. BEHLING: I can include you, Wanda.

MS. MUNN: Thank you.

MS. BEHLING: Okay.

MS. MUNN: I don't actually have a printer, but I can download it, yeah.

MS. BEHLING: Okay. And Mike, I'll include you, also -- I'll include all the Board members.

MS. MUNN: Thank you.

MR. GIBSON: Okay, thank you.

MR. GRIFFON: Okay. All right. So the first finding is -- or first case is case 61, and maybe I'll turn it over to Hans and let him give us some background on these findings.

DR. BEHLING: Yeah. The title of this finding is that we could not reproduce the modeled external photon dose numbers that relates to the exposure model that involved the uranium ingot, and we -- in our report that's obviously not available on

your matrix -- provided our version of what we considered was the right value, and that does not coincide with what NIOSH had put in there. But in realizing NIOSH's response, they said that there was a revision to Table 3 in OTIB-4 and we accept that as the response.

And -- but one of the things I do want to say is that the first five cases all involve AWEs, and you're going to see a repeat because this OTIB-4 was used for dose reconstruction each of those five AWE claims, and so we're going to repeat ourselves on a number of times. And when we do, we'll try to make it very quick to say we've addressed this issue and let's just go on with that so as to get through the first five cases.

MR. GRIFFON: Okay. So in terms of the -- the finding -- now I'm just trying to understand so I can fill in my other columns in -- in the matrix here, for consistency purposes. This -- was this -- this sort of -- I mean the -- the values were higher, but it was a mistake in the --

MR. HINNEFELD: Apparently. We can't reconstruct them, either.

MR. GRIFFON: Okay.

MR. HINNEFELD: So apparently it was. It was higher than what it should have been based on --

MR. GRIFFON: It doesn't affect the outcome of --

MR. HINNEFELD: -- the descriptions.

MR. GRIFFON: -- the dose. Right, right, right. Okay.

MR. HINNEFELD: Right.

MR. GRIFFON: So -- so there's agreement on the finding. Okay.

DR. WADE: Just for my edification -- so with the new table, then you're able to -- to --

DR. BEHLING: Yes.

DR. WADE: -- reproduce the numbers that NIOSH then produced using the new table.

MR. GRIFFON: Right. Okay.

MS. MUNN: So are we going to rank these as we go along or are we just going to indicate (unintelligible).

MR. GRIFFON: I was just going to try to fill in the resolution column.

MS. MUNN: Okay.

MR. GRIFFON: Yeah. But I mean I would think that...

MS. BEHLING: This is Kathy Behling. Can I ask a question here? I believe that TIB-4 has changed rather significantly, and I'm not sure -- is this particular table included in the revision of Rev. -- Rev. 3 or 4 of TIB-4?

MR. HINNEFELD: Well, there is a -- there is an external dose number in there.

MS. BEHLING: Okay. Because I wasn't sure if this Table 3 that has incorrect values in --

based on our finding 61.1 is actually reproduced in the most current version of TIB-4. I have to be honest, I didn't look -- look at that at this point because, as they've indicated, we just got these responses and I really didn't have time to go back to the most current version.

MR. HINNEFELD: There are actually several Table 3s. There's 3-1 through 3-7 in the new TIB-4, and the -- the external dose rates are on Table 3-7 in the new version.

MS. BEHLING: Okay. I just have to admit that I didn't personally go back and recalculate this value to ensure that it is correct in the current version.

MR. HINNEFELD: Okay.

DR. MAURO: This is -- this is John Mauro. I believe conceptually what we have here is (break in transmission) uses a generic slab or chunk of uranium that a person is standing next to, I believe 2,000 hours per year, and he's being exposed, I believe at one foot is the -- is the conceptual nature of how the model approaches it. And we were -- and then of course when -- depending on the organ, the actual dose that -- will differ from person to person, but the setting, the generic setting I believe has remained fairly constant from revision to revision. Please cor-- you know, you can

certainly correct me if I'm wrong. And when we check the calculations, the radiation field that the person would be exposed to, and then what the dose to your organ would be, we -- we are finding that the doses that we are getting are lower than the ones that are being reported -- and this is recurring -- for (break in transmission) and one reason, one doing -- one regarding how the external field itself is calculated at this one-foot location from this generic slab of uranium, and second, how the conversion is going from the field to the organ dose or this -- this superficial -- let's say to the organ dose. So we're -- we're finding that in just about every case when we review an OTIB-4 dose reconstruction based on dose that -- that we're -- we -- we're always coming in lower by about a factor of two. And I guess to a certain degree we're not quite sure where -- you know, where that, you know, the underlying reason for that is. And Stu, it sounds like you folks are looking into that also?

MR. HINNEFELD: Well, I don't know that we have an active investigation on that, but I think -- have you guys -- are you guys reviewing the new version of TIB-4 in the procedure review task?

DR. MAURO: We did look at -- well, the latest version is -- is -- it's called PC3? Is that -- is -- that -- I'm not sure if -- we did review

TIB-4 in the last cycle of procedure reviews.

MR. HINNEFELD: The most recent is Rev. 3 PC-1.

DR. MAURO: Okay, we did not review that one. Rev. 3 PC-1, no. I don't know what date that is, but I don't -- you know, I -- I was involved in the reviews of the TIB-4 that -- that -- I do not believe we reviewed that version. Unfortunately we're losing a little track of them 'cause there are a number of versions. In any event, what I'm saying is that it sounds like that we do have agreement that the methodology by which the external dose from this generic slabs is being calculated apparently -- at least up to -- up to the versions that we looked at, and the cases, all of -- all of the -- and there are a lot of these -- that there seems to be a small difference of -- relatively small, you know, we -- we're coming up -- you're coming up with something on the order of four rem to -- and we're coming up with something closer to two rem per -- I think it's per -- per year from this generic slab, and we haven't quite yet nailed down the reason for those differences. Those differences may have been resolved in the latest version of TIB-4, I don't know. But I thought I'd add that. It might help out here.

DR. WADE: Just as a procedural issue, one of the things the Board will need to do in December is

to complete the list of 30 procedures for SC&A to review this year, and I think there are still 16 slots open for review, John, or a number like that.

DR. MAURO: Exactly, correct -- that's the exact number.

DR. WADE: So we could consider adding Rev. 3 PC-1 as a candidate and so I would make that note. And if you would like, I would see that that's brought up during the Board meeting.

DR. MAURO: Yeah, I'm going to check to make sure that in fact we did not look at it, but certainly that would be appropriate if it has not been looked at.

DR. BEHLING: John, I think you're touching on two separate issues here, your own theoretical calculation and versus the instructions that are given in TIB-4, and the table that identifies the number that we can't match.

DR. MAURO: Yeah --

DR. BEHLING: Now those are two separate issues.

DR. MAURO: (Unintelligible) questioned that. You're -- yes. I think there are multiple aspects to this.

DR. BEHLING: Yeah, and our calculation, if you don't have the dose reconstruction review report in hand, we calculated a dose of 4.1 rem versus -- no, they calculate a dose of 4.1 and we

calculate a dose of 3.1, so we're off by about 25 percent lower than theirs.

DR. MAURO: Okay.

MR. GRIFFON: Okay.

DR. BEHLING: Again, this issue will repeat itself in the next four, so that when we -- when we go to the next four cases we'll skip over that whole issue.

MR. GRIFFON: Yeah.

MS. MUNN: But the magnitude of the differences that you're seeing is not that great.

DR. BEHLING: Well, 25 percent.

MS. MUNN: Yeah, but --

DR. BEHLING: Yeah.

DR. MAURO: I might want to add -- this might be helpful, too. In the case of TIB-4 we're -- we're dealing with AWE facilities where usually the driver for risk is the inhalation dose of uranium --

MS. MUNN: Right.

DR. MAURO: -- (break in transmission) of course get to in this case, so in general the external dose portion -- I guess it would of course depend on the organ -- on the cancer, but in general I think the -- where the majority of the exposures are occurring is from the relatively high levels of airborne uranium that the individual is assumed to inhale as being the -- the major

contributor to most of the -- the organ doses. In this particular case I believe it's a colon cancer so I'm not quite sure how impor-- if you look at the summary table you can find out how important the external dose is relative to the internal dose. It could be determined if this difference in about two rem per year -- you know, how important it is to this particular case. Bear in mind, I believe this person was compensated. Is that correct? I believe that's the case.

DR. BEHLING: Yeah, just to answer your question, John --

DR. MAURO: Yes.

DR. BEHLING: -- the external dose represents about 33 rem and the internal dose is about 30, so we're actually higher for the external than we --

DR. MAURO: Okay, I stand --

DR. BEHLING: -- are for the internal.

DR. MAURO: -- I stand corrected. Okay.

DR. WADE: Could I make just one --

MR. GRIFFON: (Unintelligible) isn't surprising for a colon cancer, yeah.

DR. WADE: -- one small observation, just to close on this? So as I understand it, SC&A did a review. Their review found that they were not able to reproduce our numbers based upon the use

of Table 3 --

MR. HINNEFELD: In Rev. 2.

DR. WADE: -- in Rev. 2. We've found that there was -- we weren't able to, either, so we've modified Table 3 --

MR. HINNEFELD: We'd actually already modified (unintelligible) --

DR. WADE: The only question that Kathy raises that I think someone needs to answer is is now the PC -- the Rev. 3 PC-1 Table 3.7, is it the right table --

DR. BEHLING: Yes.

DR. WADE: -- and someone needs to say that.

MR. GRIFFON: Right.

DR. WADE: And if NIOSH --

MR. GRIFFON: And I'm not sure SC&A has reviewed those.

DR. WADE: Right, so that -- that issue needs to be --

MR. GRIFFON: That might be on the table.

DR. WADE: -- closed.

MR. GRIFFON: Otherwise --

DR. WADE: We're done.

MR. GRIFFON: -- we're in agreement on that -- on that finding. And -- and if -- if that most current version of that OTIB-4 hasn't been reviewed, I think we probably should add it because it -- it's going to be a pretty critical

TIB, obviously.

DR. WADE: It would --

MR. GRIFFON: For a lot --

DR. WADE: -- be nice --

MR. GRIFFON: -- for lots of sites.

DR. WADE: -- to see that the --

MR. GRIFFON: Yeah.

DR. WADE: -- that NIOSH verifies that the new Table 3 is the correct table.

MR. GRIFFON: That if -- okay.

DR. BEHLING: And to answer Wanda's question, what is the difference, well, it's driven by obviously duration of employment.

MS. MUNN: Thank you.

MR. GRIFFON: All right, let's go on to 61.2. My goal also in this meeting is to get through the whole matrix, so --

MS. MUNN: Yeah.

MR. GRIFFON: Yeah, but it -- my -- the only reason I say that is 'cause there's some fairly technical ones coming up, so we may want to table where we have a chance to -- you know, we may not be able to do it at the full subcommittee meeting. We may say, you know, Hans, get together with Stu off-line, figure out where we're at, you know --

MR. HINNEFELD: I can think of one --

MR. GRIFFON: Yeah.

MR. HINNEFELD: -- I think clearly we won't be able to resolve today.

MR. GRIFFON: Right, okay.

MR. HINNEFELD: It'll be very -- I think it'll be an extensive technical discussion on one issue.

MR. GRIFFON: Okay, yeah. In fact I --

MR. HINNEFELD: I'm sure, there may be more than one.

MR. GRIFFON: -- at least -- maybe -- yeah, maybe more than one, but at least one -- one that appeared in a couple of different spots I think, so -- at any rate, I do want to try to get through all of them at least one time through, even if we have to kind of table a few of the more technical ones.

All right, go ahead, Hans. Sorry.

DR. BEHLING: The second one involves the improperly converted model photon doses to organ of interest, and that's a very, very generic problem that we've encountered. It probably needs no further discussion. The intent was to substitute all AP geometry DCFs and -- and I think NIOSH has acknowledged that that should be the case. So again, we accept NIOSH's response on this in the -- strictly the issue of the geometry afforded for Appendix B of Implementation Guide, all the DCFs.

MR. GRIFFON: And I think NIOSH is in agreement

and -- and it -- and you state that all cases will be re-evaluated in this report. As far -- Wanda was mentioning earlier that case ranking and site ranking -- I'm kind of skipping those now, only because I'd like to go back to my other matrices and make sure I'm applying these consistently and then bring it back to this subcommittee because I know these -- this finding, for instance, has come up before and I think I want to make sure I'm being consistent in the way we're ranking them across matrices, so -- and I don't -- I don't want to guess at those on the fly.

All right, 61.3?

DR. BEHLING: That's the issue that has also been discussed at length. I don't know to what extent we want to talk about it today again --

MR. GRIFFON: Yeah.

DR. BEHLING: -- and that's the applicability of TIB-4 for compensable cases.

MR. HINNEFELD: We've tried to summarize this -- you know, what happened in this response, and so we -- we felt obliged to, you know, make progress. These cases have been around a long time. We've always felt like there would probably be some sites where we couldn't do anything better than a bounding dose. We felt like the TIB-4 technique provided us a -- a -- a

valid bounding dose on the sites it's applicable to, and so we decided we would do that. You know, there's a part in the regulation that says you -- you -- when research is done, you go with what you've got. And so that's what our decision was. Research is done; we're going to go with what we've got. And for some of the cases we did, I think we were perfectly appropriate in doing that, but not for all of them. We applied it more broadly, through misunderstanding on NIOSH's part -- and I guess it is on my part. If you look at who at NIOSH misunderstood, it was me, because I directed ORAU to submit these cases and I directed our health physicist to approve these cases. So if it didn't -- if no one -- if everybody above me understood what we should have been done -- doing, I'm the one who misunderstood.

MR. GRIFFON: And particularly you're speaking to the --

MR. HINNEFELD: TIB-4 -- any TIB-4 compensable cases.

MR. GRIFFON: -- (unintelligible) used for compensable cases.

MR. HINNEFELD: TIB-4 compensable cases.

MR. GRIFFON: Okay.

MR. HINNEFELD: And --

MR. GRIFFON: But at this time --

MR. HINNEFELD: -- TIB-4 was applied -- you know, there are two types of misapplication that one -- that they were compensable, but it was -- it was applied to cases -- the reason there were misapplication -- two categories of misapplication, it was applied to cases where it -- where TIB-4 really wasn't applicable, and you've noted that in some of the findings. And it was applied to cases where really the research was pretty much done and there was no real need for a capping dose. And then TIB-4 itself prohibits its use in a compensable case. We expected that the revision will be forthwith. We'll start doing these things, revis-- (unintelligible) will be revised right away and it just never got revised because we recognized before that was done that this was -- that it was being misapplied and there weren't really that many cases we could correctly complete in this fashion, so the revision never got done. There was an exchange of paper -- what we call a change management form between us and ORAU where we documented this is what we want you to do. We told ORAU yes, this is what we want you to do. We do that on occasion. We don't necessar-- I don't document all my direction to ORAU on change management, but there are certain ones where there's maybe a good chance that there won't be

common understanding among both sides of the team so we prepare a written understanding -- this is what we want to do -- and that was done.

DR. MAURO: Stu, this is John Mauro. Just a question on -- this particular case is a Bridgeport -- Bridgeport Brass case. I notice that there is now a -- a site profile for Bridgeport Brass, and I think in our write-up on this case we make -- we point out that if you were to use the -- the -- the site profile, specifically Bridgeport Brass, as opposed to TIB-4, there is a substantial change in the dose. Is this one of the cases where you're going back and revisiting this particular case and using Bridgeport Brass site profile?

MR. HINNEFELD: We are not revis-- we are not revisiting any cases on our own.

DR. MAURO: I -- I can go --

MR. HINNEFELD: The Department of Labor is aware of these cases.

DR. MAURO: I -- I see.

MR. HINNEFELD: And if they return them to us, then we would do it with Bridgeport Brass site profile.

DR. MAURO: I understand.

DR. WADE: But now this is a case that was compensated.

MR. HINNEFELD: Yes.

DR. MAURO: Yes.

DR. WADE: Just want to have that on the record.

MS. BEHLING: This is Kathy Behling. Stu, do I understand correctly that the modification to TIB-4 is going to allow certain facilities, certain AWE facilities, to be compensated using TIB-4? Is that what I'm understanding?

MR. HINNEFELD: I didn't -- I didn't intend to say that we would -- were doing that now. At the time we adopted this approach, we intended to do that, but we abandoned the approach before the revision ever got made.

Now it still may happen that we may find cases that we want to -- there's no -- nothing we can do better than a bounding dose, and TIB-4 is a good bounding dose for that site. In that case, if there's some we want to do in the future, we would revise TIB-4 to allow that -- it to be used in that -- in that fashion. Or we would put out some other document that -- with a bounding dose as -- you know, when that -- you know, in that fashion, but we would not rely and reference TIB-4 in its current -- in its current state if we did that.

MS. BEHLING: Okay, because I -- I'm just wondering if it would be useful to maybe go and look at the list of AWEs where there are claimants and determine which facilities it may

be applicable to use the OTIB-4. I wasn't sure if that's what you were insinuating or not, if potentially there would be a list of AWE facilities where you realize TIB-4 may be appropriate to be used, but it doesn't sound like that's what you're doing.

MR. HINNEFELD: Well, we're doing something like that.

MS. BEHLING: Okay.

MR. HINNEFELD: Battelle, our second dose reconstruction contractor, has responsibility for most of the AWE sites, and they are -- they have compiled the available information and they are making those judgments about which ones does it look like we can -- we have enough, you know, data at that site where we can do dose reconstructions and here's a site profile, here's how you do it. Which ones do we not have enough information to even do a capping dose reconstruction. And so those'll have -- those will probably go 83.14 path. They don't know what else they would do. And then the final category would be those which -- a source term model like -- like TIB-4 would work. Now whether it -- we ultimately end up revising TIB-4 and -- and using TIB-4 or whether we publish another document that describes the capping source -- you know, source model -- exposure model dose for

those, I don't know exactly how that'll proceed yet.

MS. BEHLING: Okay, that makes sense and that seems to make the process a lot cleaner --

MR. HINNEFELD: Yeah.

MS. BEHLING: -- so very good.

DR. WADE: This is Lew Wade. If I might just make an observation because this is one that obviously we've talked about a great deal within the agency, as well. I think NIOSH encountered a situation where it felt in order to do its job in a timely way it needed to make use of bounding assumptions, and I applaud that decision. There were technical errors made in that those reports said that TIB-4 was used when TIB-4 was a document that was not to be used, and therefore errors were made. The working group -- excuse me, the subcommittee and SC&A did their job in a wonderful way, as well, and pointed out these issues. And it's good to have this open discussion and now we're moving to a better way of all of us doing business. I think this points out the importance of a review process, as well, so I compliment all involved.

MR. GRIFFON: Just the -- I gue-- I guess your -- answered part of my question which was who defines this universe of applicable sites for this procedure and -- and Battelle's -- this is

kind of ongoing now, but how -- at the time you had TIB-4 for the cases that -- in this review, how was it -- how was it decided --

MR. HINNEFELD: It was one --

MR. GRIFFON: -- TIB-4 was going to be a bounding -- plausible upper bound for these sites?

MR. HINNEFELD: Well, TIB-4 was prepared to be a plausible upper bound for sites that handled uranium. It was originally uranium. And so because it's based on the earliest --

MR. GRIFFON: So the (unintelligible) say that, but it's --

MR. HINNEFELD: -- it's based on the earliest AEC facilities and the conditions that were found in the late '40s when HASL actually started looking at these places that had been producing uranium during the war.

MR. GRIFFON: Right.

MR. HINNEFELD: So it was based on uranium facilities, and -- and then so the research that was done at the time was to look through some of the available information, not necessarily make a thorough research of it but to identify sites where it appears all they handled was uranium. And so those sites were in the appendix as the applicable sites.

MR. GRIFFON: And it doesn't necessarily distinguish between types of uranium work.

MR. HINNEFELD: Well, it's gone through -- it's gone through a number of evolutions, and so at one point I think it may have said uranium metal forming --

MR. GRIFFON: Okay.

MR. HINNEFELD: -- and then -- and then -- but those plants in the '40s did more than uranium metal forming. They did all the chemical process uranium and so the data that supported this supported more than just uranium metal work. So -- and it's gone -- it was originally just natural and I think it was maybe expanded to allow some low level enrichment, also. So I don't know exactly what -- but there -- it's going through --

MR. GRIFFON: And the reason --

MR. HINNEFELD: -- a series of things as research supported it.

MR. GRIFFON: I'm sorry. The reason for developing a Bridgeport Brass site profile and that was that you -- you subsequently found additional information on Bridgeport or --

MR. HINNEFELD: Yeah, we did -- we did have -- well, I don't know that Bridgeport Brass was ever part of -- in the TIB-4 appendix. I don't know that it ever was. It's one of the -- one of the -- one of the errors we made was the misapplication of TIB-4 to sites beyond the way

it was supposed to be.

MR. GRIFFON: So this was one of those sites that might have been beyond --

MR. HINNEFELD: I don't -- I don't think -- I don't know if it was ever -- I don't know if it was ever in the appendix or not, and even if it were, there is additional information about Bridgeport Brass available beyond --

MR. GRIFFON: There's -- there's two -- two things that I was looking at here was, one, that it was a compensable claim and, strictly speaking, the TIB said not to use it for that -- right? -- at the time, anyway.

MR. HINNEFELD: Right.

MR. GRIFFON: And then the second thing was I was wondering before that I was -- asked was the site even listed in that -- in that TIB at the time this was done. I don't know if Hans knows that.

(Pause)

MR. HINNEFELD: Yeah, it was.

MR. GRIFFON: Oh, it was listed? So it was listed in the -- so it was really the compensable issue. That's what I was (unintelligible). Then -- then why -- why did -- was it -- was it additional information came (unintelligible) --

MR. HINNEFELD: Yeah, we did find additional information from Bridgeport Brass. We actually found the guy who had been the radiation safety

officer and he pointed out where some records were stored about the information from those people, I think.

DR. BEHLING: Okay, 61.4 is an issue that -- in your matrix it's defined as failure to account for all potential occupational medical doses, and this person was employed in the '50s to the early '60s. He was given -- given medical occupational exposure in behalf of conventional PA chest X-rays, but there was no accounting for any potential photofluorography. And so that issue really addresses the need to perhaps account for medical exposures involving photofluorography. And as it turns out, in OTIB-4 Rev. 3 PC-1 there is a recommendation to use photofluorography for all years prior to 1961. So I'm not sure your response addresses that change in the guidance.

MR. HINNEFELD: Well, there's not -- you know, that TIB -- TIB-4 does include that, the latest revision does include that. There's not uniform agreement on everybody's side, on the ORAU and OCAS side, about whether that really is the correct approach to take because the -- the research that supports -- I believe it's TIB-6, which is the DOE -- you know, medical exposures. The research that led us to conclude that if you don't have other evidence at DOE facilities, you should use PFG up in -- through some year, was

based on research that was done in DOE facilities. It was not research that was done at -- how were chest X-rays done in general, in the population. And so it's not entirely clear to us that you really -- you know, that a private firm, if they were giving X-rays, and some -- most AWEs we don't even have any indication that they were necessarily giving X-rays, but if they were, would they have done a PFG exam, which was usually a large-scale kind of screening thing. They could do a lot of them. So there's still some disagreement. The current version of TIB-4, as you say, exactly says use PFG up to '61, but there's still some open discussion on the side -- our side whether that's really the correct recommendation or not. If we want to go farther down that path, that would really I think require -- outside of this, you know, discussion outside this sub-- this subcommittee, at least in this particular task.

MR. GRIFFON: But at this point you're -- you're at least saying there was a -- you didn't adhere to the procedure.

MR. HINNEFELD: Well, the -- no, no, actually procedure two --

DR. BEHLING: The original procedure didn't make reference to it.

MR. HINNEFELD: Right.

DR. BEHLING: The revised procedure does, and generically speaking, when we talk about pre-1960, there was at least some generic use of photofluorography at -- at DOE sites. And so that was really brought up then, and of course would support our contention that the revised TIB-4 does in fact make reference to the photofluorography.

MR. HINNEFELD: And there's still debate, yeah, but right now -- where we are today --

MR. GRIFFON: Right, right --

MR. HINNEFELD: -- where we are today, it would be included.

MR. MAHER: This version of the OTIB (unintelligible) dose reconstructor follow (unintelligible) used to correct (unintelligible).

MR. HINNEFELD: Yeah, the version that he had at the time.

MR. GRIFFON: Okay.

DR. WADE: But Hans's question has been raised, and the new OTIB deals with Hans' question, so this issue is behind us right now.

MS. MUNN: Yeah, that's done.

MR. GRIFFON: So it's accepted in the new OTIB, but you say there's still -- you're --

MR. HINNEFELD: Well, there's still some debate about it.

MR. GRIFFON: -- still some debate --

MR. HINNEFELD: There's still some debate about it, but where we are right now -- you know, unless some debate changes things, where we are right now is it's in TIB -- TIB-4 to include PFG in (unintelligible).

DR. WADE: Well, that's the infamous Rev. that we're going to --

MR. GRIFFON: That we're going to review anyway, right. Okay, go ahead.

DR. BEHLING: The next one, 61.5, is already -- something we discussed and that is the appropriateness of using TIB-4 for 'pensable claims, so we can skip that. I think that takes care of claim 61.

MR. GRIFFON: 61's done, okay.

DR. BEHLING: 62 is another AWE facility. In this case it's NUMEC, and the first issue there was, again, the use of OTIB-4 as an appropriate method for calculating dose, which we've already discussed. And so you see in the matrix, see response 61.3. The only difference here, however, is that is NUMEC really an AWE that should be judged on basis of TIB-4.

MR. HINNEFELD: And it should not.

DR. BEHLING: Should not.

MR. HINNEFELD: It was not --

MR. GRIFFON: Wasn't on the list.

MR. HINNEFELD: -- I can pretty much tell you. It wasn't on -- it was not part of TIB-4.

DR. BEHLING: Okay.

MR. GRIFFON: Agreement on that. This -- was this a compensable case or a...

MR. HINNEFELD: Yeah.

MR. GRIFFON: Compensable?

DR. BEHLING: 62.2, again, goes back to the uranium ingots in Table 3, and I think Stu has already identified the fact that that table has been revised, so we can skip over that.

Again, 62.3, it's a repeat of the issue about a DCF using AP geometry which was already discussed, so we can skip that.

Let me go to see if there's anything unique about 62.5.

MR. HINNEFELD: Case where the file included a few individual bioassay samples and some medical exposure information.

MR. GRIFFON: Does 62.4 fall into that earlier discussion of --

MR. HINNEFELD: Yeah.

MR. GRIFFON: -- the --

MR. HINNEFELD: Yeah, yeah, yeah, because it was the -- it was about residual contamination, but it -- you know, it's from uranium in TIB-4 and this was other than uranium plant, so it's the same misapplication.

DR. BEHLING: So 62.5, it's an issue involving the failure to actually look at the DOE records that were provided, and your statement here is that the data was not received until after the dose reconstruction had been completed.

MR. HINNEFELD: Yeah, this ca-- this is a case -- this is a site where we didn't -- DOE didn't have any exposure records for this site, so we -- and we didn't have a contact to get exposure records for the site so we didn't think we were going to get any. And so this case was done -- subsequently we've encountered and had contact with two companies that ran the site for some period, one of which provided us relatively quickly the information they had, but they were not the site that closed it so all they had was medical information that was generated during the time when they oper-- they were the -- they had the license for NUMEC. And included in that were some X-ray exposures and some bioassay. They had some bioassay and a medical record. So that's how come it showed that, and that came after the DR was done.

DR. BEHLING: And I can understand why this dose reconstruction was closed, in light of the fact it was compensated. The need to have additional information that -- was at this point no longer relevant to the -- to the decision. It was

obviously a motivated capture.

Again, 62.6 is the issue of TIB-4 and its applicability, so that needs no further discussion.

MR. GRIFFON: Does NUMEC have a -- a site profile by itself?

MR. HINNEFELD: It's being -- we're working on -- we're working on it. And in fact, the company that had the license when it clo-- when those plants closed we've been in contact with and they've just recently provided us a lot of individual exposure information for the claimants -- boxes.

UNIDENTIFIED: Good.

MR. HINNEFELD: Yeah, sort of good.

MS. MUNN: Give or take a little.

DR. BEHLING: 62.7 goes basically back to the issue that was discussed in 62.5. The dose reconstruction was done at a time when certain amount of monitoring data had not been made available, that were only made subsequently available, but because the case was compensated I can only assume that issue of having to back-fit that was really not necessary.

MR. GRIFFON: This says inconsistency between CATI and data used by NIOSH.

DR. BEHLING: Well, the CATI report said he was monitored.

MR. GRIFFON: Okay.

DR. BEHLING: The absence of records was obviously considered as perhaps an issue where these were lost and the dose reconstruction took place using a generic method. And since he was compensated, the decision was made not to make an issue out of it.

MR. GRIFFON: And the only interest -- this person was compensated. The only curiosity I had on this was how in fact were -- 'cause I didn't look at this -- the details of this case. How was the --

MS. MUNN: CATI (unintelligible)?

MR. GRIFFON: No, how was external dose assigned?

MS. MUNN: Ah.

MR. GRIFFON: Was it a --

MR. HINNEFELD: TIB--

MR. GRIFFON: -- coworker model?

DR. BEHLING: TIB-4 model.

MR. HINNEFELD: -- TIB-4 model.

MR. GRIFFON: TIB-4 model. TIB-4 covers both external and internal. I always focus on internal. Okay. Right.

DR. BEHLING: And the last one -- again, the last one, NIOSH did not address potential radiological incidents of -- in the CATI report the survivor of the claimant made reference to the fact that the individual had to frequently take showers

prior to coming home from work and that his clothing were contaminated and his shoes were taken away from him. Again, these would suggest that there were issues involving personal contamination, but again, as previously cited, the person was compensated so the issue of minimizing the dose investigation or dose reconstruction is justified.

MR. MAHER: This is the standard technique we use for minimization where we give them enough dose to make them compensable and it's over.

DR. BEHLING: Yes. Yes, so it's just a technical issue in making that -- it would have been all different -- those three different sit-- conditions would have been different in a non-compensable case.

MR. MAHER: That's right.

DR. BEHLING: Case 63, this is West Valley. Again, we can probably expedite things, pretty much the same issues came up, but again, West Valley is probably not a facility that should be compensated by TIB-4, so that's the --

MR. GRIFFON: It wasn't on the original list of facilities.

DR. BEHLING: So the first three things we can just totally ignore; 63.4 --

MR. GRIFFON: Is this a compensable or non--

DR. BEHLING: Yeah.

MR. GRIFFON: It's compensable.

DR. BEHLING: In fact this was somewhat of a hybrid. They did not use the full measure of TIB-4. Again, it was a partial application of TIB-4, but it was sufficient to compensate the person, so it was basically an abridged dose reconstruction using TIB-4 as a -- as a generic model.

Now the only question I have, and this is more or less an academic question, is -- again, the issue that -- what brought this to light was that TIB-4 states that it should not be used for certain types of claims, including lung cancer. In this particular case the cancer involved -- it's the thoracic region, and based on whether or not you define that as an integral part of the respiratory system that would be excluded under the way that TIB-4 read at the time and so this is -- that issue was really a technical issue that the TIB-4 really states it shall not be used for dose reconstruction involving the lung tissue and this cancer was a ET-2 cancer and so that was the reason I brought this issue up here.

MR. HINNEFELD: I think it -- yeah, it's a worthwhile thing to debate, except that the latest revision of TIB-4 has removed that. You know, it no long excludes its use for lung.

DR. BEHLING: That was my real question.

MR. HINNEFELD: So it no longer excludes its use for lung, so it wouldn't -- there's no need -- so we -- kind of it goes away.

DR. MAURO: This is (break in transmission) Stu.

MR. HINNEFELD: Yeah.

DR. MAURO: When I was looking at this West Valley I (break in transmission) the application of TIB-4 to West Valley and in theory the line of argument went like this. (Break in transmission) uranium handled at West Valley, there -- and so --

MR. GRIFFON: John --

DR. MAURO: Yeah.

MR. GRIFFON: -- are you on a speaker phone?

DR. MAURO: Yeah, should I pick up?

MR. GRIFFON: You're -- you're -- we're losing every word -- every third word.

DR. MAURO: Oh, I'm sorry. Is that better? I'm now on my headset.

MR. GRIFFON: I think that's better, yeah.

DR. MAURO: Okay. Yeah. I'm speaking loud into my headset. The only thing I was -- would like to ask is, you know, when we were talking NUMEC and talking Bridgeport Brass, it was clear that predominantly both facilities dealt with uranium. Bridgeport Brass certainly, NUMEC also, but there were other radionuclides. But now we're moving into West Valley where it would seem to me that

we're dealing with a facility where uranium is not your principal concern. There are, you know, other radionuclides that probably are (break in transmission). And then in this case, by assuming the uranium as if it were a uranium facility and then applying the 100 MAC for the airborne dust-loading for inhalation seemed to be so far removed from the reality of the operation itself (break in transmission) Valley facility that it -- that it really went, you know, I would say to the point where it was too far removed. Are you folk-- I mean that's how I came out. Are you folks of the same mind or do you see it differently?

MR. HINNEFELD: No. No, we're of the same mind. Yeah, that was one of the errors that was made in that use of TIB-4 for compensable claims was we didn't worry about the applicability of TIB-4 to the particular site.

DR. MAURO: Okay.

MR. HINNEFELD: So yeah, that was clearly -- you're right.

DR. MAURO: Okay, thanks. I just wanted to make sure I had it right.

MR. GRIFFON: Then 63.5, Hans?

DR. BEHLING: 63.5, yes, the selection of solubility class for this case, the dose reconstructor elected to use type S, when in fact

TIB-4 identifies solubility class type M. Now of course type S would be considered claimant-favorable, so under the assumption that we wanted to maximize it, the selection of type S for a respiratory type cancer would have been claimant-favorable. On the other hand, it did conflict with TIB-4's statement that solubility type M should be used generically. So you overestimated when you didn't have to.

MS. MUNN: Another one of those cases where the issue becomes do you go the claimant-favorable route at all times, even when it's not really appropriate scientifically, or do you follow the directive.

MR. GRIFFON: Some of this is moot because TIB-4 is not even applicable. Right? I mean --

MR. HINNEFELD: Realistically, TIB-4 shouldn't have been used at this site.

MR. GRIFFON: Right, right, right.

MS. MUNN: It's the same question coming up again.

MR. HINNEFELD: And it probably gets caught up in at the time lung being excluded --

MS. MUNN: Uh-huh.

MR. HINNEFELD: -- for use of TIB-4. Everybody thought well, and for every other organ M's going to be more favorable so we're going to use M in TIB and in the ET, the extraterrestrial or --

extraterrestrial -- sometimes we feel that way.

MS. MUNN: Yes.

MR. GRIFFON: ET, right.

MR. HINNEFELD: The ET part, extrathoracic part of the respiratory tract would be -- that's going to look great in the transcript.

MR. GRIFFON: Little sense of humor.

MS. MUNN: Yes.

MR. HINNEFELD: Yes, very little.

MS. MUNN: You had to be there.

MR. HINNEFELD: The -- I forget my point. Anyway, I think it was -- when we excluded the lung we just neglected to think about what about ET-2 and should we exclude that as well, and so we excluded the lungs there and I think that's why TIB-4 read the way it did.

MR. GRIFFON: Yeah.

MR. HINNEFELD: But I don't think it reads that way anymore.

MR. GRIFFON: But I think, just to summarize -- I mean there was a -- a -- I don't think you strictly followed your initial procedure --

MR. HINNEFELD: Right.

MR. GRIFFON: -- at the time.

MR. HINNEFELD: Right.

MR. GRIFFON: But the point was that you used S, which is more favorable in this case, so --

MR. HINNEFELD: Yeah.

MR. GRIFFON: Are we on to 64, Hans? Is there anything else on this case?

DR. BEHLING: Yeah, I think that sums it up --

MR. GRIFFON: Oh, West Valley, I'm sorry.

DR. BEHLING: -- concludes that one. Let's see here, the next one is Jessup Steel, and that claim was denied. Again, Jessup Steel was defined in behalf of -- dose reconstruction was done in behalf of TIB-4 and we've looked at Table 3. That was the error that we identified earlier, so I can skip that first finding.

MR. GRIFFON: Yeah, and the second one.

DR. BEHLING: The second one, again, AP geometry and DCF value, we can skip that. 65.3, let's see -- 64.3, now we are (unintelligible) -- 64.3 is inappropriate uncertainty assigned for modeled photon dose. Again, this is probably a formatting problem where parameter two had included some values that should not if you apply a dose that's defined as a constant.

MR. HINNEFELD: Yeah, but IREP doesn't use parameter two.

MR. MAHER: It ignores that parameter.

DR. BEHLING: It ignores it.

MR. GRIFFON: So it shows up there, but it's not using it.

DR. BEHLING: Let me just take a quick look to see... Usually you can -- if there's a two value

that's identified, then you realize that it's just a mechanical error, but --

MS. BEHLING: Actual-- excuse me, this is Kathy Behling. Actually I think the template for the IREP includes a two in parameter two and if that's not taken out by the dose reconstructor it's erroneously left in there, but as NIOSH is indicating, it's -- it's not used because it was entered as a constant.

DR. BEHLING: But what I'm looking at, Kathy, is the actual Appendix A for those particular entries, and the two is -- does not appear there. It does seem to be a value that differs -- in fact it oscillates between 1.26 and 1.82, et cetera. And so it suggests that a generic uncertainty value was not used if you look at the Appendix A for this case.

MS. BEHLING: Yeah, I'm looking at it. Okay.

DR. BEHLING: And that's what made us question the --

MR. GRIFFON: But doesn't --

DR. BEHLING: If you look at the IREP input sheet, you will see for the particular entries listed, the uncertainty is not a value two. In fact it's -- it oscillates between 1.26, 1.82 -- goes back and forth. And so I'm not sure if this is just a typographical or some kind of error associated with the IREP because the numbers do

change.

MR. HINNEFELD: Well, I don't know that we could possibly reproduce where those parameter two numbers came from. I mean we can speculate about a few things. Could be that the original dose reconstructor erroneously entered it, say as a lognormal distribution or something like that based on something, and the peer reviewer said you're using overestimating technique, this should be a constant, and they just changed all those param-- all the -- the distribution constant and then the dose comes out right. I mean I don't know that -- and certainly in our shop we would not review parameter two if we had a dose identified as a constant in the IREP sheet. So it could be -- it could have been a spreadsheet that was essentially reused and cut and pasted stuff into it that had values already in parameter two and we just didn't change them. So there's any number of ways you can speculate about how they got in there.

MR. MAHER: But it is not used when you use a constant --

MR. GRIFFON: Bottom line -- if there's agreement that it should be a constant, I think it (unintelligible) right.

MR. MAHER: Just the first parameter.

MR. HINNEFELD: Yeah, just the first parameters

there.

DR. BEHLING: 64.4 -- yeah, here's an issue. There were dose assignments that go beyond the years of employment. We looked at the years of employment and apparently the IREP inputs contains surface contamination exposures that go beyond the period of employment.

MR. HINNEFELD: That was a mistake.

MR. GRIFFON: That's something I would quali-- qualify as like a quality control thing, you know.

MR. HINNEFELD: Well, I guess it -- I suppose. I mean I don't think that our reviewer would even -- would -- I think our reviewer would let it go --

MR. GRIFFON: Yeah.

MR. HINNEFELD: -- because if -- if -- this is a -- this is a non-compensable claim. The -- it's probably not very much dose, and --

MR. GRIFFON: Well, it's quality in the sense of the outside world sees this as they assigned me dose; I wasn't even there, you know, yeah.

MR. HINNEFELD: Yeah, could be.

MR. GRIFFON: So then they wonder, you know.

MR. HINNEFELD: Yeah. But I mean there -- there are doses -- there will be internal doses in everybody --

MR. GRIFFON: Right.

MR. HINNEFELD: -- beyond their employment right up to the date of diagnosis.

DR. BEHLING: And then the last and final one, failure to account for all potential occupational medical doses. And I think -- I think, John, you wrote this one in because you compared the OTIB-4 values for occupational medical with the generic TIB-6 values and you concluded that the TIB-4 gave much higher values, and the question is why. And I guess -- again, here in my write-up, apparently this inconsistency has been rectified in Revision 3 of TIB-4, which recommends the use of ORAU OTIB-6, so apparently you have taken away the earlier medical exposure doses that were considered. We would -- looked at them, said why are they so high and are they in -- why would there be a reason for them to be higher. I guess the review on the part of NIOSH says let's take them back out --

MR. HINNEFELD: Well --

DR. BEHLING: -- and substitute generic TIB-6 values.

MR. HINNEFELD: Yeah. Well, I think -- I'm getting confused now which way it went. When TIB-4 was revised to refer to the TIB-6 -- to use the TIB-6 values, those early years, that would actually move the doses up because the TIB-4 X-ray doses were lower than the TIB-6 PFG doses.

So this is part of that open question we had about what -- what is the correct -- you know, is it correct to apply the research at DOE facilities that says you should assume PFG exams. Is it correct to apply that research to the general public and non-- non-DOE sites when you don't even have any particular evidence that the X-rays were taken. So that's kind of part of an open question that we talked about earlier.

DR. BEHLING: And not included in the matrix was, again, the reference to the use of photofluorography prior to '61. The issue's raised why wasn't that considered. And again, we've discussed it, that's still under discussion with ORAU and NIOSH.

MR. GRIFFON: But the current revision includes it. Right? I mean where we're at as far as today goes.

So 65 are we on to?

DR. BEHLING: 65, this is Chapman Valve, and again, the similar things that we've already discussed -- the use of TIB-4, and so that requires no further discussion. Account for all medical exposures -- again, we've discussed that issue. 65.4 -- let me see what 65.4 is making reference to.

MR. GRIFFON: Those two are the same.

DR. BEHLING: Yeah, yeah, these are all repeats.

MR. GRIFFON: On 65.4?

DR. BEHLING: Yeah, 65.4 makes reference to model intake via ingestion during uranium operations may not be scientifically valid or claimant-favorable. And John, I don't know if you want to take this one --

DR. MAURO: Yeah, this is a generic issue. It's recurring, but I think it's been resolved. It has to do with the -- the basic approach that NIOSH has adopted in the past for the ingestion pathway from -- from deposited radionuclides, and also for the resuspension path-- (break in transmission) --deposited uranium. We -- we -- and this goes all the way back to Bethlehem Steel. The fundamental approach had to do with one predicting what might be on surfaces on some generic assumptions regarding deposition velocities, and then certain generic assumptions once the stuff is on the surfaces, how would it go from the surface and then be inadvertently ingested. So the basic approach that's been used across the board on all of these, for the ingestion pathway and for the resuspension pathway, from the deposited residual activity has been that there would be a direct proportionality between what's airborne during an operation and -- and then place an upper bound on what might be ingested. And one of our concerns that we

brought up -- and this will -- again, goes all the way back to Bethlehem Steel -- was well, you know, what might be on surfaces may not very well be directly proportional to what's in the air because the process by which surfaces become contaminated may be from other -- other mech-- (break in transmission) not only from the deposition of fine, 5-micron particles. So as a result, I think this issue has been resolved in principle. I believe that NIOSH has accepted that, has come up with a new methodology that they incorporated into the latest version of Bethlehem Steel, which we believe is -- meets -- satisfies the concerns we raised. But these cases that we're looking at now still use the old methods, but I believe there's agreement (break in transmission) really need to be revised and -- and are -- and have been revised, and the degree to which you may or may not need to revisit a particular case in light of that, you know, I -- I don't know, but -- but we're going to continue to see this deposited residual radioactivity issue emerge again and again because -- and historically that's the method that was used, but I believe that problem has been solved.

MR. GRIFFON: Where -- where does that model stand, Stu? Has that been completed and -- I know --

MR. HINNEFELD: It's not clear to me --

MR. GRIFFON: -- Bethlehem Steel.

MR. HINNEFELD: It's not clear to me that it's completed. There's work underway, yeah.

MR. GRIFFON: Yeah.

MR. HINNEFELD: It's on the overarching issues list, I believe.

MR. GRIFFON: Right, right, it's on our --

MR. HINNEFELD: Yeah.

MR. GRIFFON: -- will remain there, I guess, for this item --

MR. HINNEFELD: For this item I think we should address overarching.

DR. WADE: And we would like -- we'll have an overarching presentation in December, and we would expect that this would be on the list.

DR. MAURO: Say, Stu (break in transmission) so the latest version of Bethlehem Steel, you know, we have not looked at, we haven't been asked to look at it, that's now on the web, do you know whether or not that includes the new method that Jim desc-- if you recall, during the closeout process Jim and you folks described a new protocol for this scenario that we all agreed was reasonable and appropriate. I'm just assuming that that protocol was in fact adopted and incorporated into the Bethlehem Steel revised site profile. And that being the case, it sounds

like that -- you know, that that was a done deal. But what I'm hearing is that you're still looking at that?

MR. HINNEFELD: Well, I think -- now I've not been engaged in that particular issue, but my understanding is that the Bethlehem Steel -- a changed model is used in Bethlehem Steel. It now uses a changed model. But that there was some discussion that that might be a Bethlehem Steel-specific sort of solution in that the ingestion remai-- in general remains a broa-- an overarching issue to -- to deal with.

DR. MAURO: I agree. I think the way we -- in fact, this might be helpful. We -- we all came to the same place. There are times when the material that's deposited on surfaces only gets there because there's fine airborne particulates that are continually depositing on surfaces. And then the method that you guys have been using historically, you know, has merit. But if you have situations where surfaces are deposited like they are at Bethlehem Steel or other steel facilities, steel handling faci-- met-- uranium steel (break in transmission) for these where the particles might be large, flake off, or there might be spills that are not related necessarily to the airborne dust loading, then the new method is used. So I think that -- I think that's where

we might be, and I gue-- perhaps the whole story has not yet been developed, but you have applied the new method on Bethlehem Steel.

MR. GRIFFON: Yeah.

MR. HINNEFELD: Yes.

DR. MAURO: So I think that might just be where we are.

DR. WADE: And we'll hear about the generic issue in December.

DR. MAURO: Uh-huh.

DR. WADE: John, just in principle, when you speak if you could pick up the handset --

DR. MAURO: I apologize, I will do that in the future.

MR. GRIFFON: That's better.

DR. WADE: -- as a matter of rule.

DR. MAURO: Yes.

DR. BEHLING: Okay, the last issue, 65.5, involves an issue regarding incidents as defined in the comments made in the CATI report. We reviewed the CATI report and the Energy employee did make some reference to accidents, and we do know that in June of 1948 there was a fire at the Chapman Valve facility, and there was no attempt to at least look at potential exposures associated with radiological incidents.

MR. HINNEFELD: Well, I mean the -- this was a -- this is still a TIB-4 case. Right?

DR. BEHLING: Yes, but it was denied.

MR. HINNEFELD: A TIB-4 case, I'm pretty sure that that TIB-4 intake applied over the course of employment exceeds the expected from that. We know about -- we know some information about the fire. We don't know perfect information about the fire but we have some information about the fire. We're very confident that even with that fire-related exposure -- and for that matter, episodic incidents in the uranium proc-- you know, the machining plant, are kind of predicated as that's a part of this TIB-4 intake. So we felt like the intake of TIB-4 sufficiently bounded this person's intake in light of the fact that they were probably exposed as they described, and so --

MR. GRIFFON: What surprised me in your response here is that you didn't -- just what you said there.

MR. HINNEFELD: Yeah, we're better at that now than we were when we did this dose reconstruction, but yeah.

MR. GRIFFON: TIB-4, you know, we've looked at it -- TIB-4. We believe it will be bounding of any incident. That's kind of the --

MR. HINNEFELD: We choose language like that. It doesn't say that exactly.

MR. GRIFFON: Well, I mean your response may

(unintelligible) don't say that in the matrix here.

MR. HINNEFELD: Yeah. Oh, okay, yeah.

DR. MAURO: I may be able to add a little bit -- turns out I just finished completing my review of the Chapman Valve site profile and SEC petition, and what you've just described, Stu, I concur in. Namely, Chapman Valve has a -- the situation there was -- the generic approach was to assume 47 MAC as being the continuous chronic exposure that all workers experienced, and then -- and then what Chapman Valve does is it superimposes upon that an additional acute from a fire. And I agree that if you were to assume 100 MAC, as TIB-4 does across the board always, that would more than account for the exposures that might occur episodically. So I agree that -- that the TIB-4 approach would in fact be bounding for Chapman Valve workers.

DR. WADE: But this response needs to be modified.

MR. HINNEFELD: Okay, I was just going to ask.

MR. MAHER: And I'd also point out that when we have incident data and sometimes (unintelligible) there's, you know, (unintelligible) bioassay data we find, we of course apply that to the -- the (unintelligible) dosimetry and (unintelligible) on top of the old TIB-4.

DR. WADE: So on to 66 --

MR. GRIFFON: This is another -- let me just ask one more thing on -- on 65. This was on the original list of TIB-4 sites, I believe. Right?

MR. HINNEFELD: What was the company again?

MULTIPLE SPEAKERS: Chapman Valve.

MR. HINNEFELD: I'm pretty sure it was, but -- I'm pretty sure it was. Yes, it is.

DR. WADE: Not to celebrate too long, we're a quarter of the way through.

MR. HINNEFELD: Yeah, the easy ones. The easy ones.

DR. WADE: We celebrate when we conclude.

DR. BEHLING: The last AWE is a case involving Heppenstall Company, and again, we can probably expedite things. The same issue that we've already discussed defines the first finding, use of TIB-4. Again, the second one, the same thing about AP geometry and DCF, so you can knock that off. The inappropriate uncertainty assigned, there I think I looked at the IREP sheet. It says constant but you have parameter for uncertainty defined as two, which instantly would signal that this is obviously an issue that involves (unintelligible). 66 -- failure to account for all potential occupational medical, let's see, let's --

MR. GRIFFON: That's the one we discussed before,

I believe. Right?

DR. BEHLING: Yeah, again, this involves generic values in TIB-6 versus those in model TIB-4 and the photofluorography, so we've pretty much discussed all of the issues that involve this particular case previously, so we can -- we can go on from -- we can put this one behind us. Okay, is there any need to take a break or you want to go to lunch?

MR. GRIFFON: I was just thinking we're getting into the harder ones now, but --

DR. BEHLING: Yeah, we're going to get into some --

MR. GRIFFON: I think we should open this one up and take lunch at noontime. I mean we just -- you know.

So this is case 67.

DR. BEHLING: This is case 67, yes. It involves a Savannah River Site claim. Notable about this claim that this represents a best estimate -- this is probably the first real, true-blue best estimate we've encountered in our dose reconstruction audits, and we identified a number of issues that I think are very technical and --

MR. GRIFFON: Hans --

DR. BEHLING: -- they require some -- some discussion.

MR. GRIFFON: -- since we have several Savannah

River cases here, can you -- I don't want to identify the NOCTS ID -- I don't think we should identify that on the record, but can you just write down on a piece of paper which -- do you know the NOCTS ID for this one? I've looked at four of them. I've got notes --

DR. BEHLING: Kathy, do you --

MR. HINNEFELD: I've got it, I've got it.

MR. GRIFFON: Okay. Thank you.

MR. HINNEFELD: Here you go.

MR. GRIFFON: Okay, go ahead.

DR. BEHLING: And again, I don't want to touch numbers that may identify the individual by citing the POC. It was -- other than to say it was very, very high. The claim was denied, of course. The person had colon cancer, I will say that. That's the kind of cancer. And so let's go and look at the findings.

I'm going to have to spend a little bit of time reading 'cause some of these things are very, very complex and as much as you can read them and I only had since Friday, so I haven't had much time to really delve into some of the issues, but --

MS. BEHLING: Maybe I can interject here -- this is Kathy Behling -- if you would like me to.

DR. BEHLING: Go ahead.

MS. BEHLING: Finding 67.1 and 67.2 -- this has

to do with an error that we have identified in the workbook that was being used. This was a Savannah River Site. It's the EDCW version I think, zero (break in transmission) point one five workbook --

DR. WADE: Kathy, are you on a speaker phone?

MS. BEHLING: Yes, I am.

DR. WADE: Please pick up, if you don't mind.

MS. BEHLING: I'm sorry.

DR. WADE: It's obvious to us.

MS. BEHLING: Okay, is that better? I'm sorry. Again, this was an issue where the -- we've identified an error in the workbook. This is a Savannah River-specific -- yeah, a Savannah River Site-specific workbook, the EDCW workbook, and it was an earlier version. I will state that it appears that this error has been corrected in a more current version of the workbook. But at this time what had happened is the workbook introduces a range of DCF values associated with the colon for not only the 30 to 250 exposure range, but it actually looks at the exposure range for the 30 to 250 for all the geometries, and it selects the minimum value from all geometries as opposed to just the AP geometry, and a maximum value from all geometries, which in this particular case I believe happens to be the AP geometry. And therefore when the Monte Carlo

technique is used, the -- it is sampling from a range of DCF values that is incorrect, and that range starts at a lower value or a minimum value that is quite a bit lower than what it should be looking at. In other words, I think the AP geometry -- let me look --

DR. BEHLING: Kathy, can I interrupt --

MS. BEHLING: Yes.

DR. BEHLING: -- because I have the numbers in front of me.

MS. BEHLING: Okay.

DR. BEHLING: I'd forgotten what this issue was about until I turned the page and you'd already taken the lead on this, but again, we had all concluded one thing is that the DCF values should be confined to AP geometry, and yet the workbook uses a sampling method that selects from the lowest and the highest, independent of what the DC-- what the geometry is. And in this case, for the 30 to 250-keV photon range -- energy range, for the colon the DCF at the lower end has 0.226 and at the high end of 0.798. On the other hand, the minimum DCF is defined in behalf of the isotropic geometry which starts out at 0.056. So in essence, the way the workbook currently operates is to take the lowest DCF, which in most instances -- in this case, especially -- use the isotropic value as the starting lower end of the

triangular distribution when in fact instead of using 0.226 as a starting point for sampling, the value of 0.056. So there's a fourfold lower value in the DCF, and that's a generic error that we identified in the workbook that was applied here.

MR. HINNEFELD: Right, and as part of the -- the whole issue of we didn't start out using a whole -- wholly 100 percent AP and so we have to identify these cases and go re-evaluate as part of that whole prog-- Program Evaluation Report.

UNIDENTIFIED: We're doing that right now.

MR. GRIFFON: So the -- the -- to make a long story short on this item number one, 67.1, you re-evaluate any cases that use this -- that approach?

MR. HINNEFELD: Yes. Yeah, and I'm sorry it's not in the response. We'll add -- we'll add that to our response.

We'll add it to our response.

DR. BEHLING: Okay, the next findings are also --

MR. GRIFFON: In this particular case -- I'm sorry to interrupt, but this one was a close -- a borderline case --

MR. HINNEFELD: It was high, but not 50 percent, so yeah, it was pretty close.

MR. GRIFFON: But it will be re-evaluated, though.

MR. HINNEFELD: Uh-huh.

DR. BEHLING: The next three findings involve 67.3, 4 and 5, and we sort of group them together. We identified that the records were inconsistent. I looked at the annual summary doses, and they did not match the quarterly assigned doses. And it turns out the annual doses were lower than the quarterly recorded doses.

MR. HINNEFELD: Actually they do match. The -- in the quarterly doses that are provided with the case, the wrong person's doses -- the wrong person is underlined. It's a person who has the same surname as this Energy employee, but -- but is a different employee. This Energy employee fortunately is on the same page, several lines lower than the underlined, and so when you use this employee's correct quarterly dose for the third quarter, it lines up and it totals -- the annual totals do add up to what the total is on (unintelligible). Now since it -- you can't redact all that and show what it means, I don't have it with me now but I can produce it. And if you look on the -- in the AR in the response on those pages where the quarterly responses are provided, you can see that Savannah River, when they were identifying the person -- the related person, underlined the wrong person. The -- he

has the same surname, but -- but different first and second initials, and the EE is about ten lines lower on the same page.

MR. GRIFFON: And I think that's something you can double-check --

DR. BEHLING: Yeah --

MR. GRIFFON: -- outside of this meeting. Yeah.

MR. HINNEFELD: Okay.

DR. BEHLING: I guess when I looked at it I focus on the underlined --

MR. HINNEFELD: Absolutely, absolutely, that's what I do, too. It took me the longest time to figure out what was going on.

DR. BEHLING: Okay. Can I interrupt just for a second? Kathy, can -- while you -- while you're doing this, since you probably have -- you're in a better position, can you make the necessary notation behind each of these findings on the spreadsheet?

MS. BEHLING: Yes, I'm doing that.

DR. BEHLING: Okay, because --

MR. GRIFFON: Just to go back to 67.1 'cause I -- seemed like there -- I mean the DCF issue I've got, but in the -- earlier in your response you -- you're talking about -- let's see, it's in the -- it's -- it's a question of zero readings versus no monitoring that I was looking at. That seems to be a separate issue -- separate and

apart from the DCF issue, isn't it? Is -- my question is were they -- were these zeroes -- were these blanks in the record, if they were blanks, how were they tre-- you know, how -- how did you treat blanks versus zeroes?

MR. HINNEFELD: Well, I don't know, Ed or Mutty, can you comment on that?

MR. SHARFI: Sure. I mean in the earlier years we did -- we did get a -- they do have a lot of blanks and it is in OCAS's TIB -- it's one of the early OCAS TIBs that cover -- that does -- they do have a TIB that covers Savannah River's reporting records, and blanks are considered zeroes. Savannah River in their records, if -- if no dose was recorded, they left the result in their manual recordings as a blank, so we do then enter a zero in as the -- to replace a blank in the record --

MR. GRIFFON: Oh, okay.

MR. SHARFI: -- for Savannah River.

MR. GRIFFON: So Savannah's site-specific policy was that blanks would mean -- or --

MR. SHARFI: Are zeroes.

MR. GRIFFON: But it wasn't that they weren't monitored.

MR. SHARFI: Correct.

MR. GRIFFON: Okay.

DR. BEHLING: I guess I --

MR. GRIFFON: You would have treated it as less than detectable and not -- okay. Go ahead, Hans, I'm sorry.

DR. BEHLING: The secondary issues -- I'm reading here quickly -- involves when you have just a quarterly dose (electronic interference) person was monitored monthly, you have no way of recognizing whether or not that dose was spread evenly or was a single monthly dose with two zeroes. The question is were all potential missed doses accounted for given the incomplete data that we had to work with.

MR. HINNEFELD: Right, I don't know, but I would guess --

MR. SHARFI: Probably more of a claim-specific. I'd have to actually look at the data itself, but generally, even if you're given quarterly data -- I mean in the same case in other sites, like Rocky Flats, where we give summary data, there are ways to estimate -- based on exchange frequencies -- the expected number of, you know, blank records or -- or --

UNIDENTIFIED: TBD will have some of that information, too.

DR. BEHLING: But what do you do? I guess I'm still confused. Let's assume that in this case I have annual sum doses, I have quarterly sum doses, but not monthly doses. And the question

is, do I assign for every -- a highly conservative approach would be to assign all quarterly doses to a single wear period and assume two zeroes.

MR. HINNEFELD: Oh, but Savannah River -- just for the Savannah River record that has the quarterly dose, it also has some cycle results, meaning the cycle -- the third cycle, that's the monthly report of the third month of the quarter, so you'll have the third month of the quarter and you'll have the quarterly total. So if those two numbers are the same, then you clearly have two zeroes. If those two numbers aren't the same, then I think what we're using is we're figuring there's one zero, because we know that there are two readings that aren't zero, so we'll put one in as zero. I think that's what we're doing, but I won't swear to it.

MS. BEHLING: This is Kathy Behling. Based on what I've seen in the most -- in the Savannah River Sites for -- associated with I guess the fifth set, that's exactly what they were doing. They're looking at the cycle data on the quarterly data. If they are the same, they use two zeroes and they are being fairly claimant-favorable in that approach.

MS. MUNN: And Kathy, two zeroes would give -- in that instance that you just reported --

approximately how much additional dose?

MS. BEHLING: The zero would be assigned to the two months, and it would depend on the LOD value, so they would take an LOD divided by two and they -- but they would assume that there would be missed dose there as opposed to assuming that that quarterly dose was spread out over three months.

MS. MUNN: Yeah, I understood that, but the -- the approximate -- I've never been very clear in my own mind how much real dose -- I shouldn't say real dose. How much assumed dose is actually recorded in a case like that?

MR. HINNEFELD: Well, for a period where the LOD is 40, for instance, it would be 20 millirem (electronic interference) a month assigned as the mean of a normal distribu-- of a lognormal distribution.

MS. MUNN: And that's a fairly common --

MS. BEHLING: Yes.

MS. MUNN: -- level of (unintelligible).

MR. HINNEFELD: In radiolo-- in radioepidemiology assessment, that's a fairly common treatment for a zero reading.

MS. MUNN: Right. Right.

MR. MAHER: The TBD gives you a different value over different time periods and I could put (unintelligible) --

MS. MUNN: Correct, correct --

MR. MAHER: -- and we would use what's --

MS. MUNN: -- but I'm trying to identify what that --

MR. MAHER: Oh, the --

MS. MUNN: -- that baseline is --

MR. MAHER: -- the magnitude of --

MS. MUNN: -- that -- that -- yeah, the magnitude.

MR. MAHER: -- (unintelligible).

MS. MUNN: So that if we were saying that this kind of treatment was being applied over a whole year; i.e., you have readings, but you're assuming that two of the quarterly doses are zero doses so you're assigning additional dose to them, then in all probability over a period of a year, an individual would have accumulated say something on the order of 100 additional millirem. Right?

MR. HINNEFELD: On that order.

MS. MUNN: Yeah, right. Okay. Thank you.

MR. HINNEFELD: Between 100 and 200.

MS. MUNN: Between 100 and 200.

MS. BEHLING: 160.

MR. GRIFFON: This can be a recurring theme, too, but the -- this question of when there's blanks and when there's zeroes, and when the blanks are really gaps in the individual's monitoring versus

-- I'm not sure I completely -- I mean I'll -- I'll defer for -- I'm talking specifically to Savannah River. I'm not as familiar with the -- I looked briefly at this cycle data being quarterly data, and if -- I mean if -- I don't know if Savannah River -- for instance, if people were cycled out of -- not to use cycle, but if they were rotated out of a rad area, didn't require monitoring, would they just have a gap on these sheets? They wouldn't have an entry with a blank? Is that the distinction?

MR. HINNEFELD: Well, Savannah River --

MR. GRIFFON: (Unintelligible) have an entry with a blank that they -- that they're saying equals a zero, and I'm saying that they were monitored but they had a zero.

MR. HINNEFELD: At Savannah River, as I understand it, at least for certain years at Savannah River, if someone was monitored for a portion of the year and then for one month like cycled out and were not monitored, it would look like they were and they got a zero. That's the way -- that's the -- the record we get would look that way, at least for some individuals.

MR. GRIFFON: Yeah. Then the question is if you have -- I mean, you know, how do you -- how do you treat that, and I think you -- kind of a triage approach, but if you have a large chunk of

those missing, I think you'd probably go to coworker model type stuff.

MR. MAHER: Right, if you find their job hadn't changed and they should have been monitored, then we'd go to something like that, that's right.

MR. GRIFFON: Right, and if it's like one missing, you probably just say put a zero in --

MR. HINNEFELD: A zero.

MR. GRIFFON: Yeah, okay. I -- I think it becomes important in this case because of the --

MR. HINNEFELD: -- Right.

MR. GRIFFON: I don't know that we can go much further on that right now, but I would -- other than to look back more -- at least I understand now that the blanks, for the most part, were -- or that was a Savannah River policy in the database (unintelligible) put blank in for zeroes.

Hans, do you have any follow-up on that --

DR. BEHLING: No.

MR. GRIFFON: -- part for now? I think --

DR. BEHLING: I'm trying to scan through --

MR. GRIFFON: The main response I have for that first one is that the DCF -- that you're going to re-evaluate --

MR. HINNEFELD: To re-evaluate --

MR. GRIFFON: -- Use that old workbook or whatever, yeah.

DR. BEHLING: And I think several of the other findings all relate to the issue of not being able to match the quarterly doses to the yearly doses, because we were looking -- or the wrong name was underlined. I think we can (unintelligible) --

MR. GRIFFON: And Kathy's got that note just to -- you think we should take that, should check into that and make sure that you're in agreement. I think we will be, but...

DR. BEHLING: Okay, I think we can go -- let me see if there's anything else here. There is, however, one thing that -- again, I'm trying to scan through more pages here that define each of these one-statement findings. I looked at the Technical Basis Document for Savannah River and also the location where this person worked at the 773-A facility, and the recommendation there is to use a photon energy split that 50 percent 30 to 250 and 50 percent 250 or greater, and -- and that would certainly -- again, not only was the issue of the triangular distribution using isotropic, the low end, misused, but using the energy distribution as defined in the TBD for 50 percent between 30 and 250 and 50 percent greater than 250, you again raise the -- the energies for the photons, especially when you talk about greater than 250, because now the triangular

distribution oscillates between a low of 0.798 to a high of 0.891, and certainly that would significantly raise the potential dose assignment.

MR. HINNEFELD: Yeah, and the -- as a general rule we believe that 30 to 250 -- assigning 100 percent 30 to 250 is -- is claimant-favorable because the radiation effectiveness factor in that energy range is higher than it is for greater than 250. I think for this case what we should do is just demonstrate (unintelligible) with doing them both, do the doses with 100 percent 30 to 250 with the correct DCF range so just the AP DCF range and so on, and also do it with a 50/50 split with the -- with each 50 percent getting its correct DCF range and then -- then once you get a dose, that dose will be -- it will be higher with a 50/50 split, but you put those values into IREP and I believe the POC will be higher for the 100 percent 30 to 250 because of the effectiveness factors, but we -- I think we can just -- just lay that out and do it, that'd be straightforward.

DR. BEHLING: Certainly the -- certainly the dose will go up. Whether the POC will go up --

MR. HINNEFELD: Right. Right.

DR. BEHLING: One of the things that was identified in your write-up where you attempted

to also redefine the POC using different DCF values, you make mention for the low energy photons -- initially in the dose reconstruction used for the less than 30 keV DCF -- a value of 0.06, which is the central value for the colon -- yeah, as I recall here -- yeah, for photon energies of less than 30 keV, the DCF AP geometry is 0.06, and then in your write-up you define a value that is considerably less and you -- I'm not sure how you justified the -- it goes from 0.06 to 0.0226, so a factor of two -- more than a factor of two lower. Initially in my write-up I agreed with what you did, but in your response here that I only had a chance to look at since Friday, you changed your mind about that.

MR. HINNEFELD: Well, the --

DR. BEHLING: You see where I am --

MR. HINNEFELD: Yeah, I know what -- I know which -- I know which one you're talking about. There is a -- we have a set of dose conversion factors that are plutonium-specific, and plutonium is 17 keV. And the DCF energy ranges in the implementation guide, with the broad energy bands for less than 30, that encompasses a fairly broad band of potential DCFs, and so you have a fairly broad band of -- of -- of potential conversions, you know, to use. But if you have pretty good knowledge that -- or if you're -- you have a good

set of knowledge that the low energy photon exposure was due to plutonium, then you have actually a mono-energetics* force and so you can have -- you can do a better job of a DCF determination for -- for a plutonium low energy photon exposure. So that's -- that's the -- that's the origin of the other set of DCFs.

DR. BEHLING: That does, however, bring up an issue, because it came up in another instance where in some cases where low energy photon spectra are compensated by virtue of the cadmium filter being somehow or other less than objective in defining the dose for low energy photons, including those at the low end of the 30 keV because of cadmium having a high (unintelligible) value, 48 --

MR. HINNEFELD: Right.

DR. BEHLING: -- and this photoelectric interaction is driven by (unintelligible) to the third power, then you have a thousand milligram per centimeter squared filter, it will attenuate more if it's cadmium than a thousand milligram per centimeter squared filter of tissue equivalency at 6.7 (unintelligible) value. So the question is, in some cases -- I believe at Rocky Flats and elsewhere -- you actually raised the -- the -- or do a dose adjustment by ten percent or even up to 25 percent, and I wasn't

sure whether this was another issue here that you attempted to correct the low energy photon component.

MR. HINNEFELD: Well, I'm not very knowledgeable about Rocky Flats. I believe the low energy photon was generated from the non-penetrating result than the -- on the -- on the dosimeter at Savannah River, wasn't it?

DR. BEHLING: Yeah, for Savannah River I think they subtracted deep dose from the shallow dose, and then they applied the less than 30 keV -- initially it was defined by DCF of 0.06 and then they converted it to 0.0226 and then -- that's the issue here.

MR. HINNEFELD: Yeah.

DR. BEHLING: And I wouldn't concern myself, but this guy is very close --

MR. HINNEFELD: I think --

DR. BEHLING: -- and every effort was made to sort of say how can we reduce this guy by what's -- and then justify it on a technical basis, and so I'm on the other side trying to say what was the justification.

MR. HINNEFELD: Well, I think that the -- it certainly warrants more discussion than we can give it today, and it apparently warrants more internal NIOSH discussion than has been applied so far about the -- you know, the use of

plutonium-specific DCFs in this case, or do we have a -- you know, do we have a firm policy on when it should -- when those should be used. So today I think it would be an open issue. I think this whole number -- this whole case number, 67, I think we could -- we could redo and -- and I think ultimately -- well, because we've still got other issues to get through as well that are relatively tough -- and have essentially a firmly-blessed one because, you know, we do dose reconstruction, dose reconstruction comes out, we're getting into some fairly -- very difficult technical questions here and we want to be sure we have the best person -- you know, Jim Neton doesn't look -- you know, the best person on our side is Jim Neton. Jim Neton doesn't look at every dose reconstruction. And so get him involved in making sure that the decisions we've made in terms of this -- this case are the correct ones and we're going to continue to proceed this way. And we're just -- you know, we haven't done that at this point. So I -- I will say that I think what we should do is rework it the way we think it needs to be reworked, all this -- you know, that NIOSH would have the best minds at NIOSH agreeing this is the way it should be reworked, and then -- and then we'll come back to the Board. And if it -- you know, if it

changes the outcome, it changes the outcome.

MR. GRIFFON: To my knowledge, plutonium-specific DCF -- this will be in an area you wouldn't expect much americium in with this material or...

MR. HINNEFELD: To be honest, I don't even know. I know that's what that says -- I know that's what the response says --

MR. GRIFFON: Yeah.

MR. HINNEFELD: -- but I don't really know for sure.

MR. MAHER: Depends on the age of the material.

MR. GRIFFON: Okay.

MR. HINNEFELD: Yeah.

DR. BEHLING: Okay, are we at 67.7?

MR. HINNEFELD: Yeah, I think so.

DR. BEHLING: I guess -- well, we had identified the failure to assign on-site ambient dose for the year 1980, '81 and '82, and OTIB-7 should have been referenced --

UNIDENTIFIED: Yeah, we agree with that.

DR. BEHLING: Okay.

MR. GRIFFON: Which one are we on, Hans? Let me catch up.

DR. BEHLING: 67.7 -- okay, 67.8 -- now we're getting into internal. I wonder if this would be a good time to take a break because internal is going to take quite some time.

MR. GRIFFON: Yeah, I guess we can break for

lunch.

DR. WADE: What time back, an hour?

MR. GRIFFON: Yeah, let's take an hour, so be back a little before 1:00 o'clock.

DR. WADE: We're going to break here for lunch, ostensibly an hour. We'll connect back in like 45 minutes, but we're going to break the contact now.

MR. GIBSON: Okay. Back by 1:00?

DR. WADE: We're going to -- we're going to connect at a quarter of. It'll probably be 1:00 before we actually begin.

MR. GIBSON: Okay.

DR. WADE: Thank you.

MR. GIBSON: Thanks, bye.

(Whereupon, a recess was taken from 11:50 a.m. to 12:55 p.m.)

DR. WADE: Okay, this is the workgroup confer-- the -- excuse me, the subcommittee conference room, and we are about to go back into session. I would ask if there are any Board members on the line?

MR. GIBSON: Yeah, Lew, this is Mike. I'm here.

DR. WADE: Hi, Mike, welcome back. Brad Clawson is not with us; he left mid-morning. Gen is here, Wanda and Mark, so we'll begin.

MR. GRIFFON: All right. Hans, I think we left off on case 67, and 67.8 seems to be internal

dose.

DR. BEHLING: Right. Yeah, the first one -- and again, some of these are complex, and if there's a period of a few seconds, it's because I'm reading the statements that lead up to the actual finding and -- some of these are complex.

I guess finding 67.8 we identified as NIOSH did not properly account for all internal doses from fission products, and for the -- for missed fission products internal doses, NIOSH was limited barium-140 and lanthanum-140, and we questioned whether or not that is really as claimant-favorable as it is stated to be. And I think we're going to get into that later on when we talk about some of the whole body count data as well as chest count data where there's a default approach to saying well, we'll use the most limiting radionuclide and apply MDA and use that as a way of saying we're claimant favorable and at the expense of obviously deleting other radionuclides that would clearly also be there in conjunction with barium or lanthanum-140 in this case. And in fact, in addition to those radionuclides that are gamma-emitters and are oftentimes found below MDA, one should also look at, for instance, certain beta-emitters such as strontium and yttrium-90, which would not even be there under any circumstances. So the question

that we have here is the issue of limiting yourself to a single radionuclide -- even though that radionuclide, in a mixture, may be one that give you the highest single dose -- at the expense of ignoring all others.

MR. HINNEFELD: And I can -- I think -- I would like to just speak briefly about this and recognize that a really complete discussion of Savannah River mixed fission product internal dosimetry approach really requires its own real discussion, with perhaps some different people in the room -- from the ORAU side and from the NIOSH side, at least. There is a basis for the mixed fission product approach in Savannah River.

It'll be a fairly involved technical discussion to get to -- you know, to describe that.

In general in a mixed fission product environment it is a calculation convenience to choose -- you know, if all the fission product activ-- where activity were of this particular radionuclide, that would provide the highest dose and so that would be the way to do that.

Now in this situation, as you pointed out, the measurement was an -- was an in vivo non-detect, and so what we had was a measurement that was indicative of each specific radionuclide, not the totality of mixed fission products. So the basis of going from the thought process that in mixed

fission products choose the most -- you know, the most claimant-favorable dose nuclide and assume all other mixed fission product to that to the cases where we have here where we don't have a total mixed fission product count is something I think requires a discussion of its own. That could occur in the Savannah River site profile review. It could occur in a future discussion of this group. And we -- like I said, we do need to get additional NIOSH and ORAU people in the discussion. Or -- you know, or whatever venue you want it to take. And since we're going to be -- I think we probably need to rework this case anyway, we could do it at that time. You know, come back with a reworked case 67 and engage in that discussion at that time as well. I mean the venue time isn't very important, but I think this'll be -- this will be a pretty difficult one to resolve and it'll take quite a bit of discussion.

DR. BEHLING: Yeah, I think it's satisfied, but for those people who are not quite familiar what this issue is, I have to go back to the previous page here that precedes the finding. In this case we have whole body counting that suggests we're looking for a cerium-144, chromium-51, iodine-131, ruthenium-106, zirconium-95, zinc-65 and cobalt-60, and -- and as I already mentioned,

they've elected to use cerium-144 as the limiting radionuclide for this particular tissue and using the MDA value decided to say that that's claimant-favorable. And for that radionuclide it would be, but what it does ignore are the other radionuclides.

MR. GRIFFON: So -- so I think Stu, maybe to -- to just sort of lead up to this discussion whether -- I actually think it would be best to put this issue in the site profile discussion. But I think to lead up to that, would NIOSH -- is NIOSH or do you have currently any description of -- of these -- you know, sort of a what-if --

MR. HINNEFELD: The -- the -- what's the basis of it?

MR. GRIFFON: Yeah, what's the technical basis and -- you know.

MR. HINNEFELD: Well, there's ----

MR. GRIFFON: Looks like there's kind of a triage and --

MR. HINNEFELD: -- there's probably --

MR. GRIFFON: -- and --

MR. HINNEFELD: -- there's probably some language in the site profile, but I don't know how descriptive it is. You know, our site profile language sometimes isn't the easiest to follow along the technical debate of it or the technical theme of it, so I think we would -- we would

start there and see what's there already, and then kind of look at -- you know, and perhaps embellishing it for future discussions of this group or Savannah River site profile group or whatever --

MR. GRIFFON: Yeah.

MR. HINNEFELD: -- whatever venue.

MR. GRIFFON: I mean 'cause all -- all I was thinking sort of an action out of this might be to -- if it --

MR. HINNEFELD: For us to ensure that it happened, we can --

MR. GRIFFON: -- (unintelligible) --

MR. HINNEFELD: -- yes, yeah --

MR. GRIFFON: -- have some basis ready so we don't --

MR. HINNEFELD: Yeah.

MR. GRIFFON: -- spin our wheels with the same discussion, you know.

MR. HINNEFELD: Right.

DR. BEHLING: And just to cap it off, I understand that at least the fundamental concept behind this approach is probably analogous to a urine data where you don't know what the mixture is but you assume that if they're all beta-emitters will take the least -- the most -- the most limiting of most claimant-favorable one. In this case it doesn't work out.

Okay, 67.8 -- no, 67.9 is the issue -- and I'm going back here in my notes, or at least in the audit. It states that -- in the dose reconstruction that the use of type M for a plutonium mix is claimant favorable and therefore type M was used. When -- when we were in -- in the -- and we substituted type S as opposed to type M for this particular organ, we end up with a considerably higher dose. If the intent was to be claimant-favorable, type S probably would have been your choice of solubility. If you can show -- convince me that type M was more likely the probable solubility, than that choice would have also been the case, but I think -- I took exception to the statement that we're being claimant favorable by assuming a more soluble form, when in fact when you start out with a urine sample and you work backwards and then feed that information back into IMBA, you end up with a higher organ dose for -- for -- for type S.

MR. HINNEFELD: I think it's a good point that we shouldn't refer to class M as claimant favorable. It wasn't selected because it was claimant favorable, it was selected because it fit the bioassay data.

DR. BEHLING: Yeah, and -- and as I said, if -- if -- if there is documentation that says the type M, based on -- on TBD information that would

suggest it's type M, that that would certainly be acceptable. I just took exception to the statement that this - this assumption was necessary claimant favorable.

MR. SHARFI: Also this particular case, but that's -- if you're assuming just bioassay, that might be true, but you have to consider this person also had chest counts, and when you get into type S you're going to get the americium associated with the type S that probably will show much smaller intakes (unintelligible) the chest count where then the urinalysis assuming type M is more claimant favorable.

DR. BEHLING: Yeah, you -- I understand your argument, but you would also have to have a chest count that is relatively coincidental in time with the urine so as to at least provide some measure of assurance that the two are somewhat in concert with each other.

But anyway, if type M is the appropriate selection, then the argument goes away.

MS. MUNN: It sounds as if it is.

UNIDENTIFIED TELEPHONE PARTICIPANT: Hello? I'm sorry, the volume disappeared.

MS. MUNN: Oh, are we back? Can't you hear us?

UNIDENTIFIED TELEPHONE PARTICIPANT: Well, very, very, very lowly, and at 84 my hearing is less than perfect, but that's all right, that's not --

that's my -- my hard luck, not yours.

MR. GRIFFON: We'll try to speak up.

MS. MUNN: Yes, we're hearing you clearly.

DR. BEHLING: Okay, finding 67.10, this centers around a conversion value and I'm trying to read where -- what the finding really was -- (reading) SC&A cannot determine the basis for uranium urinalysis conversion factors. And the conversion factor that apparently came into the dose reconstruction methodology involves a one microgram per liter of uranium is equivalent to 109 picocuries per liter, and I guess I was questioning how that -- it's obviously a sign of -- of uranium -- enriched uranium, but I'm at a loss to explain what that enrichment is.

MR. HINNEFELD: There's a specific mixture identified in the glossary of the site -- of the site profile, HEU, and so using that specific mixture that's defined in the glossary and the specific activity conversions, that's the composite conversion you get.

DR. BEHLING: The second issue in -- in that, and I'm not sure -- let me see if it's even identified -- no, it's not in the matrix. The second one is the issue of converting -- or making assumptions with regard to the intake regimes. I believe in this case we had two chronic intake regimes for -- for all of the

bioassays involving uranium urinalysis data and eight acute intake regimes.

MR. GRIFFON: Wait, are you on to 11?

MR. HINNEFELD: No, this is still part of 10 -- still part of 10.

MR. GRIFFON: Go ahead.

DR. BEHLING: And of course what happens here, when you look at the intake regimes, the acute intakes regimes apparently were assigned to the highest observed urine activity, and to what extent one can reasonably justify that on a scientific basis, because it tends to reduce the collective dose to the organ if you assume an acute intake as opposed to a chronic intake, and I realize when you guys put this data into IMBA you actually plot it out and then you have certain programs that would suggest what is the most logical interpretation of these periodic points in space for -- for measuring urine and dates and -- and I'm just not sure I always agree or understand how the selection process of an acute versus a chronic regime takes place. And I -- on -- on the next page I actually have the dates that -- that are defined here for the eight chronic -- for the eight acute intakes, and they're fairly high. There's a couple that involve -- in fact, the one that stands out, there's one urine sample that contained 180 dpm

per 1.5 liter, and as it actually turns out, that should have been one of the high five selection groups and it was considered an acute intake. And then most important was the actual time for that intake, and I think this is where we're going to get into a discussion here because apparently the dose reconstructor assumed that for the eight acute intakes, the day of intake or -- was the day before the bioassay, in some instances two days before. And -- and when I look at the procedure, it says if the bioassay is labeled as routine -- in other words, it's your day to come in and have your urinalysis done, there's nothing that motivates that; for instance, failed respiratory device, an alarm going off, a nasal swipe positive -- to what extent can one justify an intake that says the day before you have your bioassay is when you took it in in order to do a dose assessment, when in fact the protocol suggests the midway point between that day and the previous one.

MR. HINNEFELD: Well, the -- the protocol assigning a mid-- a midway intake is when there's not other evidence of what the date occurred, and so when you have a long series of bioassay data, you can -- you can fit the intake -- you know, choose the intake date that fits the bioassay curve the best. And so that's generally what's

done and that's how the intake date then is chosen on these selections. The reason why a series of, you know, all these various acute intakes were taken -- you know, on many occasions you'll see a bioassay pattern that moves around a little bit and will choose a chronic intake that essentially covers the whole lot, realizing that the excretion curve is well above some of those bioassay data points. Well, that's an overestimate of what the actual intake was because you've overestimated those various excretion points and so that's suitable and much easier in a case that you can get by with an overestimate. But we're not -- you know, we don't provide compensation cases -- overestimating compensation cases, so if we have a compensable case, we have to do our best estimate. That means fitting the bioassay data, even when there are a number of episodic acute exposures like this. That's what the bioassay would indicate. So that's why a lot of acute exposures were done, and the intake dates should have been selected to best fit the bioassay data. And like I've said before, since we've said we're going to redo this case, kind of make it a poster child for these various issues, I think we can probably walk through that in greater detail at the point when we do that.

DR. BEHLING: Yeah, and in fact -- again, for the people who don't have the actual table -- I looked at the assumed days of intake versus the midpoint, and in some instances we're talking about months, so clearly if one were more claimant favorable and follow the guidance as defined in ORAU PROC-3 that says intakes should be based on known incidents when information is available. When there is no information, default data for acute intake or start of a chronic intake is the midpoint between the date of the sample assumed to indicate the intake and the previous sample. So --

MR. GRIFFON: I think, Hans, there's more -- I mean the most compelling point, too, is that these are all routine, you say?

DR. BEHLING: Yes.

MR. HINNEFELD: They were routine tests.

MR. GRIFFON: (Unintelligible) specials drawn from an inci-- you know, if it was specials every time and you knew you had a known incident, then you could say well, it makes sense. You had -- you have paperwork that shows you got exposed the day before or two days before.

DR. BEHLING: Yeah, and --

MR. GRIFFON: You know, it's kind of odd that you had eight acute intakes --

DR. BEHLING: Yeah, and especially --

MR. GRIFFON: -- if it fits it best, you might even have to step back and say am I modeling it right here, you know. I mean that's what I would do, so --

MR. HINNEFELD: Well, I think that -- yeah.

MR. GRIFFON: -- this raises a question.

MR. HINNEFELD: I think that it's a -- it's a valid -- a number of valid things to look at when the case is re-evaluated and -- and how that's done. All I can say is that generally in this situation, if -- if it's on the edge, you know, we're not supposed to compensate with an overestimate, then we try to get the best fit to the bioassay data we can. And what's supposed to happen is that the -- the intakes are selected to best fit the bioassay excretion and -- I haven't personally gone back and verified the fits of these, so I -- you know, but we can -- we can do some more investigating of those when we bring the case back.

I'm not going to last all day.

MR. GRIFFON: You need some (unintelligible).

MR. MAHER: The dose reconstructor (unintelligible) provide some (unintelligible) on that and he felt that if he'd used your in-- your dates, that would have over-predicted much of the data.

DR. BEHLING: Oh, I would not question that. But

when you have 180 days between two successive one, to select the day before, that's kind of pushing it. You know...

MR. HINNEFELD: Well, the key element on internal dosimetry issue -- well, what was this cancer, was this colon?

DR. BEHLING: Yes.

MR. HINNEFELD: Okay, so then it was relevant. Normally on a bi-- if you're doing internal dosimetry calculation from urine data for a systemic organ, the inte-- if you get the integral -- the integral of the uranium excretion curve correct, you've got the dose correct. Now for colon it's actually a little different, not so clear cut because some portion of the intake doesn't end up systemic but still irradiates the colon to a certain extent, so just -- I think it's -- it's -- certainly speaks to the need to have a more thorough review of this particular case and these various issues, use kind of this case as the poster child for it.

MR. GRIFFON: And that -- that was 67.11, I believe.

MR. HINNEFELD: Yeah.

MR. GRIFFON: Okay, so -- I mean really you're going to re-examine this issue. Right?

MR. HINNEFELD: Yeah.

MR. GRIFFON: Yeah, and -- and the whole case, as

a matter of fact.

DR. BEHLING: That was one of the more difficult ones --

MR. GRIFFON: Can I just go back to 67.10 for a second? I'm just -- just wanted to make a note or have Kathy make a note that I think SC&A needs to state agreement with that if you agree with the way that -- that -- I think it's a mixed AGU* factor that you calculated. Right? Based on different --

MR. HINNEFELD: Yeah, they'll -- they'll need -- they'll need to check and see what they --

MR. GRIFFON: They'll verify that --

MR. HINNEFELD: Yeah.

MR. GRIFFON: -- and if there's agreement, we can close it out, you know, but...

Okay, go ahead, Hans. I'm sorry.

DR. BEHLING: Okay. So I think we're finished with case 67. Let's go to 68, which is another Savannah River Site one, and this is -- involved someone had actually two cancers, which I won't name. The POC was also very, very high, and there was a best estimate. This goes first finding, finding 68.1, two blanks shown in exhibit one were associated with code 67 entries -- let me see here what it said. Inappropriate method used to assessing missed photon dose.

Oh, the -- it is really a workbook issue here.

I'm reading here again, trying to refresh my memory.

MR. MAHER: The LOD over 2 issue?

DR. BEHLING: Yeah, and I think this comes up elsewhere. The workbook really only identifies a missed dose when the dose entered actually represents zero. On the other hand, if it's a positive dose that is less than LOD over 2, it recognizes that as a real value, which means that the guy who has a positive dose that is less than LOD gets penalized over the guy who has a zero dose.

MR. MAHER: Yeah, that's the way we used to -- we have since changed that way of doing business. I think it was because of the last meeting we had on this.

MS. MUNN: Was this compensable?

MR. HINNEFELD: No, it was close to -- no, but it was close.

DR. BEHLING: This is -- you know, this is one of the best estimates.

MR. MAHER: We've looked at a few of these cases. It doesn't make much difference.

DR. BEHLING: No, I realize that, but when -- when you're close to that pivotal point, you look at all of the information.

MR. GRIFFON: And that --

MS. BEHLING: This is Kathy Behling. I think one

of the other things -- and Hans, you're right, in the earlier versions of these workbooks they did not consider any of the doses that are less than the LOD over 2 as actually missed doses. But the other thing is is we have cases here that we're dealing with that go back into the '40s and '50s, and in the early years many of these people were monitored on a weekly basis. So as -- as we're indicating, for a case like this, that can at least add some additional dose. But I think in this particular finding we're also pointing out that, based on what we saw in the workbook, there were some blanks put in for some of the weekly doses that didn't seem to make sense because it looked like there were zeroes before it and after it and he was monitored before and after, but these blanks didn't seem to be considered as zeroes. So there were several issues here and I think we have an exhibit to that effect.

MR. GRIFFON: This is that code 67, which means they --

MR. HINNEFELD: That must be --

MR. GRIFFON: -- switched locations or something, is that what --

MR. HINNEFELD: It's a change in location, and it's an entry in the dosimetry record that indicates the person changed locations, not that a badge was read.

MS. BEHLING: Okay.

MR. HINNEFELD: So -- and that's, I guess, in -- that's, I guess, probably in our TIB in interpreting the Savannah River --

MR. GRIFFON: Out of an area requiring monitoring, is that the --

MR. HINNEFELD: No, it's just a -- that they would --

MR. GRIFFON: Oh.

MR. HINNEFELD: -- they kept track of not only -- they -- the person's assignment, they kept track of where the person was assigned in their dosimetry record, and when they would change assignments they would enter a line -- a code 67 line --

MR. GRIFFON: Okay.

MR. HINNEFELD: -- that doesn't have a result over there and the -- the month is there when it changed --

MR. GRIFFON: Right.

MR. HINNEFELD: -- so it looks like it's a monthly result -- or not actually a month, it's the cycle, the year and the cycle, so it looks like a monthly report but it's really just information to the system to change this person's work location. It's recorded in the record that way, so it's not an actual badge reading. That's the -- that's the way that our TIB says to

interpret that bioassay record, so that's the case on the 67 ones.

Now the case on the LOD over 2 is still -- I mean that's a valid issue that will have to be part of the reconsideration. Normally it doesn't change much, but it still needs to be done correctly.

MS. BEHLING: And that has been corrected as you indicated in -- I guess based on a -- one of these memos that NIOSH put out, but based on ORAU, I believe that correction has only been implemented as of maybe September of this year.

MR. MAHER: September 1st was the kickoff date for that, that's right.

MS. BEHLING: Okay. If I can also just remind everyone to speak into the microphone, I'm having some difficulty hearing some of the people that I -- Mark, it -- I'm not always hearing you, and the person that just spoke, I -- I don't always hear you.

MR. GRIFFON: Yeah, that's because we're behind computer screens probably. Sorry.

MS. BEHLING: Okay, thank you.

MR. MAHER: There were somewhere close to 48 templates we had to change to make this improvement, so it took a while to do that and to edit it all that, make sure --

MS. BEHLING: And I understand, and it all sounds like it's a lot of insignificant doses, but as I

believe Hans is mentioning here, we are dealing with a best estimate, we are dealing with a case that's very close to a 50 percent POC, and we are dealing with an individual who was monitored back in -- where -- there were numerous years where he was monitored on a weekly basis, and so it can add up.

MR. GRIFFON: That's -- my follow-up question to that was are you going to reassess certain cases and is it going to be dependent on --

MR. MAHER: That's going to be --

MR. GRIFFON: -- are you going to make a judgment --

MR. MAHER: -- (unintelligible) --

MR. GRIFFON: -- if it's close in certain -- yeah.

MR. HINNEFELD: Yeah, and it'll be a judgment, you know. We'll probably have a fairly high cut point in terms of the POCs that --

MR. GRIFFON: Right.

MR. HINNEFELD: -- that we'll look at -- 'cause it's going to be -- you know, even if you have a lot of these changes, you're going from a constant -- or a -- well, a normally distributed value of say eight to a lognormally distributed value of 20 and -- and you know, a few times. It's just not a big change.

MR. GRIFFON: No, I know.

MR. HINNEFELD: -- instance, so --

MR. GRIFFON: But you have some POC --

MR. HINNEFELD: But we'll have some POC cut points.

MR. GRIFFON: So you might generate a PER report --

MR. HINNEFELD: Yeah, something like that.

MS. BEHLING: This is Kathy Behling again. This just prompted another thought, and I know we're going back to a previous case and a previous finding, but the issue of the error with the DCFs in at least the Savannah River Site cases and the Savannah River Site workbooks, did you say you are going to go back and look at all of the cases? Because for some cancers, such as like a breast cancer, this can be a significant dose that is -- the dose can be significant based on the fact that they used the improper range of DCF values. Is that something you will be going back and looking at all of the cases where they may be affected by this -- by this issue?

MR. HINNEFELD: Yes.

MS. BEHLING: Okay. Okay, thank you.

MR. GRIFFON: I think we're on to 68.2, is that --

DR. BEHLING: Yes, and this goes, again, back to the workbook, because as part of this particular dose reconstruction review we obviously looked at

-- for the first time closely at the workbook and what are the assumptions assigned in it, and one of the positive things was that it automatically finds the uncertainty associated with recorded doses, which was something that we always had talked about in earlier reviews where it was up to the dose reconstructor to actually assess for recorded doses what the uncertainty is. And based on the guidance given in the implementation guide, we realize no one could do it and understandably so, and so either they didn't bother or they defaulted to a 95th percentile by multiplying all doses by a factor of two. So here comes the workbook and it does it nicely for you.

However, it does in fact limit the uncertainty strictly to laboratory uncertainty, and I pointed out under Task III when I reviewed the implementation guide what it does not include is obviously radiological uncertainty, which can contribute significantly. And so I brought it up here because it was part of our review of the workbook that was used and -- and the -- the workbook does not address anything other than laboratory uncertainty.

MR. HINNEFELD: Yeah, I think the -- the resolution of this, if -- if it's okay, we can keep in the procedures review --

MR. GRIFFON: It's been brought up before, as you said --

MR. HINNEFELD: -- it's in there. I mean it's in the procedures review finding, and so I think if we bring -- you know, resolve it there --

MR. GRIFFON: Close -- yeah, I agree.

MR. HINNEFELD: -- it might be most efficient.

MR. GRIFFON: Makes sense.

DR. BEHLING: Okay, this is 68.3, onsite ambient dose improperly converted to organ dose, and --

MS. BEHLING: Can I interrupt here a minute? This is Kathy Behling. Before we go on to 68.3, there -- there is an issue that we discussed in this dose reconstruction report regarding neutron doses, and I'm just asking this because I would like to clarify some of these issues for myself for future cases, as well as this case. It's of-- it's often very difficult for us, and in fact I believe I had asked Stu Hinnefeld for the list of what are called HP area codes that are part of the Savannah River Site dosimetry records, and now that we're more familiar with the workbooks we can see where the dose reconstructor placed that individual throughout all of the years, where his work location was, and then that dictates whether there were neutron doses considered. And a lot of times -- and I did get this list of these HP codes and also these

department codes, but it's still not clear to me often where he worked. And we will see in these records that between -- let's say they'll assign him in one location between 1960 and 1965, and in 1966 they'll put him in another location. But when I look at the dosimetry records, I don't see that HP area code changing, and sometimes I do question why they moved him into a different location which may indicate that he is not going to be supposedly exposed to neutron doses. And I'm just wondering if NIOSH has any other documentation or information that they can provide to SC&A that helps to better explain these dosimetry records, because obviously they seem to see something that we don't see always. And this'll be brought out I think in more detail in some of the more -- the cases under this -- this set. I don't know if you can shed any light on that or not, but the HP area codes that you had provided me, Stu, don't always seem to answer these questions and I wondered if there was any other data that NIOSH has that we don't.

MR. HINNEFELD: I'll mention something, and then maybe Mutty and Ed might have some additional things. For Savannah River at least, if a person has a bioassay record, the bioassay card includes that work location at each sample.

MS. BEHLING: Yes, and I do look at that, also.

But also I will see in the dose reconstruction report that NIOSH indicates we assigned him at these various locations based on dosimetry records, and it's just not always clear to me based on these HP area codes and -- but I do usually compare the bioassay codes, also. But maybe we could get a less -- little bit more detail on that particular issue also when we go through this case again.

MR. HINNEFELD: If not today, I think we can probably have some more insight.

MS. BEHLING: Yeah, that's what I mean, when we reassess -- well, we might not be reassessing this case, but maybe when we reassess the previous case we can get more detail on that.

MR. MAHER: It has to be very case-specific because the dose reconstructor will read the whole picture and the CATI interview and then, even though it may not appear he moved his location, there may be some information in the CATI or in other sources that says well, things have changed for that time frame, that his dosimetry had changed -- reactor was shut down or that type of thing where you would have normally given neutrons if it was operating, you know, that type of thing. So it's a -- it's a whole picture they look at, a sort of professional judgment issue.

MS. BEHLING: Okay. Okay, very good. I just wanted to ask that question while I was thinking about it.

MR. GRIFFON: That kind of thing should be documented in the case work-up -- no?

MR. MAHER: Yeah, well, you might make the case -- yeah, it is, but these things are pretty long as they are and --

MR. GRIFFON: Right.

MR. MAHER: -- sometimes they're probably not documented to the extent they probably should be for someone on the outside -- a clear picture. But if you have case numbers, we could go back and take a look and -- and find out why that dose reconstructor made that decision with that.

MR. HINNEFELD: Well, we've got the case number on this one. For instance, we can do it on this case, number 68.

MR. MAHER: Does it apply -- is it --

MR. HINNEFELD: Is 68 one of them, Kathy?

MS. BEHLING: We made mention in this particular case that it was interesting how they defined these various work locations, and based on what we saw, I guess we felt that this was reasonable. Now I have two cases in the fifth set where I'm questioning whether that was appropriate, the assignment of the work locations.

MR. HINNEFELD: Okay, well --

MS. BEHLING: So I will provide -- provide you with those case numbers.

MR. HINNEFELD: Okay.

MS. BEHLING: Thank you.

DR. BEHLING: Kathy, by the way, you don't have to identify your name. We recognize your voice.

MS. BEHLING: Okay.

MR. HINNEFELD: She's just being polite for Ray.

MS. MUNN: We know where you are.

MS. BEHLING: Anyway, 68.3, onsite ambient dose improperly converted to organ dose. We -- we couldn't match the numbers, even when we used the DCF iso*, but the second part of that is the issue again of DCFs that we question for anything other than AP geometry. It's probably very trivial, but it is something that should be raised. I understand the justification for isotropic when you talk about a surface contamination from effluent releases, but in the end, the fact that the DCFs are questionable for iso*, you have a dilemma here. What do you use? Obviously the geometry's correct, but the DCF is wrong.

MR. HINNEFELD: Okay, we'll include that as one of the items to re-evaluate.

DR. BEHLING: Okay, the next one is 68.4 -- let me just go to that. Yeah, my comment here in the original version was just -- well, I guess it's -

- at least the title of it was correctly transcribed. It says the internal dose calculations and assumptions for plutonium are excessively complex, time-consuming, without scientific basis and potentially not claimant favorable. That's the sum total. I'm going to go back and see what was done here. This was a very, very complex calculation.

This person apparently had 17 chest counts, four had values that were above the MDA value for americium-241, and those four chest counts were regarded as representing acute intakes and therefore were modeled by IMBA by assuming that the acute intakes occurred midway between the date of the observed chest count and the previous -- so in this case they followed the prescribed methodology. All of the 17 chest counts were identified as routine chest counts, which again raises the question when do you draw the distinction between a -- an acute intake versus a chronic when they are defined in the original DOE documents as routine.

What was done here, and it's very difficult to -- to really explain in the brief time we have, there were several intake regimes and -- and again, the question is was -- was the scientific basis for that justified.

MR. HINNEFELD: As you stated, it's a pretty long

and complex --

MR. GRIFFON: Another one --

MR. HINNEFELD: -- process.

MR. GRIFFON: -- another one you said you're going to rework, or no?

MR. HINNEFELD: Well, this --

MR. GRIFFON: This is 68, you already said --

MR. HINNEFELD: I said 67, I think we should do 68 as well. They're both complex.

MR. GRIFFON: 'Cause I see in your response you say simplified runs for type S and M apparently had been done. This was post-- post-mortem, right? I mean post-(unintelligible) --

MR. HINNEFELD: Yeah, yeah. Yeah. So you know, having done that, I think we ought to just put the whole thing together.

MR. GRIFFON: Okay.

MR. HINNEFELD: In fact, for these -- for these complex ones with POCs close to the decision point --

MR. GRIFFON: Okay.

MR. HINNEFELD: -- I think we ought to --

MR. GRIFFON: 'Cause that's --

MR. HINNEFELD: -- spend the time to have, you know, as much -- you know, wherever we need to have these discussions, but to go through these --

MR. GRIFFON: 'Cause we haven't seen these --

these simplified runs, have we?

MR. HINNEFELD: No, you have not.

MR. GRIFFON: No.

MR. HINNEFELD: No, you have not.

MR. GRIFFON: But if they're going to be part of the --

MR. HINNEFELD: It will be part of it.

MR. GRIFFON: -- entire rework, then I don't think we need to see it until you do the entire...

MR. HINNEFELD: Right.

MR. GRIFFON: Okay.

DR. BEHLING: And one of the most important things was that there were no data for a number of years, '67, 8, 1980, 1981, 1984 through 1993, and so there are a whole series of years for which there's no accounting of potential internal exposure, and then I believe, even though they may not have assessed this individual by bioassay, there are other competing monitoring that was done for this guy that would suggest that perhaps he was still continuing to be exposed.

MR. HINNEFELD: Yeah, the decision I guess would depend upon a coup-- either work location or knowledge of monitoring practices. For instance, if -- and I'm only making this up; I don't know if this happened at Savannah River. If a site

said well, we've got this nifty in vivo counter now, it doesn't take much to count people, we're just going to run people through it every year, then that doesn't necessarily mean that the person who's getting counted is in a likely exposure job, or a job where they would typically be monitored. So there may be situations why there might be data generated in that circumstance that does not -- is not indicative of exposure. I guess we see it probably most often in terms of exit in vivo counts. It's fairly common to have an exit in vivo count on someone who hasn't had one before or hasn't had one certainly for a long time. And in that case you'd say well, that was a common practice, and it's clearly an exit -- I mean it's right before he leaves employment. So there are situations like that where a monitoring that you sometimes consider an indication of exposure really are not an indication of exposure, so it could be something like that. I just think we'll need to address it completely when we, you know, rework the case.

DR. BEHLING: Yeah, the next -- the next one is very, very complex, too. Again, it involves the uranium and I can just sort of briefly talk about -- this was very much more complicated due to the fact that they converted units from mass per unit

volume to dpm at various times, and -- and it makes it very difficult and then -- so there were also the -- the -- then there was the issue of -- there were -- there were multiple issues involved here that may go beyond the point of discussing this right here.

MR. SHARFI: Hans, are you on 68.5?

MR. GRIFFON: Yes.

DR. BEHLING: Yes. The one that I guess I had -- I had the most difficult time with here -- let's see, is this the one -- yeah, the -- the person was clearly involved in areas where natural uranium and even modestly enriched uranium might have been his source for exposure. And when you talk about micrograms per liter, you run into a difficulty in converting micrograms per unit volume into activity. When it's defined in dpm it really doesn't matter, but in the case of micrograms per liter, you have to obviously now convert it, and you have to make assumptions -- are we talking about depleted uranium, natural uranium or modestly enriched uranium -- and in this case they elected to use depleted when there was evidence to suggest that, at a minimum, he was exposed to a natural and possibly somewhat enriched. And of course the difference between those three options are significant. It can be as high as a factor of three and a half and up to

ten, depending on degree of enrichment. So the key finding on -- on this particular one was the unconservative or non-claimant-favorable assumption that assumed that all uranium exposures was necessary to depleted uranium. And -- and there were quite a few bioassays. I think this guy had a total of 239 urinalysis done that identify uranium and 18 identify enriched uranium. Now I think I heard comments about EU not necessarily being (unintelligible), but -- but again, what is the basis for making that assumption?

MR. SHARFI: I believe inside the Technical Basis Document they do cover that uranium samples that were analyzed for activity were identified in the records as EUs, even though they weren't necessarily for enriched uranium. It was just a recording practice to mark mass-based uranium samples as U and activity-based uranium samples as EU, so --

MR. HINNEFELD: That -- that was an artifact of the sample that the type of analysis that was run, that's what dictated that entry rather than the material the person was exposed to.

MR. SHARFI: Correct.

MR. HINNEFELD: And there's al-- you know, there's also a situation where if you're -- when you're -- if you have bioassay results in mass

units, like less than five dpm per unit of volume, and then after that you have -- I'm sorry, five micrograms, less than five micrograms per unit of volume, and then at a later date you have bioassay that is less than one dpm or something per unit of volume, that later bioassay can in fact impose a limit on how much -- how high that earlier intake could have been and how many dpm per liter could have been taken in associated with those five micrograms because -- you know, because the excretion wouldn't be completely gone yet, depending on how much later it is. So there may be some bounding factors that were used there.

Again, complicated issue --

DR. BEHLING: Yeah, this -- this --

MR. HINNEFELD: -- discussed in more depth, I think.

MR. GRIFFON: Yeah, and I think -- right now you didn't even have a reply --

MR. HINNEFELD: I didn't even put it in there, no.

MR. GRIFFON: -- that, right.

DR. BEHLING: And also the assumption that it was necessary type F would certainly, again, minimize exposure in this case.

MR. HINNEFELD: Yeah, and that really should only have been selected if it was -- either fit it

best or if the combination of the fit and the dose to the target organ --

MR. GRIFFON: Right.

MR. HINNEFELD: -- worked out to the highest, and so I don't know what the -- you know, sitting here today, I don't know what the situation was.

DR. BEHLING: Okay.

MR. GRIFFON: 68.6, Hans, is...

MS. MUNN: I hope the response that you put together does include that interesting information about EU notation. The --

MR. GRIFFON: Yeah, --

MS. MUNN: -- casual observer would never know that.

MR. GRIFFON: -- specifically reference the TBD so we know where --

MS. MUNN: Yeah.

MR. GRIFFON: -- to look.

MS. MUNN: Yeah, that would be helpful.

MR. GRIFFON: The practice of recording dpm versus micrograms, yeah.

DR. BEHLING: Okay. 68.6, the statement here is that internal dose methodology for tritium excessively complex, time-consuming and not proceduralized. I understand now you do have a procedure TIB for tritium, but at that time I don't think it was there.

MR. GRIFFON: Has SC&A reviewed TIB-11? I --

DR. BEHLING: Yes, I believe -- Kathy?

MS. BEHLING: I believe we do -- we do have that on our list to review TIB-11. I really have to verify that, though.

MR. GRIFFON: Well, it has not been done yet, though. Right?

MS. BEHLING: No, I don't -- no, it hasn't.

DR. BEHLING: I think it has, Kathy.

MS. BEHLING: Well --

DR. BEHLING: I'm not sure, Ron Buchanan --

MS. BEHLING: I'm not sure, let me mark it down and -- and check it.

DR. BEHLING: Okay. But anyway --

DR. MAURO: I distributed the TIB review to the latest set that we were authorized to various reviewers and that just began. I could check quickly to see if that was among them.

DR. WADE: Thank you.

MS. MUNN: That would help.

DR. BEHLING: Anyway, to get back to this particular case, this individual had 648 individual tritium bioassays that were entered into the workbook, and I guess they were then modeled through some -- IMBA, I assume --

MR. GRIFFON: Hans, did you have an issue with the -- the technical -- I mean the --

DR. BEHLING: It's not so much --

MR. GRIFFON: -- conclusion or --

DR. BEHLING: -- an issue, it's just that, again, I --

MR. GRIFFON: -- overly complicated --

DR. BEHLING: Overly complicated --

MR. GRIFFON: -- yeah.

DR. BEHLING: -- very difficult, time-consuming, et cetera, and it tends to raise a question of efficiency and timeliness for doing dose reconstruction in assuming that -- a reasonable estimate or appropriate, and what I really would have recommended is to use certain values such as -- since many of them were positive, half of MDA would have been nice. And since you know that one microcurie per liter represents 71 millirem, you can do a back-of-the-envelope calculation and come within a few percentage points, and the difference between 648 individual dose entries versus a generic calculation would have been a couple of millirems. But again, it's -- it's -- it's obviously something that is not technically incorrect, but questionable in context with the need to do thing in an expeditious --

MR. GRIFFON: I could see the other --

DR. BEHLING: -- manner.

MR. GRIFFON: I mean the dose -- the dose consequence here is not very --

DR. BEHLING: No, it's not.

MR. GRIFFON: -- but I can see the other side of

it where we could say this was very close, you should have looked at the specific data that you have for this person instead of using the back-of-the-envelope approach, you know.

MR. MAHER: Well, also we're required by contract (unintelligible) hierarchical use of data -- dosimetry data supposed to (unintelligible).

MR. GRIFFON: If there's personal data, use it, yeah, right.

DR. BEHLING: But there are procedures, like TIB-3, that can be used to -- to do tritium dose calculation using a more generic approach.

MR. MAHER: But those --

MS. BEHLING: I think the other --

MR. MAHER: -- (unintelligible) don't have dosimetry data.

MR. GRIFFON: Yeah, if you have the data, we -- I mean --

MR. MAHER: We have to use it.

MR. GRIFFON: -- supposed to use it, yeah.

MS. MUNN: The data is the data.

MS. BEHLING: I think the other thing that we have determined since reviewing this case, it appears that there is a workbook that's being used -- it's a very user-friendly workbook -- and from my understanding in talking to ORAU, possibly a lot of this tritium bioassay data is entered up front when this -- this case is being

put together, along with other dosimetry data. So if that's the case, that certainly does make this whole process a lot easier for the --

MR. MAHER: The DR's not --

MS. BEHLING: -- dose reconstructor.

MR. MAHER: -- punching this thing. We have a prep group that sets up all this data into the file, yeah.

MR. GRIFFON: Right.

MS. BEHLING: But at the time of us doing this dose reconstruction -- this dose reconstruction audit, we were not aware of that.

DR. BEHLING: Okay, 68.7, internal dose from fission products -- that's a repeat of the one that we just talked about -- again, where whole body data -- it talks to cerium-144 as the limiting radionuclide and then ignores the other radionuclides that could have been potentially been considered as part of the dose reconstruction process and you said you're going to be looking into that.

So 68.8, NIOSH failed to properly address radiological incident. Let's see here... I have something here that I can't in my mind -- maybe Kathy can help me. It says here NIOSH statement regarding biological monitoring in 1966 is in error since internal monitoring for the (unintelligible) for uranium did not start until

--

MS. BEHLING: Okay --

DR. BEHLING: -- 1971.

MS. BEHLING: -- yeah. I believe what we're indicating here is perhaps NIOSH indicated that they felt they had -- they had addressed any potential radiological incident because there was bioassay monitoring. Howev-- however, we're stating that the CATI did identify a radiological incident and he wasn't -- this individual did not have monitoring throughout his entire employment, if I -- if I'm recalling correctly. Or am I wrong here?

MR. HINNEFELD: No, that's -- that's the case.

MS. BEHLING: His actual monitoring did not start for uranium until 1971, and I believe we're indicating that this incident could have been prior to 1971 and we're using this date here of 1966. I'd actually have to go back to the entire dose reconstruction report again, but I believe we're indicating that there certainly could have been a radiological incident that was possibly not picked up through the monitoring.

DR. BEHLING: Yes, you're correct, Kathy. I'm reading it now and that -- I'm reminded of that's what happened. He -- he was not monitored till '71 and the incident precedes that by five years.

MR. SHARFI: In his description now of the

incident, his work location they describe is consistent with this time period that he worked, and he was monitored in the '70s, so it does -- it does look like maybe his recollection of the exact year may be off, and the bioassay is consistent with a possible incident occurring in the early '70s, and the work location described in the incident -- they align. So I -- I think -- I think what they're looking at is maybe -- maybe that the assessment did account for the incident, though his perfect recollection of exactly when that incident occurred may be questioned. And obviously when you're trying to remember an incident that happened 30 years -- 30, 40 years ago, you know, he's -- remembering exactly what day or what exact year happened can't be -- always difficult for anybody.

MS. MUNN: It is hard.

MR. HINNEFELD: We can provide whatever -- you know, whatever information we have that would lead us to believe that it didn't happen in 1966, you know, in more complete detail --

DR. BEHLING: Yeah, we'd --

MR. HINNEFELD: -- or we may go back and say well, gee whiz, maybe it did occur in '66 -- you know, as part of the rework of the case.

DR. BEHLING: We make no judgment about the -- the validity of statements made in the CATI. I

mean we have to accept it at face value. Whether or not the person's failing memory is at fault here or whether this was true is something we can't make a judgment call on.

MR. HINNEFELD: If there's evidence to the contrary of their recollection, then we will do something different. As a general rule, we believe what their recollection is. And I'm just saying that in this case this will be part of the rework of the case and we'll --

MR. GRIFFON: I guess I'm --

MR. HINNEFELD: -- have to go back and see if we really do have evidence to the contrary that's convincing.

MR. GRIFFON: I guess I was surprised to see a different response than the other incident findings when you said there was --

MR. HINNEFELD: Oh, the other --

MR. GRIFFON: -- but you may not be taking the intake all the way back to those early years. Right? For uranium? It may depend on when you started --

MR. HINNEFELD: There are a number of things -- there are a number of things associated with this issue.

MR. GRIFFON: -- going on here, yeah.

MR. HINNEFELD: There was -- there was -- this person had a nice -- in his -- in the records we

got from Savannah River there were nice descriptions of incidents that he was involved in late --

MR. GRIFFON: Yeah.

MR. HINNEFELD: -- and so it looks like we got a good, complete record. And they described incidents he was involved in late.

MR. GRIFFON: Right.

MR. HINNEFELD: But now that begs the question, when did they start keeping records in that fashion and putting them in the bioassay record, you know. If they didn't start that till 1968, that's not evidence.

MR. GRIFFON: Right.

MR. HINNEFELD: See? So there are things like that that we put together originally, and I just felt like -- you know, we had a response that I didn't send over 'cause I felt like it needed work --

MR. GRIFFON: Right.

MR. HINNEFELD: -- and we needed to make sure that we have -- you know, if we have evidence that it didn't occur in '66, we'd better be pretty comfortable with the evidence.

MR. GRIFFON: Right.

MR. HINNEFELD: And so that's why we felt like we would have to come back later with this is the demonstration of where we're -- yes, we're

convinced it didn't happen in '66, or come back and say mea culpa, we -- maybe it did happen in '66.

DR. BEHLING: Okay --

MS. MUNN: Until that's articulated and laid out, it's hard to evaluate, though.

MR. GRIFFON: Right.

MR. HINNEFELD: Yes.

MS. MUNN: Impossible to evaluate.

MR. HINNEFELD: Yes.

DR. BEHLING: Last finding for this person --

MR. GRIFFON: I think we kind of just --

DR. BEHLING: -- 68.9, and I think this goes back to an earlier one that involves his recollection that he may have been working with natural and enriched uranium, which again goes back to an earlier issue that we have identified.

MR. GRIFFON: I thought it was also the recollection of the incident, wasn't it?

MR. HINNEFELD: Well, I think --

MR. GRIFFON: Both, I guess.

MR. HINNEFELD: They're both caught up in the CATI.

MR. GRIFFON: Yeah.

MR. HINNEFELD: I think he did also describe in his CATI he was exposed to --

DR. BEHLING: Yeah, he identified --

MR. HINNEFELD: -- to natural and enriched --

DR. BEHLING: -- identified the radionu--

MR. GRIFFON: Okay.

MR. HINNEFELD: Yeah.

DR. BEHLING: Okay, next case, tab 69, is the third Savannah River Site case. This person had -- well, I won't say the cancer. Again, in this case the POC was not as close to 50 as the other two, but still within the -- within the stretch of the -- the POC values where you have to be very careful about what may have been assigned versus what should have been assigned. And I'm looking at the doses for this particular type of cancer and it's apparently a cancer that has a very low natural incidence, which means that a relatively small dose can certainly raise the POC quite high.

Let's go -- take a look -- the first finding, unable to match the dates of recorded doses with NIOSH-assigned doses. Let me try to --

MR. HINNEFELD: That's right. It was a mistake on our part. We entered the wrong year -- started in the wrong year. And we started it a year early, so if there's any effect, it would be in the positive POC side -- on the side of POC.

MS. MUNN: So we're okay with that one. We know what happened.

DR. BEHLING: Second finding, 69.2, failure to account for recorded photon dose uncertainty. I

guess they assumed a normal distribution but failed to give an uncertainty estimate for two entries.

MR. HINNEFELD: Yeah, in this --

DR. BEHLING: No, not two entries, 155 through 166, so we're missing certain --

MR. HINNEFELD: This is a comment that's been made before in dose reconstruction reviews because the dose reconstruction use a DCF of one and times a constant dose number, used that as a constant, as opposed to propagating a normally distributed measured dose times the triangular DCF. We think that using one is claimant favorable. If you use a DCF of one in -- in -- when the triangular distribution is entirely below one, we think that's a claimant-favorable approach. We're putting together a paper that demonstrates that. It takes a while to do that 'cause you have to do it cancer by cancer, so you (unintelligible) each of the cancer models, but we are -- we feel like we can demonstrate that that's a conservative approach.

DR. BEHLING: Yeah, there's no doubt, and I will not identify the cancer in question, but the DCF -- obviously well below unity and so the choice of a default DCF of one would certainly be claimant favorable. And I guess it would be nice just to proceduralize it so that when you fail to

give uncertainty and you give a generous DCF that one fully understands that you have accounted for any -- any potential exposures that might have been missed based on the absence of an uncertainty measurement.

MR. HINNEFELD: Yeah, and we've gone through a series of language that tried to illustrate -- you know, we have a section of what uncertainties were used in a dose reconstruction. It's in the dose reconstruction report. And our language has evolved over time where we try to say that since this such-and-such component is an overestimate, it was entered as a constant, or something like -- you know, something like that.

DR. BEHLING: The next one is -- parallels this one, finding 69.3, failure to include recorded neutron dose uncertainty. When you look at the TBD and you look for the uncertainty measurements using the TLND, they do give a standard deviation of 30 percent, and --

MR. HINNEFELD: I think it's the same issue.

DR. BEHLING: It's the same issue.

MR. HINNEFELD: Same issue, right.

DR. BEHLING: Yes.

MR. GRIFFON: On to the internal dose?

DR. BEHLING: Yeah, 69.4, selection of solubility class not claimant favorable. Again, it's a question of whether to use type S versus M.

MR. GRIFFON: In this particular case I'm assuming that you're not going to redo this case necessarily.

MR. HINNEFELD: We had not planned to.

MR. GRIFFON: And you -- can you provide the IMBA analysis --

MR. HINNEFELD: Yes.

MR. GRIFFON: -- showing that it would be a bound --

MR. HINNEFELD: I think we can provide the evidence.

MR. GRIFFON: You're basically saying your in vivo is sort of bounding the --

MR. HINNEFELD: The intake, yes.

MR. GRIFFON: But we haven't seen that analysis --

MR. HINNEFELD: Right.

MR. GRIFFON: -- have we, so maybe they can provide that, Hans, and then you can -- we can follow up on that?

DR. BEHLING: Yes. Now I guess -- you know, this --

MS. BEHLING: Mark, can you repeat that? I'm sorry, I didn't hear it.

MR. GRIFFON: Yeah, I -- I -- I said -- I asked if NIOSH wasn't expecting to redo this entire case, but if they can provide the IMBA analysis described in their response to 69.4 --

MS. BEHLING: Yes.

MR. GRIFFON: -- where they show that the -- or they're -- they're saying that the -- that the in vivo counts are -- are going to basically bound your intakes, considered alongside the urinalysis, I -- I -- approach --

MS. BEHLING: Okay.

MR. GRIFFON: -- so -- and Stu said they would provide that to us and you can follow up on reviewing that.

MS. BEHLING: Okay, very good. Thank you.

DR. BEHLING: I guess the only question I have in regard to that explanation, which certainly makes scientific sense, was this in fact considered at the time that the decision was made to use a different solubility class rather than saying okay, let's be sure that we were correct. There was no evidence from what I could see that the calculation you're referring to was in fact the basis for the selection. In other words, had this selection been made on that particular calculation and -- and made obvious, one could certainly say well, they did their homework, they made a decision that is justifiable and -- and there should be no questions about whether it's scientifically right or wrong. The question is was this calculation done after the fact to justify the intuitive decision, which may have

been the correct one, but the question is was it done at a time when you didn't know.

MR. HINNEFELD: Well, sitting here today, I don't know.

MR. GRIFFON: Or is this something that the -- yeah, I would hope that the dose reconstructor considered this in -- in the first analysis. That's sort of what you're saying. Right, Hans?

DR. BEHLING: Yeah. You know --

MR. GRIFFON: Yeah, yeah.

DR. BEHLING: -- if I had the warm and cozy feeling that this -- this information was basically available to the dose reconstructor when he made the decision, I would say you're correct and you did your homework, you -- you went forward and said well, the americium count would have been greater than what was evident and therefore we can justify our selection. But it appears perhaps at this point it was done after the fact, and it may tru-- it may be the correct choice after all. But the question is was this done to back-fit your decision.

MR. SHARFI: It would be the general practice to look at all solubilities and look at what bounding -- obviously since this one is close, you wouldn't have -- you know, you might have -- if this case wasn't so close, you might have just used the type S and done an overestimate --

DR. BEHLING: Yes.

MR. SHARFI: -- on the urinalysis. But this one is close so I'd have to think that -- in standard practice, you would consider both the chest count and the urinalysis and that is the common practice to do, so --

MR. GRIFFON: Was that evident in the files provided in the D--

MR. SHARFI: Probably not, probably -- I mean you wouldn't show every possible scenario that you may have tried in that given scenario. Otherwise you'd be providing 300 files, possibly -- you know, to show every single scenario that's possible.

MR. GRIFFON: Yeah.

MS. MUNN: So if we said that standard practice would dictate that the reconstructor would have considered this --

MR. MAHER: Well, we feel that -- yeah.

MR. SHARFI: Yeah. Since I -- I had to clarify what -- how much I can say. Since I actually did the case, I can speak in general practice of what I've done and what I've reviewed. This is obviously a two-year-old case that we've done, but in general practice, yes, you would -- you would consider looking at both the urinalysis and the chest counts. It would be very common to look at it if you're going to do type S, what is

more limiting, whatever the chest count to the urinalysis would be, which would provide a larger dose, whether it's the type M based on (unintelligible) or vice versa, you'd have to look at both scenarios. And you know, whether you're basing the chest counts as type M or S or -- and whatever bioassay would be more limiting in that case or whether or not you base the intake on the urinalysis and look at type M or S and without the chest count.

MR. GRIFFON: And is that actually in those -- I mean I reference these -- like at Rocky the last time, these ones, too, I don't know. It might have been -- the SRS dose reconstruction guidelines, do you have similar documents for Savannah River that you have for some of the other sites, dose reconstruction guidelines?

MR. SHARFI: Some -- some sites do, I wouldn't -- I mean Savannah River's one -- probably one of the first DOE sites we probably started tackling, so given the people that do Savannah River, been doing them for two years, whether or not I -- we -- we have guidelines -- the general thing -- because they've been -- they've been involved in it for so long, I'm not sure if we've --

MR. GRIFFON: You don't know if they're written down, though? That's the question I think --

MR. SHARFI: This particular site, I don't.

MR. GRIFFON: 'Cause part of what we have to consider is consistency across different DR --

MR. MAHER: And it's hard to know two years ago because a lot of the information dose reconstructors get are in the weekly meetings. You know, we kind of get these unique cases or different cases and we kind of have a round table in these meetings saying when you have this situation, do this. So some of this information's not written down, but it's part of the ongoing -- you know, weekly meetings and information and training that the dose reconstructors get. I can tell you right now, though, we get into a situation with two forms of bioassay, they'd better support each other or we'll take the one which supports the higher dose. And OCAS won't let it go through unless we do something like that, I can guarantee you that.

MS. MUNN: So my question is, given that information, can we -- at least this -- this one single item here, can we say that's acceptable? It's acceptable because --

MR. HINNEFELD: Well, we've already said we'll provide the IMBA analysis that shows --

MS. MUNN: Yeah, and you're going to do the whole schmear --

MR. GRIFFON: Yeah, I mean the -- your -- your statement probably will stand, you know, but all

we want to see is the -- yeah. And they've done it. It's not like they're recreating anything. Right? I mean this has been done.

MR. MAHER: And these reports, you know, have the final run, the one that we select that we feel is most claimant favorable, and all the other ones we run, we just don't -- they just don't show up. They may stay with the dose reconstructor --

MR. GRIFFON: Well, not necessarily the most claimant favorable. Here you might -- you know, the best fit --

MR. HINNEFELD: We put in the one that supports the dose reconstruction.

MR. GRIFFON: Right, right, right.

MR. HINNEFELD: That's what's submitted is the run that supports the dose reconstruction.

MR. GRIFFON: Right.

MR. MAHER: Right, but when you have two forms of bioassay and one's giving you a different result from the other one, then we will tend to the more claimant favorable one --

MR. GRIFFON: Yeah, from that standpoint, claimant favorable, yeah.

All right. I only -- I have one other thing and that -- it -- I was wondering in this particular case, not that we know who did it, but was there any supporting documentation for -- for this conclusion that it's a false positive -- other

than -- other than based on your fitting. You know, was there any --

MR. SHARFI: Outside no intake scenario would fit to it?

MR. GRIFFON: Right, was there anything at the time of the -- of the measurement that they indicated on the in vivo count that this looked, you know --

MR. SHARFI: I'm going to have to actually pull up the --

MR. GRIFFON: -- suspicious or, you know, unusual and we want to do a follow-up or --

MR. SHARFI: I can't guess --

MR. GRIFFON: -- not necessarily, this was based on your --

MR. SHARFI: Given that the next chest count I think is a couple of months away --

MR. GRIFFON: Yeah.

MR. SHARFI: -- and chest count results obviously come by really quickly, so --

MR. GRIFFON: Right.

MR. SHARFI: -- I -- it doesn't seem that there's something specific that they -- otherwise you would think they would have just --

MR. GRIFFON: Right.

MR. SHARFI: -- within a couple of days, recount --

MR. GRIFFON: Raising alarms at the time for them

necessarily.

MR. SHARFI: Yeah, so the only -- the only way you could rule it out is, given that they do have various other monitoring data --

MR. GRIFFON: Urinalysis right after that is how you did it.

MR. SHARFI: Yes.

MR. GRIFFON: Right.

MR. MAHER: I think also you had information about the site. This location where he was working is not likely an americium area.

MR. SHARFI: A pure americium --

MR. MAHER: (Unintelligible) information together would sort of collaborate (unintelligible) --

MR. SHARFI: Correct.

MR. GRIFFON: But not necessarily any -- any --

MR. SHARFI: I don't remember anything on the individual chest count report that indicated this was a false positive by count.

DR. BEHLING: Finding 69.4 -- no, we've just done that, 69.5. And this is sort of a generic question I have. Here they used a triangular distribution which assumes zero MDA over two and MDA in -- in the samples. Now I've always looked at that and sort of say if you had -- for instance, in a case of a dosimeter and you had 20 readings, none of them are above LOD, so you realize you're somewhere between zero and LOD but

you don't know where you are and the reasonable assumption -- or perhaps even conservative assumption -- would be to assume that's on average somewhere midway. But for instance if I looked at a series of -- of dosimeter reading for -- 50 percent were well above and then some were below LOD, then you realize that zero is not likely to be an option as a lower limit. In fact, you would start to favor a value between LOD over two and LOD, and this is the issue that is raised here.

MR. SHARFI: You're talking about if you have positive --

DR. BEHLING: Yes.

MR. SHARFI: -- results.

DR. BEHLING: Yes.

MR. SHARFI: In this --

DR. BEHLING: In conjunction with -- with -- with that --

MR. HINNEFELD: It would not, yeah -- yeah.

MR. SHARFI: In this case, this was assigned missed dose when all -- all the monitoring data was negative.

MR. HINNEFELD: Yeah. The triangular distribution on these -- on the internal missed dose is only used when all the -- when all the bioassay is --

MR. SHARFI: If you do have positive, then you

would have -- you would have assessed that positive and assigned a lognormal distribution with a GSD of three. In this case, this is all missed dose.

DR. BEHLING: But he did have chest count that showed positive counts for americium-241, and I think that's what prompted this.

MR. HINNEFELD: Well, there --

MR. SHARFI: Outside this positive one -- outside this one that was ruled as a false negative, I (unintelligible) this report (unintelligible) that there are -- there was one (unintelligible) positive net count. That doesn't make the result positive. If you look in some of the settings, I know it looks like you've just taken a ratio of the net counts to the chest -- the actual positive chest count and tried to infer that same ratio to the other chest counts, which is not something that you can do. In this case it talks about having like a thousand net counts is referred to as a .6 nanocurie chest burden. Actually if you look at that chest count, the site actually did calculate the chest burden for that partic-- for that particular chest count and it was .12 nanocuries, not .6, and there are a lot of factors that go in when you're converting net counts to (unintelligible) chest burdens, and in that case the MDA at the time was -- for that

particular chest count was like .2, so that was a negative chest count even though it had positive net counts. So in that case -- I mean then if you go through all those chest counts, all those chest counts actually are reported and it's less than the MDA from a chest burden activity, so that's why only missed dose was assigned even though they do have positive net counts on the -- for the americium region.

MR. HINNEFELD: See, and that net count's -- positive net count's in a region of interest if -- depend-- I don't -- not exactly sure how they generated their net counts. If you're talking about, you know, your count in that region compared to an empty chamber background, if that is what your net count rate is, that will always be positive if you've got a body in the chamber because you will always have more net counts with a human in the chamber than you will with an empty chamber, so there -- they've estab-- you know, we -- they established a detection level where they would have, you know -- this is a detectable count, you know, because a few net counts doesn't matter. You have to get enough net counts to really be indicative of what the -- that there's something there, and so we've generally taken the approach then that if it's not a detectable, it's not a detectable --

DR. BEHLING: And I just want to be sure --

MR. HINNEFELD: -- from zero.

DR. BEHLING: -- in understanding, but when you say you would always have a positive net count is due to scattering into that region that would be defined for the americium?

MR. HINNEFELD: If -- if you're -- yeah, if you're in vivo counting and you take an empty chamber background and then you put a person in the chamber and count them, you will --

DR. BEHLING: Person in the --

MR. HINNEFELD: -- always have more net counts because --

DR. BEHLING: (Unintelligible) potassium-40 --

MR. MAHER: Scattering volume (unintelligible) --

MR. HINNEFELD: -- potassium-40 scatters -- scatters through the whole thing -- potassium-40 in particular, a few other things here and there, naturally occurring here and there, and you're going to have counts all down the continuum, you know, if you put somebody in the chamber.

DR. BEHLING: Yeah, 'cause I looked at that and I always saw net positive counts for some of these maybe below MDA, but it certainly suggests that something is there and therefore the assumption of zero as a starting point for triangular distribution wouldn't hold.

DR. MAURO: So -- so this is John -- so when you

have a control, it's not from a person that you're counting that you know does not have the particular body burden. It's basically a count without a person there.

MR. HINNEFELD: Well, the idea --

DR. MAURO: In other words --

MR. HINNEFELD: I mean it would be something to investigate. I can tell you for sure that, depending upon how the software's set up -- you know, it's going to depend on how they set up the software --

DR. MAURO: Yeah.

MR. HINNEFELD: -- what they consider -- what they subtract in order to get net.

DR. MAURO: I understand.

MR. HINNEFELD: And I don't -- sitting here today, I don't know. I would think that would be something we could find out.

DR. MAURO: Yeah, that'd be -- 'cause I would -- your -- your argument is -- if in fact you -- you just take a count of the background noise without a person present, your -- I couldn't understand why -- the difference between -- you know, how you would come up with a positive net count for -- in this -- in the circumstance. So anyway, I think that's an interesting question and -- on how the calibration's done so that we could understand what that number really means when you

say you have a positive net count, but it really is not above the lower limit of detection, that would help clarify things.

MR. HINNEFELD: Okay, we'll see what we can find out.

DR. BEHLING: Okay, 69.6, dose entries for plutonium-241 with less -- no, with electrons with energy greater than 15 keV appears to have been ignored. I'm trying to remember what this is about.

MR. HINNEFELD: Probably the internal dose assessment doesn't include any --

DR. BEHLING: Yeah, yeah, I think --

MR. HINNEFELD: -- any lines that show electron dose.

DR. BEHLING: -- we're missing that as one of the components.

MR. SHARFI: 69.9?

DR. BEHLING: Yeah, and --

MR. HINNEFELD: No, 69.6.

DR. BEHLING: And -- and I think Kathy ran the calculation that says at MDA level we would end up with a dose of 4.7 rem.

MR. HINNEFELD: Well, the practice was to --

MR. SHARFI: I'm sorry. I mean -- I mean the -- the plu-241* component was included into the total alpha component -- plu-241* is assigned as an alpha because it readily decays to americium

and the majority of the dose component's going to be an alpha-emitter, not a -- not a -- not the plutonium beta-emitter but the actual alpha associated with its daughter, so it's actually assigned as an alpha. The -- the -- (unintelligible) looked at this. The actual electron that we're talking about that was assigned I believe is associated with the -- either the environmental or the fission product that was assigned, and I think there's just a misunderstanding of the interpretation of the -- you're talking about the triangular distribution assigned is electron greater than 15 keV.

DR. BEHLING: Uh-huh.

MR. SHARFI: Is that correct? That is actually the fission product dose that's assigned, not the plutonium-241. The plutonium-241 is compiled into the total alpha dose that's assigned. So if you were to sum your four components of your alpha -- your plu-238*, 239, americium-241 and plu-241*, that will equal the total americium assigned. Then the electron greater than 15 keV is the fission product that's assigned.

DR. BEHLING: That's certainly not something we came away with or understood when we looked at dose reconstruction.

MS. BEHLING: I think we need to go back and revisit this because now we have a better

understanding of some of the workbooks that are being used and we can better sort out this -- this -- this particular finding. Right now I can't remember.

MR. HINNEFELD: Yeah, I think that the key -- the key element is that a plu-241* intake is assigned as alpha. Most of the dose is alpha because it's from the americium-241 that grows in while it's resident, and the little bit of beta dose that comes from plu-241*, we throw it into the alpha pile, you know, and just total it all up as alpha dose. It actually works to the claimant's favor 'cause the REF of alphas is higher than REFs of betas.

MS. BEHLING: Okay.

MR. HINNEFELD: But it's a fairly small --

MR. GRIFFON: The part I was missing was the fission product, how does that tie in --

MR. HINNEFELD: That's a completely separate analysis, it's just there are apparently --

MR. GRIFFON: I didn't understand why there was really a dose finding.

MR. SHARFI: It seemed -- it seemed to me --

MR. GRIFFON: It's not --

MR. SHARFI: Yeah -- that they assumed that the -- 'cause they're very -- to do -- actually to (unintelligible) the plutonium-241 and the cesium-140 -- or the cerium-144, the actual final

doses are very similar, so I think there's a confusion that -- that the -- what we assigned as cerium dose was actually what was supposed to be assigned as plutonium dose. I think that -- I think that's -- that connection I got away from reading -- from what -- obviously I'm trying to interpret what someone else is interpreting, but...

DR. BEHLING: Okay, this is as far as I got in my personal review so I'm reading this again because within the time we had available -- trying to figure out what each of the findings really represents based on the expanded explanation. 69.7, again, this person is very similar to previous ones, had seven -- or had ten whole body counts, seven of which identified body burden of cesium that exceeded two standard deviations and were considered significant, and for seven other fission products including cerium-144 and we've already mentioned those ones, who body count measurement did not exceed the 95th percentile level but were nevertheless consistently identified in terms of net count that suggest their presence. On that basis, NIOSH confined itself again to cerium-144 and assumed an MDA value of 60 nanocuries and used MDA over two to come up with a dose for cerium.

MR. HINNEFELD: This is the -- this is the issue

that we talked about on the two previous cases about mixed fission product intakes. If we can address it appropriately in the rework of the other two cases --

MR. GRIFFON: Same, right, yeah, yeah.

MR. HINNEFELD: -- it'll be the same solution here, so...

MR. GRIFFON: 69.8.

DR. BEHLING: 69.8, use of a triangular distribution is not claimant favorable for uncertainty. Again, it's the same argument that we just talked about here, that when you have below MDA value but there are strong indications that it's -- it's below MDA and it's real number, the use of a triangular distribution that starts out at zero may or may not be appropriate.

MR. GRIFFON: And you're saying only use it when all the bioassay's negative.

MR. HINNEFELD: Yeah, only use it when the bioassay's negative and we believe there is a reason why there are non-detectable consistently -- consistently positive net counts that are non-detectable. We believe there's a reason why it comes out that way. It is not -- does not mean that those radionuclides are present. It has to do with how things are set up.

DR. BEHLING: Well, the only thing here is -- like the earlier one where you say okay, in an

empty chamber you don't count any constant scattering that would contribute to the 60-- in this case you had cesium-137 as positive, which is a fission product and it's usually not necessary by itself, so the presence of three positive cesium-137 counts would suggest the probability that other fission products would have also been there, perhaps at lower (unintelligible).

MR. HINNEFELD: When were the counts taken? When did this guy work? The cesium-137 was dietary until --

DR. ROESSLER: I counted a lot of cesium-137.

MS. MUNN: Yeah.

MR. HINNEFELD: Yeah, it's dietary and you counted it in everybody from bomb fallout until -- I don't know, you might still count it today, I don't know.

MR. MAHER: Deer meat.

DR. BEHLING: Deer meat.

MR. HINNEFELD: Well, that's -- that's a common -- I mean it lasted longer in people -- you count it longer in people who eat deer meat, but during certain time periods everybody had cesium-137.

MR. MAHER: Wood ash (unintelligible) wood ash.

MS. MUNN: It's out there.

DR. MAURO: With this pause, I -- this is John Mauro. You had asked the question before whether

-- was it OTIB-11, whether or not --

MR. GRIFFON: Yeah.

DR. MAURO: -- it was reviewed? Was it -- yeah, is -- is O-- is the OTIB-11 you're referring to dealing with tritium?

MR. GRIFFON: Yeah.

MS. BEHLING: Yes.

DR. MAURO: Yeah, that was reviewed as part of the second set of 30 cases -- procedures that were reviewed, so yes, SC&A has reviewed and it's in one of our reports as --

MR. GRIFFON: All right.

DR. MAURO: -- tritium calculated doses, OR-- OTIB-0011, so the answer to the question is yes, we have reviewed it.

MR. GRIFFON: Thank you, John.

MS. MUNN: Thank you.

MR. GRIFFON: Stu, can you -- that last line I'm reading -- in fact, OCAS consistently treats non-detectable results as indistinguishable from zero. Can you explain that -- explain? I think (unintelligible).

MR. HINNEFELD: The basis -- well, we do that clearly in the external dosimetry world. When we have a result that's less than LOD over two we consider that indistinguishable from zero, therefore we count it in the missed dose column as if some-- as if a person was monitored and

nothing was detected. So we put it in the missed dose calculation rather than put those eight millirem in the recorded dose. So -- and similarly, in a bioassay setting, if the -- if a value is less than detectable, then we consider that -- it is not distinguishable from zero and so is a -- it's a non-detect, it's not distinguishable from zero, and so based on that thought process, the triangular distributions applied to these missed doses start at zero because there's a potential this person had no exposure.

MR. GRIFFON: Okay. All right, I understand. Thank you.

DR. BEHLING: Okay, the last one, 69.9, identifies environmental internal exposures to account for tritium, iodine and uranium is inappropriate. I'm trying to remember exactly what was the issue here, but... The records show or suggest that the EE worked in locations where tritium exposure and iodine exposure and uranium may have taken place in the workplace instead of as a result of environmental exposure. And I guess the question then is it claimant favorable to assign the presence of tritium, iodine and uranium to environmental as opposed to workplace exposure.

Kathy, do you have anything to add because --

MS. BEHLING: No, that's exactly the issue. You've just hit it. We -- based on what we saw on the IREP sheet, this looked like they did calculate dose for tritium, iodine-131 and uranium, but it was assigned based on calculations for environmental internal exposure as opposed to assuming that it was workplace, and that's exactly it.

MR. SHARFI: These were all radionuclides they were not monitored for.

DR. BEHLING: Right, yeah.

MR. GRIFFON: But there was a --

MR. SHARFI: Well -- I mean tritium's -- in Savannah River tritium seems to be a very -- -- (unintelligible) in '86 we did assign -- we did have some tritium bioassay we assigned for, so we drew the environmen-- the other years, though, there's no indication that -- that he had likely -- I mean Savannah River's very -- they readily monitored people for tritium bioassay, so the -- the lack of tritium bioassay does not necessarily suggest that he had a true occupational exposure to it since they were so readily monitoring people on that program. So outside the years that he was actually monitored for tritium, we did not see -- see the -- something that would force us to use anything more than environmental dose.

MS. MUNN: But there's no evidence that -- that his workplace environment --

MR. SHARFI: Correct.

MS. MUNN: -- would create tritium and iodine.

MR. SHARFI: Correct.

MS. MUNN: All right.

MR. SHARFI: I don't know how much you want to get --

MR. GRIFFON: Well, I mean that -- that --

DR. BEHLING: Well, the fact that we had a whole body count, that did suggest at least trace quantities of iodine-131.

MR. MAHER: Exit or entrance body count -- I mean everyone gets one.

MR. SHARFI: Well -- well, as part of his routine -- I mean when they -- when they do a whole body count, they look for a slew of radionuclides that -- that -- I mean whether or not that truly means that he had a potential for iodine-specific just because they reported the values -- you know, obviously they're looking for the entire fission product gambit.

MR. MAHER: He was not on a routine bioassay program.

MS. MUNN: Wasn't on the program apparently.

DR. BEHLING: Well, the fact that he was whole body-counted would suggest that there was reason for doing so (unintelligible) fission products --

MR. GRIFFON: It wasn't regs that it was a --

MR. HINNEFELD: Chances are --

MR. MAHER: (Unintelligible) is a part of routine bioassay (unintelligible) was it a entrance or (unintelligible).

MR. GRIFFON: I don't know, I (unintelligible), too, I guess.

DR. BEHLING: Again --

MR. MAHER: (Unintelligible) all get counted once.

MR. GRIFFON: Yeah, yeah, yeah.

DR. BEHLING: What this whole thing is about is that the assignment of doses to these three radionuclides would have been considerably higher had the assumption been made that it was a workplace exposure as opposed to a -- a -- environmental exposure.

MR. MAHER: Yeah, 'cause the way we would use some other source, occupational exposure, but --

MR. SHARFI: Well, his work location didn't insinuate any uranium potential -- I don't think in any of his work locations, for the uranium particularly. The fission product will probably fall more into the fission product discussion where we assigned the highest -- the radionuclide that gave the most dose rather than this whole discussion of whether or not can you assign a slew -- so I mean I think that's a different

issue, whereas we assign fission products based on the highest potential radionuclide, not every single one that he was monitored for.

MR. HINNEFELD: Yes, they -- you know, just sitting here, I would think that --

MR. SHARFI: Iodine for this cancer's not going to --

MR. HINNEFELD: -- we -- we assigned a -- an occupational mixed fission product intake --

MR. SHARFI: Correct.

MR. HINNEFELD: -- which should account for the iodine in any iodine occupational intake, and that the addition of the iodine in a -- environmental iodine, I would say, is probably a mistake on the high side, but it's pretty small, you know, so it's not that big a deal because since you assigned a mixed fission product intake based on his occupational exposure, you have accounted for the fission product intake. That's what I would think. Then if there's no evidence of uranium exposure, we would in-- you know, we would maybe assign a uranium environmental intake because he worked on the environs of the Savannah River Plant. And if I read this response correctly, the tritium intake was less than a millirem from environmental (unintelligible) --

MR. GRIFFON: (Unintelligible) work areas and job --

MR. HINNEFELD: -- as a matter of course we --

MR. GRIFFON: -- suggested that he wouldn't have been --

MR. MAHER: So the DR --

MR. GRIFFON: -- uranium building --

MR. MAHER: -- occupation exposed, that's the --

MR. GRIFFON: Right.

MR. MAHER: -- professional judgment of the DR.

MR. HINNEFELD: To -- to the -- to uranium.

MR. GRIFFON: Right.

MR. HINNEFELD: Was occupationally exposed to uranium.

DR. BEHLING: Well, the assignment was as follows: 55 millirems for collective exposure to tritium, zero for the iodine and zero for uranium alpha. So he was given 55 millirem collectively for the period 1970 through the year 2000, so 30 years worth of environmental exposure netted him 55 millirem. And I -- I guess I looked at it in context with the whole body counts and saying well, if he was whole body-counted for fission products, which is really what you're looking for, why wasn't any assumptions made that that exposure couldn't have been assigned to a workplace exposure.

MR. HINNEFELD: Well, and we did assign a mixed fission product missed dose, which -- even though we didn't specify every radionuclide, you know,

that's part of the discussion so that would fall into -- you know, that was --

DR. BEHLING: That would essentially eliminate this --

MR. HINNEFELD: -- meant to encompass --

DR. BEHLING: -- as an argument.

MR. HINNEFELD: Yeah, that would -- it's intended to encompass all those fission products in that mixed fission product --

MR. GRIFFON: And I guess unless something strikes us in the job history or work history --

MR. HINNEFELD: Yeah.

MR. GRIFFON: -- otherwise, I would say, you know, that -- that's --

MR. MAHER: That's a reasonable --

MR. GRIFFON: -- that's the basis, yeah. So I -- I put for that one that the iodine part is going to -- I sort of footnoted this fission product model discussion, and on the other two, unless you see something else in the job history you want to note, I think that's -- there's no further action on those.

DR. BEHLING: Okay, the next case number, 70, is Hanford. I think the ones that follow these first Savannah River Sites are going to be much easier.

MR. GRIFFON: (Unintelligible) strike me --

MS. BEHLING: We're now getting into the min/max

type cases as opposed to the more realistic cases.

MR. GRIFFON: Just -- just one thing as follow-up on that last one. It did strike me that 30 years of environmental exposure netted zero millirem for uranium. You -- you must round off if it's below a certain --

MR. HINNEFELD: Well, we generally round off --

MR. GRIFFON: -- ten millirem of something (unintelligible) bother. Right?

MR. HINNEFELD: -- below a millerem a year. We round to the nearest millerem and if it rounds to less than one millirem a year, we don't include it, yeah.

MR. GRIFFON: I mean I would expect it to be low, but 30 years and zero millirem is --

MR. HINNEFELD: Yeah, I --

MR. GRIFFON: -- surprising.

MS. MUNN: Oh, there are a lot of us that did that. Not necessarily at Savannah River.

MR. GRIFFON: And it may have been -- anyway, that doesn't -- left that aside.

I think -- can I ask for a -- maybe a comfort break? Let's keep it to ten minutes. We're -- we're past the Savannah River ones. I think --

DR. BEHLING: These are going --

MR. GRIFFON: -- we can still get through --

DR. BEHLING: -- to go much quicker.

MR. GRIFFON: Yeah, it should go much quicker.

MR. HINNEFELD: Yeah, we've been through the three hardest.

MR. GRIFFON: We'll give Hans a little chance for some (unintelligible) --

DR. BEHLING: No, in fact, I'm going to -- because I'm going in on virgin territory here for me because these were done by Kathy and I a long time ago and I did not go beyond the three Savannah River cases in preparation for today because I had very limited time to review the matrix since I only received them --

MR. GRIFFON: Yeah.

DR. BEHLING: -- over the weekend.

MR. GRIFFON: Well, we'll do the best we can.

DR. BEHLING: I have to kind of read as we're going along and I'm going to ask -- normally if Kathy were here, she reads while I talk; I read while she talks and we kind of oscillate between us, which makes things a little more fluid.

MR. GRIFFON: Let's take ten -- a ten-minute --

MS. MUNN: This is bad 'cause you both (unintelligible).

MR. GRIFFON: -- ten-minute comfort break and --

DR. WADE: We'll be back in ten. We're not going to break the connection, though.

(Whereupon, a recess was taken from 2:30 p.m. to 2:40 p.m.)

DR. WADE: Okay, we're going to start up in a minute. Mike, are you still with us?

MR. GIBSON: Yes.

DR. WADE: Okay. Thank you. We're on the home stretch, he said naively.

MS. MUNN: Yeah.

MR. GRIFFON: Home stretch, the last ten, yeah. Okay, we're ready to start up again, everybody?

MS. MUNN: We're back.

MR. GRIFFON: Everybody, are we starting on case 70, wasn't it, Hans, on the (unintelligible).

DR. BEHLING: Yeah. Okay, this case was I believe a maximized dose reconstruction; denied, of course, if it's maximized. The first finding, inappropriate DCF, and I guess somehow in here I see the thyroid DCF of 1.1 was used when it should have been slightly higher, 1.017. I'm not sure that that is -- I'm looking here at the NIOSH response that says the correct DCF of 1.017 was used.

MS. BEHLING: I believe I can address this. I believe initially the dose reconstruction report actually indicated that a DCF of 1 was used, and when we went in and calculated our doses manually, we realized that a DCF of 1.01 was essentially used. And when we looked at the implementation guide, it indicated that it was 1.017 and NIOSH is indicating here that 1.0--

yeah, 1.017 was actually used, and that's what's in the workbook. I believe at this time we weren't quite as familiar with the workbooks and our manual calculation -- it's so close -- it obviously really doesn't matter here, but I think initially we felt it was 1.01, the dose reconstruction report said 1, and it was just a rounding-off issue. I don't think we really have any additional comments on this and we agree with NIOSH's response.

DR. BEHLING: Okay, 70.2, failure to assign recorded photon dose uncertainty -- let me see here. Let me go back and check to see which --

MS. BEHLING: Oh, this is that reoccurring theme that for recorded photon dose --

DR. BEHLING: Yes.

MS. BEHLING: -- they're supposed to enter it, based on the procedures, as a normal distribution with a numerical standard deviation and that was not done in this case.

DR. BEHLING: I'm looking at it. These were extremely trivial doses for recorded dose that ranged from ten millirem to -- only to a maximum value of 61, so again, it's a technical issue, but it's a very marginal dose to begin with and the uncertainty around a marginal dose would certainly have limited impact.

Finding 70.3 --

MR. GRIFFON: So you're -- let me just --

DR. BEHLING: It's a technical issue.

MR. GRIFFON: -- NIOSH is kind of saying there's probably no reason to rerun this because --

MR. HINNEFELD: No.

MR. GRIFFON: -- (unintelligible) triangular distribution --

MR. HINNEFELD: We don't think it's going to matter.

MR. GRIFFON: Right, not going to matter (unintelligible).

MR. HINNEFELD: We may -- based on 70-- when I read 70.2 and 70.3 I said we can take another look at these, it won't take a lot of work to re-evaluate some --

MR. GRIFFON: Right.

MR. HINNEFELD: -- potential things here and -- and show this is probably not likely going to change.

MR. GRIFFON: It's a POC of 45, but still --

DR. BEHLING: Yeah --

MR. GRIFFON: -- this is probably not likely to be affected. Right?

DR. BEHLING: But -- but the -- it's not even the POC. You have to be careful. This was a -- based on an overestimation approach and there's so much buffer built into it where these minor, trivial doses have very little impact. And so,

you know, when somebody says -- for instance, when we go back to our -- our initial matrix here of where we have to say okay, the case review checklist, what -- is this dose significant, yes or -- or is it low, medium, high. That's -- it's not so much the absolute value of that error, but -- and it has to be done in context -- was this a best estimate and how close are you to 50. So a one-rem miscalculation when you're at 49 percent POC on a best estimate could certainly make a monumental difference. A one-rem miscalculation for a best -- for a maximized where there's 12 rem given for hypothetical internal has no meaning, so --

MR. GRIFFON: No, I'm agreeing, I (unintelligible) the case.

DR. BEHLING: Okay, 70.3, potential failure to properly account for missed neutron dose. Our review of this claim looked at the location. He apparently worked in -- in two buildings -- or actually three locations, he worked in building 1705, 105 in the 100 N reactor area, and the EE also identified the 1705 building that was located for the N reactor area. And he claims that there were no doors separating his facility from the reactor, et cetera.

MS. BEHLING: In addition, I guess the employee was also given a multi-purpose TLD that was

capable of monitoring for neutrons between 1982 and 1984, and generally we see that these types of dosimeters are issued when they are going to be monitored for neutron dose, although in this particular case I think the records just showed a blank. And so although we -- we still are questioning, based on the fact the work locations or the proximity to these work locations, whether there shouldn't have been neutron doses considered.

MR. HINNEFELD: And I think that's just one -- that one and .2 I said we'll take a look at because --

MR. GRIFFON: You're re-evaluating, I saw that --

MR. HINNEFELD: -- when I was -- when I looked at that, this person went from a non-multi-purpose dosimeter onto a multi-purpose dosimeter, so it wasn't like they were necessarily hanging them on everybody --

MR. GRIFFON: Right.

MR. HINNEFELD: -- so we may want to take a look at it. But there is -- like you said, it's a hypothetical internal, so it's a pretty big overestimate to start.

MR. MAHER: It’s a big overestimate.

MR. GRIFFON: Yeah, yeah.

DR. BEHLING: Okay, 70.4, and that is inconsistency between CATI and data used to

assign dose. Let me quickly scan through here.

MS. BEHLING: This is a reiteration of the finding 70.3 where, again, the individual seemed to indicate that there -- I believe that's what this is -- that there was a potential for neutron exposure that wasn't calculated in this -- in this dose reconstruction.

DR. BEHLING: Yes.

MS. BEHLING: So 70.3 and 70.4 are discussing the same issue of the neutron dose.

MR. HINNEFELD: And do you want to get into the neutron discus-- or the radon discussion at all, you know, --

DR. BEHLING: Was there a potential for a radon --

MR. HINNEFELD: -- the CATI, they -- they alarmed the -- the PCMs at -- we don't have an occupational source of radon at this part of Hanford and so we would consider that to be natural background --

DR. BEHLING: Yeah, that -- that was --

MR. HINNEFELD: -- as far as the dose reconstruction. And you can alarm a -- if you're -- if you're talking about a count PCM, you can alarm then on natural -- natural background.

DR. BEHLING: Now would the radon exposure be considered occupational?

MR. HINNEFELD: Not in an instance where it was

naturally background. It is considered occupational in a couple of circumstances.

MR. MAHER: Some sites it is.

DR. BEHLING: For instance, in the case of the Gerties and --

MR. HINNEFELD: Yes.

DR. BEHLING: -- other locations, wouldn't --

MR. HINNEFELD: There are --

DR. BEHLING: -- obviously you would have a natural source of radon --

MR. MAHER: Certainly (unintelligible) involved.

DR. BEHLING: -- but it's also considered in the dose reconstruction.

MR. HINNEFELD: There are -- there are two circumstances when radon's included. One is when you have the occupational source of radon; in other words, you have radium, but -- and the other is when you are working in a workplace that's sort of unique to the complex. You know, it's -- it's -- you wouldn't be working in that kind of environment unless it were a tunnel drill-back at NTS and you're working in a tunnel or you're working in a Gravel Gertie where nuclear weapons are assembled. So in those --

MR. MAHER: A unique -- unique feature of the work area.

MR. HINNEFELD: Those are considered unique features of the AEC work and therefore we include

radon in those. But just working in the basement of a building, we would not because a lot of people work in basements of buildings.

MR. GRIFFON: Right.

DR. BEHLING: Yeah, that was an issue raised by the claimant.

MR. HINNEFELD: Right.

MR. GRIFFON: I -- I -- can I understand the -- the finding again? I'm looking at the little snapshot, but ingots I see between CATI and data used to assign neutron dose, and then we're talking about radon over here. Am I --

DR. BEHLING: Well --

MR. HINNEFELD: Well --

DR. BEHLING: -- it all comes under the CATI.

MR. HINNEFELD: -- it comes -- it's all in the CAT, it's all in the CAT.

MR. GRIFFON: So it's two parts of --

MR. HINNEFELD: Two parts things, yeah.

DR. BEHLING: Okay. Can we go to (unintelligible) --

MR. GRIFFON: Can we talk about the neutron part of that? I mean --

MR. HINNEFELD: Well, it's the same as 70.3.

DR. BEHLING: Yeah.

MR. GRIFFON: All right, got it.

MS. BEHLING: Which NIOSH is -- NIOSH is going to reassess.

UNIDENTIFIED: Going to reassess, right.

DR. BEHLING: Okay, 71 is also a Hanford case.

MR. GRIFFON: Did this person -- I'm sorry to go back to 70.4. Did this person say that they had alpha alarms going off, is that what prompted this --

MR. HINNEFELD: Yeah.

DR. BEHLING: Apparently -- let me see here, this is -- let me see.

MR. GRIFFON: Because I think we can agree on there was no source of --

DR. BEHLING: She said --

MR. GRIFFON: -- radon exposure, but --

DR. BEHLING: I shouldn't say even any --

MR. GRIFFON: -- how do we know radon was causing the alarm? I mean --

DR. BEHLING: Portal -- portal monitors were set off, and that suggested exposure to radon, radon daughters. One of the daughters is a 360 keV photon that oftentimes gets mistaken for iodine-131 in a reactor facility, and so I guess perhaps one of the short-lived gamma-emitters was -- was triggering alarms, portal alarms.

MR. MAHER: (Unintelligible) happens a lot in power plant (unintelligible) --

DR. BEHLING: We had at Three Mile Island --

MR. MAHER: -- poly-- polyester suits, you know --

DR. BEHLING: Yes, yes --

MR. MAHER: -- stick to the --

DR. BEHLING: Yeah, in the Redding Prong area we would have people come in first thing in the morning for a whole body count and they would set off or give a false positive for iodine and it would turn out to be radon.

MR. GRIFFON: No, I -- I know theoretically this can and does happen, but how do we know --

MR. HINNEFELD: She attributes it to that on the CATI.

MR. GRIFFON: Oh, she attributed it in the CATI --

MR. HINNEFELD: She said --

MR. GRIFFON: -- okay --

MR. HINNEFELD: -- the alarms were set off because of radon.

MR. GRIFFON: Okay, that's fine.

MR. MAHER: That's probably what the technician around the (unintelligible) kind of told (unintelligible), you know, (unintelligible) --

MR. HINNEFELD: Well, it's easy to -- it's easy to tell if you make them stand there for 30 minutes.

MR. GRIFFON: Go ahead on to 71 -- 71.

DR. BEHLING: Okay, the next one is 71, it's another Hanford case. If you have the background, Kathy, is this a overestimate -- yes,

it is.

MS. BEHLING: Yes, it is. I was going to say, let's, for the rest of these, indicate that -- whether they're overestimates or underestimates, and this was an overestimate.

DR. BEHLING: Yeah, the POC was very, very low in spite of the overestimate, so we can look at these issues with -- with a questionable need to -- to address these more serious infractions, other than the fact that they were findings.

MS. BEHLING: And actually the first finding, again, although we're only dealing with a small dose here, we realize, but to be technically correct when we look through all of the DOE records there was a 30-millirem dose identified in 1980 that was not accounted for in the IREP input sheet.

DR. BEHLING: Yes.

MR. HINNEFELD: We agree.

MS. BEHLING: Okay.

DR. BEHLING: Okay.

MS. BEHLING: And again, we're back to the same issue of also failed to account for recorded photon dose uncertainty.

DR. BEHLING: That's finding number 71.2, so again, we've discussed that before.

Finding 71.3, failure to account for all occupational medical exposures. There were three

years of occupational medical exposures that were not included, and these doses were relatively minor. Now let's see, what does it say here.

MR. HINNEFELD: Well, the DR said as part of its overestimating --

DR. BEHLING: Yeah.

MR. HINNEFELD: -- approach, it assigned one every year.

DR. BEHLING: Yeah, and -- and --

MR. HINNEFELD: And it actually didn't.

DR. BEHLING: Yeah.

MR. HINNEFELD: It left out three years. We've got the records and the person didn't get that.

DR. BEHLING: Yeah, it still assigned more -- it's consistent with -- with the statement "for all years," it's inconsistent --

MR. MAHER: With every year.

DR. BEHLING: -- with every year, so --

MR. MAHER: So it's still an overestimate, though.

DR. BEHLING: -- it's still an overestimate, so --

MR. HINNEFELD: It should have coincided -- you know, and it's an overestimating approach so the POC's not very high. The dose reconstruction should have coincided with the language in the dose reconstruction.

DR. BEHLING: Inappropriate --

MR. GRIFFON: No further action on that?

DR. BEHLING: If the wording --

MS. BEHLING: This particular case -- this is another one of those reoccurring themes where when they ran the OTIB-2 workbook, the hypothetical intake, they used the colon as the highest non-metabolic organ as opposed to the actual --

DR. BEHLING: Cancer.

MS. BEHLING: -- the actual tissue of interest for this particular case. And again, this resulted in a fairly significant overestimate of the dose.

DR. BEHLING: And again, it's mostly for the optics, when a person reviews this and says we assessed it for colon, if the emphasis is stated that this colon dose is actually greater than your cancer dose, they might say well, maybe you got the wrong person. And -- and clearly the hypothetical does allow for the particular cancer in question to be run.

MR. GRIFFON: And the other -- and the other reason is important, we discussed many times, is if they come down with another cancer. I don't know if this person's --

MR. HINNEFELD: Right.

MR. GRIFFON: -- still alive.

MR. HINNEFELD: Right.

MR. GRIFFON: In this case was 12.377 the dose or was it 18.(unintelligible).

MS. BEHLING: 12.377 was the dose calculated based on the colon.

MR. GRIFFON: Okay.

DR. BEHLING: Yeah.

MR. GRIFFON: Okay.

DR. BEHLING: And it was --

MR. GRIFFON: I read it, it was an overestimate of 12 or -- or -- okay.

DR. BEHLING: No, no.

MS. MUNN: Overestimated by that much.

DR. BEHLING: Yeah, the -- the --

MR. MAHER: And that was -- that was typical of OTIB-5 at that point, you know, years ago.

MR. GRIFFON: Yeah, yeah, yeah, we've found that before. Okay.

DR. BEHLING: And again, as I said, it is the hypothetical intake that drives this whole dose reconstruction.

MS. BEHLING: I agree.

DR. BEHLING: Looking at the Table 1 here of the 15 and a half rem assigned to the organ dose, fully 12 -- 12 of those 15 and a half was based on a hypothetical. So these errors that we identified are trivial when you compare it to the generous assignment of hypothetical intake and therefore they have limited significance.

MR. GRIFFON: And 72.

DR. BEHLING: Okay, 72 is a -- another Hanford dose reconstruction case. This was a minimized dose reconstruction and therefore you attempt to minimize or underestimate dose or only partially reconstruct dose, and on the basis of a partial dose reconstruction the claim was obviously compensated and -- do we even have any findings here?

MS. BEHLING: Yes.

MR. GRIFFON: Yeah. This has come up before, too, this derivation --

MS. BEHLING: Yes, it has, this is the inappropriate method used for deriving the recorded shallow dose.

DR. BEHLING: Oh, yeah, yeah.

MS. BEHLING: Go ahead.

DR. BEHLING: No, I'm actually -- I just got to the page, Kathy. If you have the answer, go ahead.

MS. BEHLING: Okay. Well, I believe in this particular case it -- and I'm -- I'm also just getting there, but the Appendix B of the implementation guide indicates that when you do have a shallow dose, a -- a seven milligram dose, that you should just use that shallow dose for your skin dose as opposed to -- see what they used here, did they use a photon dose and apply a

DCF?

MR. HINNEFELD: I think --

DR. BEHLING: What they did was use the 1,000 milligram deep dose and then applied a DCF, as opposed to just using the shallow dose and saying okay, this is the number; we don't have to have a DCF.

MR. HINNEFELD: I think what the -- I think what the DR did was identify the electron component of the shallow dose, which is a step that you say should really not --

DR. BEHLING: It's minimizing the dose --

MR. HINNEFELD: Yeah.

DR. BEHLING: -- but it's an unnecessary step when you're trying to be efficient.

MR. HINNEFELD: Yeah, well, some people might argue no, because the Radiation Effectiveness Factors are different for electrons than they are for 30 to 250 keV electrons.

DR. BEHLING: But it's counter to a minimized dose where you're trying to say --

MR. HINNEFELD: We should have just put it in there.

DR. BEHLING: -- hey, (unintelligible) efficient.

MR. HINNEFELD: He could have just put the shallow dose in it and made it -- you know, just called it all electrons, for instance.

DR. BEHLING: Well, we've encountered this issue,

however, in instance where it was not necessary an -- an overestimate where we sort of say just use -- and -- and Appendix B in the implementation guide clearly states if there is a shallow dose, assign that.

MR. HINNEFELD: Right, and -- and there may be a need to apportion it, though, in a best estimate, be-- especially if your components are 30 to 250 elec-- photons because the Radiation Effectiveness Factor is different --

DR. BEHLING: I know.

MR. HINNEFELD: -- for that than it is for electrons, so there may -- you could use it as the number, that's the dose number. You still may need some way to apportion it between the photons and the electrons. It this case it was considered all -- it could have been done (unintelligible) just call it all electrons.

DR. BEHLING: There's a second one area -- yeah, 72.2, again, the issue of uncertainty.

MS. BEHLING: And actually in this particular case we realized that for efficiency, you know, you could disregard the uncertainty. However, it was entered again as a constant and I believe that parameter two had a value of two, and again, which we've discussed earlier, is just part of a template that -- it just looked strange to us when we look at the IREP sheet.

MR. HINNEFELD: Right.

DR. BEHLING: And in general, when you have a minimized dose, you ignore uncertainty to begin with.

MS. BEHLING: Yes.

DR. BEHLING: You say --

MR. HINNEFELD: Well --

DR. BEHLING: -- we'll just go with the lower dose and forget uncertainty, so that's a standard protocol for -- for a minimized dose.

MR. HINNEFELD: Yeah, and -- and the DR did enter it as a constant. It is identified as a constant value, it's just that that (unintelligible) for those (unintelligible) twos in parameter two.

MR. GRIFFON: Yeah.

DR. BEHLING: Okay, case 73, a Y-12 case. This person had two cancers.

MS. BEHLING: It was an overestimate of the dose.

DR. BEHLING: Yeah, an overestimate, and a POC that was very modest, a little more than half of the required dose to be compensated.

MS. BEHLING: The first two findings are these findings that we've discussed over and over again. That is very typical when the dose reconstructor is using either OTIB-8 or OTIB-10 and their misinterpretation of that.

DR. BEHLING: Yeah, this is what I think Stu is getting sick and tired of hearing us talk about

it. We call it the poster boy (unintelligible).

MS. BEHLING: We also realize that OTIB-8 and OTIB-10 have been modified --

MR. HINNEFELD: Yeah.

MS. BEHLING: -- and then it should correct this problem.

MR. HINNEFELD: Yeah.

MS. BEHLING: You want to go into the -- to --

MR. GRIFFON: No.

MS. BEHLING: -- the actual problem on these two ca-- on these two findings?

MR. GRIFFON: I don't think we need to.

UNIDENTIFIED: There's no action.

MR. GRIFFON: On -- on these case-- on these first two, do -- would you still use TIB-8 or would you use the Y-12 coworker models that you have?

MR. HINNEFELD: Well, this is an ORNL case.

DR. BEHLING: This is an overestimate.

MS. MUNN: An overestimate.

MR. GRIFFON: It's ORNL?

MS. BEHLING: No.

MR. HINNEFELD: We -- we -- I -- we could still use --

MR. GRIFFON: Oh, it says ORNL/Y-12 in my (unintelligible).

MR. HINNEFELD: Oh, okay, maybe it's both.

MR. GRIFFON: Is it both or is it --

MR. HINNEFELD: We -- we could use both. We could still use TIB-8.

MR. GRIFFON: Yeah.

MR. HINNEFELD: We could, or we could use the coworker --

MR. GRIFFON: Right? Okay.

MR. HINNEFELD: I mean if -- if it's going to be a relatively low POC with -- using TIB-8, we just might go ahead and --

MR. GRIFFON: Where -- what is this -- what is this case from? Is it Y-12 or ORNL?

DR. BEHLING: It's Y-12.

MR. HINNEFELD: It's both.

MR. GRIFFON: Or both? It's both.

DR. BEHLING: Oh, yeah, yeah, it is both.

MS. BEHLING: Both.

MS. MUNN: There's really no action here.

DR. BEHLING: No.

MR. HINNEFELD: Right, we've addressed it else -- we've addressed it elsewhere.

MR. GRIFFON: It's already been addressed, yeah.

DR. BEHLING: TIBs have been revised to be more clear.

Are we on 73.2, Kathy?

MS. BEHLING: 73.3 now.

DR. BEHLING: 73.3, okay.

MS. BEHLING: Because the first two findings were both associated with --

DR. BEHLING: Yeah.

MS. BEHLING: -- the calculation of the -- the missed dose and then the uncertainty associated with that, and they were both associated with misinterpreting TIB-8, so we're on to 73.3.

DR. BEHLING: Yeah, here again it was a willful assumption to assign missed dose for 73.3 where data suggests that that was really excessive and unnecessary.

MR. HINNEFELD: Yeah, they assumed that 12 badge exchanges --

DR. BEHLING: Yes --

MR. HINNEFELD: -- when the records indicate four.

DR. BEHLING: -- quarterly.

MR. HINNEFELD: Yeah.

DR. BEHLING: So again, it just -- you know, our feeling is if you have the real number, don't necessary inflate it beyond what's reasonable.

MR. GRIFFON: And this individual -- this individual wasn't in the production areas in these facilities, doesn't seem like it.

MR. HINNEFELD: Well, could have been. Looks like he was a maintenance craftsman, probably in and out. Indicates that (unintelligible) was in some of the production areas, but was -- I believe was monitored full time. And the -- the cancers are not -- they have relatively low risk

values.

MR. GRIFFON: Okay.

DR. BEHLING: 73.4 and 5 involves unmonitored neutron versus missed neutron assignments. I guess it's a question here -- Kathy, can you help me out here? What is --

MS. BEHLING: I'm struggling with this, also. I'm just reading it as you are.

DR. BEHLING: I'm just trying to read here. Apparently the records show that when for external photons the -- the values was below MDA, they recorded it as a zero. But that was not done in behalf of neutrons.

MR. HINNEFELD: Yeah, well, in our response we said --

MR. GRIFFON: Based on work area?

MR. HINNEFELD: -- if we were doing this case today we wouldn't have put the neutrons in. You know, your -- your finding is right, this is an over-- unnecessary overestimate.

MS. BEHLING: Can you repeat that, Stu? I didn't hear you.

MR. HINNEFELD: If we were doing the -- I'm not sure I can.

DR. BEHLING: I'm choking him.

MS. MUNN: He's about at the end of his rope here.

MR. HINNEFELD: If -- if we were doing the case

today we would not have included the neutrons, as you suggest. We would have -- we would have said we have done it the way you suggest it should have been done, so this was an unnecessary overestimate done at that time.

MS. BEHLING: Okay. Thank you.

MR. GRIFFON: And you're saying if you would do it today, that would be -- the basis would be based on where they worked their job that you wouldn't --

MR. HINNEFELD: Well --

MR. GRIFFON: -- include neutron?

MR. HINNEFELD: -- the nature of the records is that if it's -- if it was non-detectable, they recorded it as zero and if they were monitored it was a blank, which is essentially what they've --

MR. GRIFFON: So they had a blank.

MR. HINNEFELD: -- what the finding is. There were blanks in this case that this dose reconstructor counted as zeroes --

MR. GRIFFON: Ah, okay.

MR. HINNEFELD: -- which we would not do today.

DR. BEHLING: I guess our finding says that perhaps the person should have been regarded as an unmonitored person as opposed to there was no reason to monitor and there was no exposure. So the second half of that finding --

MS. BEHLING: Yes.

DR. BEHLING: -- 73.5 seems to suggest that perhaps the approach for -- for assigning neutron dose should have been based on unmonitored neutron as opposed to missed neutron.

MR. GRIFFON: That's what I was getting at, the second (unintelligible) where it says and does not appear to have any potential for exposure. I think that's what you're also saying. Right?

MR. HINNEFELD: Right.

MR. GRIFFON: Yeah.

MR. HINNEFELD: Right.

MR. GRIFFON: So... And SC&A -- Hans, do you (unintelligible) --

MS. BEHLING: And actually --

DR. BEHLING: Well, I guess --

MS. BEHLING: -- I think we need to look at this a little closer because based on the building locations that he indicated he was working, that would indicate that he should have been monitored, that he -- he could have been exposed to neutrons.

MR. HINNEFELD: Well, I think you also want to look at the era that he worked.

DR. BEHLING: Yeah, it's building 9212.

MS. BEHLING: 9212.

DR. BEHLING: And there was a photon -- neutron-to-photon ratio of 25 to one, so the potential for relatively significant neutron exposures

would have existed in building 9212.

MS. MUNN: During the years he was there?

MR. HINNEFELD: But again, look at -- look at the era that he worked -- the era he worked, which was essentially the '90s.

MS. BEHLING: Okay.

MR. GRIFFON: He's got '80s. Is that at ORNL? No, he's in the '80s at Y-12. But still, that may be...

MR. HINNEFELD: Wait a minute, I was looking at the one excerpt on page --

MR. GRIFFON: I show '81 through '89 --

DR. BEHLING: Yeah, let me go back here --

MR. GRIFFON: -- uranium --

MR. HINNEFELD: Okay.

MR. GRIFFON: -- bioassay data.

MR. HINNEFELD: Okay, you're right. Well, like I said, the practice was that if there was -- the neutron badge was less than detectable, they recorded a zero. If he wasn't -- and if he wasn't monitored for neutrons, then it was a blank. And based on that, that's why we would decide that he wasn't monitored for neutrons, and probably appropriately. Just because there is a potential for it in some -- I mean 9212 is a -- that's a Y-12 building, right?

MR. GRIFFON: 9212 is a Y-12 building, yeah.

MR. HINNEFELD: What would be the source of the

25 to one neutron-to-photon at Y-12? It'd be one location in a -- in the building, right? It wouldn't be the whole building.

MR. SHARFI: I think so. I'm not as familiar with Y-12.

MR. HINNEFELD: The basis for the decision would be the --

MR. GRIFFON: I'm trying to --

MR. HINNEFELD: -- there'd be blanks.

MR. GRIFFON: Yeah.

MR. HINNEFELD: They were blanks, not zeroes, and that's -- you know, in the record, and so that's why we say well, he wasn't monitored for neutrons. That's what we would say today.

MR. GRIFFON: But this job basis does make -- make us at least question it still, at least in my mind.

MR. HINNEFELD: Okay. I can get more explanation.

UNIDENTIFIED: Yeah, we'll get that to you.

MS. BEHLING: I'm sorry, I'm not hearing. What was the resolution to this finding, or have we come -- have we come to one?

MR. GRIFFON: We're fading out here, it's --

MS. BEHLING: Okay.

MR. MAHER: We'll get the DR to give his or her thinking on this and why they considered the person not exposed to neutrons.

MS. BEHLING: Okay, I believe I got that.

MS. MUNN: Did you get that, Kathy?

MR. GRIFFON: Okay, Hans, are we -- yeah, I guess we -- yeah.

DR. BEHLING: Yeah, and -- and I -- I assume you're going to look into this building issue of (unintelligible).

MR. HINNEFELD: Yeah.

DR. BEHLING: 73.6, incorrect organ selected for estimating occupational medical exposures, and apparently -- I'm trying to quickly read here -- what they did using testes as a surrogate organ for the prostate and (unintelligible) organs for the surrogate of the brain, when they actually used -- X-ray dose recorded (unintelligible) organ other than skin. I'm not sure I --

MR. HINNEFELD: They used the highest medical -- the highest dose -- X-ray dose in the table rather than the correct surrogate. I think this kind of falls into the category that we've actually asked them, you know -- we've sent ORAU -- hey, don't do these overestimates just to be overestimating --

DR. BEHLING: Yeah.

MS. BEHLING: Right.

MR. HINNEFELD: -- and -- and so I think we've kind of addressed that in communications.

MS. BEHLING: Yes, excessive conservativism.

MR. HINNEFELD: Yeah.

DR. BEHLING: Yeah, and -- and -- and in TIB-6 you really have the option of choosing the specific organ dose of concern. Okay. So it was a question of potentially overestimating that, again, we would like to discourage.

Finding 73.7, whether the use of the hypothetical internal dose model is appropriate. Let me see.

MS. BEHLING: Here again, I believe we're -- we're indicating that there were quite a few bioassay records. I believe that we have here 57 positive urinalysis records. However, the dose reconstructor I guess chose to use the hypothetical internal dose model, which I don't think is consistent with OTIB-2. I don't really believe that the OTIB-2 indicates that a dose reconstructor should have used the hypothetical internal when this person has had this many positive bioassays. And I believe I also went in and actually ran IMBA in this case, and although that hypothetical internal model gave a higher dose, it still was inappropriate to run it, just based on the number of positive bioassay samples.

MR. GRIFFON: Yeah, and I think you agree with that in your response, yeah.

MR. HINNEFELD: Yeah, as -- as a matter of practice -- you know, the nice thing about the hypothetical intake is the dose numbers are there

and available to you.

MR. GRIFFON: Right.

MR. HINNEFELD: And if you can demonstrate that the hypothetical gives you a higher dose in an overestimate, that's been a matter of practice. And we -- we would prefer the use of bioassay data, but a bioassay fit takes a lot of time and a lot of work and so we have accepted cases that had hypothetical intakes, even when there's bioassay present when -- that's been --

MR. MAHER: For non-compensable cases.

MR. HINNEFELD: For non-compensable cases, yeah.

MS. BEHLING: Yeah, I do understand that. I guess, though, the wording in OTIB-2 would indicate that the dose reconstructor was not supposed to use that procedure, but I understand your rationale.

DR. BEHLING: Finding 73.8 --

MS. BEHLING: Again, this is a situation where when they did run the hypothetical internal they used the highest non-metabolic organ as opposed to the actual --

DR. BEHLING: Prostate and -- well, I won't say the tissues.

MS. BEHLING: -- The actual, you know, cancer of in-- or organ of interest. So again, this was an overestimation of the dose.

DR. BEHLING: Yeah, it was essentially then twice

you used hypothetical when in fact you could have used real numbers, and then you used the hypothetical using the colon as opposed to the tissue of interest. So twice an overestimate, again, for efficiency or whatever, but again, there's -- the excessive use of -- of assigned dose is something that will bite you if the person gets another cancer.

MR. MAHER: Except that we do caveat these reports by telling (unintelligible) --

DR. BEHLING: Oh, I realize that, but I think most people don't view it quite that way.

MR. MAHER: Well, I -- I agree, but if we have to go back to best estimates, it's going to take us a lot longer to do a case --

DR. BEHLING: Oh, I know.

MR. MAHER: -- so I mean, which way do we want to go? And I think the right way is what we're doing.

DR. BEHLING: Well, you know --

MS. BEHLING: We're not even suggesting doing a best estimate. We're just suggesting -- you can keep your efficiency by selecting the correct organ of interest as opposed to the highest --

MR. MAHER: This is an old case.

MR. GRIFFON: Yeah.

MR. MAHER: This is what we were told to do back then.

MR. GRIFFON: Right.

MR. MAHER: That's not --

MS. BEHLING: Right --

MR. MAHER: -- (unintelligible) do now.

MS. BEHLING: -- I understand.

MR. MAHER: (Unintelligible) change --

DR. BEHLING: However, I will point out -- I will point out I did listen yesterday to the hearings and this issue was brought up again. In fact, they gave an example of a case where someone had a 40 -- I believe 40-some percent POC with one cancer, developed a second cancer. The dose reconstruction was reworked and the POC went down to 30-something. So that was discussed again yesterday in -- in hearings.

MR. MAHER: But the only way to get around that is to do best estimates.

MR. HINNEFELD: Yeah, we're all on the same page here.

DR. WADE: This is a NIOSH policy issue.

MR. HINNEFELD: We're all on the same page. If it's effici-- if it adds efficiency, it's allowed. But there's no reason to go over and above --

DR. BEHLING: More than you have to.

MR. HINNEFELD: -- more than you have to for the efficiency.

MR. GRIFFON: Can -- can -- Kathy, you seem to

have these records in front of you. I don't see any X-10 information for this person. Is there any dosimetry information from X-10? You said it was an X-10/Y-12 case.

DR. BEHLING: Yeah, there was no data for X-10.

MS. BEHLING: I don't have all those records in front of me, Mark.

MR. GRIFFON: Oh, okay, I'm sorry.

MS. BEHLING: I believe Hans is correct that there was no X-10 data.

DR. BEHLING: Yeah, if I recall this one, they only had Y-12 data for this person.

MR. GRIFFON: I'm assuming we confirmed -- you confirmed employment at both or...

DR. BEHLING: Yes.

MR. HINNEFELD: There are a lot of possible explanations, but I'd have to look at the case file to really know.

MR. GRIFFON: The only reason I ask is just to -- to go back to those other issues of where this individual worked and whether he could have been in areas where he was not monitored and should have been monitored, you know, those kind of questions.

MR. HINNEFELD: This person was --

MR. GRIFFON: I'm not saying it's likely to turn this case over, but --

MR. HINNEFELD: If this person was a -- cons-- a

subcontractor employee, Y-12 would have held his records, regardless of where he worked on the three sites down there.

MR. GRIFFON: Okay.

MR. HINNEFELD: 'Cause they held records -- all the records for construction subcontractors for certain periods of time --

MR. GRIFFON: Right.

MR. HINNEFELD: -- were kept at Y-12 even though they worked in all three of the Oak Ridge plants, so -- and that could be the case.

MR. GRIFFON: That could be -- that could explain it, yeah.

DR. BEHLING: Okay, case -- case 74, again, this individual was ORNL and Y-12.

MS. BEHLING: And this case was an overestimate of the dose, conducted as an overestimate.

MR. GRIFFON: This was also ORNL and Y-12?

DR. BEHLING: Yes. Low POC, that's why the overestimate. First finding, 74.1, inappropriate assignment of missed dose uncertainty, and I think --

MS. BEHLING: I think this, again, is a --

DR. BEHLING: Yeah.

MS. BEHLING: -- misinterpretation of the OTIB-8 which was previously discussed and has been corrected at this point.

DR. BEHLING: Yes, so we can skip that. The

second one is the misuse of surrogate organ for calculating occupational medical dose. Again, that's the same thing as we've gone through before. In this case the lung was used instead of the colon, which was the cancer of interest. And then there's no excuse for looking up a table and then looking at the wrong tissue.

74.3, inappropriate selection of the hypothetical internal dose. We came to a conclusion that perhaps -- I don't know, maybe there's justification -- that the 28 radionuclide dose model's inappropriate for a place that doesn't have reactors.

MR. HINNEFELD: Well, if they worked at ORNL -- I mean ORNL has reactors and fission products. If they were only at Y-12 --

DR. BEHLING: Y-12, yeah, this is --

MR. HINNEFELD: If they were only at Y-12 that'd be (unintelligible). If they worked both places, we would use the 28-nuclide --

MR. GRIFFON: Kathy, is this both or -- or just --

MS. BEHLING: This is both. This is both, so I guess it was appropriate to use the 28.

MR. GRIFFON: Kathy sent me that spreadsheet, that's why -- on her spreadsheet it just said both, so...

MS. MUNN: So we're not --

MR. GRIFFON: Again, there's no X-10 records, though, I don't think.

DR. BEHLING: Let me see -- well, one of them had no -- no records for X-10. I don't know which one it was -- the previous one --

MR. GRIFFON: Well, neither one of these last two have.

MR. HINNEFELD: Well, that we see here. Do you have the whole --

MR. GRIFFON: Yeah.

MR. HINNEFELD: -- submittal file?

MR. GRIFFON: Yeah.

MR. HINNEFELD: Okay.

MR. GRIFFON: Yeah.

MS. BEHLING: I don't know if it's this one.

DR. BEHLING: And unless I read the whole report, I'm not in a position to make a firm statement. Let me go --

MR. GRIFFON: Yeah, I -- I think this person's work history was in the '80 -- late '80s to '90s, so -- and it was an overestimating approach, so I don't know that there's anything there. It just surprises me that there's both -- both times they list X-12 and Y-12 and I haven't seen any X-10 records at all. I don't know, maybe that's common.

MS. MUNN: Well, yeah, I think it was fairly com-- based on what I believe I've heard Bob Presley

say, I think that was common, that people moved from one to the other but the records were kept by one --

MR. GRIFFON: Stayed in one -- one area, yeah.

MS. MUNN: Yeah.

MS. BEHLING: You know, actually when I go back to the summary statement here -- 'cause I don't have --

DR. BEHLING: Yeah --

MS. BEHLING: -- all the records in front of me --

DR. BEHLING: -- I believe he was at both places.

MS. BEHLING: Yeah, I'm not sure that this individual also worked at X-10 or if this was just Y-12.

DR. BEHLING: Yeah, I think this -- Kathy, I think this guy was confined to Y-12.

MS. BEHLING: Yes, I do, too.

MR. HINNEFELD: That's the -- that's the way the write-up reads. The tab reads both.

MR. GRIFFON: So the last case then was both, though. Right?

DR. BEHLING: I'm trying to even verify that.

MS. MUNN: That's what they said.

MR. GRIFFON: I just want to be clear this --

MS. BEHLING: Yeah, the last case -- I also -- I'm looking at whole different sources here, but I also have on the last case that that's just Y-

12.

DR. BEHLING: Yeah, I -- I have not found anything, Kathy --

MR. GRIFFON: So maybe it's only 75 --

DR. BEHLING: -- that would suggest that these -- either one of these cases worked at both.

MS. BEHLING: Yeah, 75 is X-10. That's the next case.

MR. GRIFFON: Oh, okay.

DR. BEHLING: Yeah, I think that's the one.

MR. GRIFFON: I thi-- okay, I think now I'm understanding your notation.

DR. BEHLING: Yeah, it's just --

MR. GRIFFON: Kathy, you --

DR. BEHLING: -- Y-12.

MR. GRIFFON: Kathy, you were writing ORNL, parentheses, Y-12.

MS. BEHLING: Yes.

MR. GRIFFON: And ORNL is always synonymous with X-10, and everybody -- down there that thinks about it, anyway, so --

MS. BEHLING: Yes, I -- that was --

MR. GRIFFON: -- I was --

MS. BEHLING: -- inappropriate on my -- on what I just sent you. I apologize.

MR. GRIFFON: No, I understand now what...

MR. HINNEFELD: Okay. I see.

DR. BEHLING: So in essence, the 28-radionuclide

model would have been inappropriate for Y-12.

MR. HINNEFELD: Would have been, yeah, and it was -- you're right. It's one of those -- no need to overestimate more than you have to.

MS. MUNN: Yeah.

DR. BEHLING: Okay, are we done with this one? We can go to case 75? And I think this is the X-10. I think this is where we have neutron records.

MS. BEHLING: No, it's not. This -- this case was compensated and I don't think there were any findings on this case.

DR. BEHLING: Okay. Okay, I hadn't looked at it yet. Okay, yeah, this was a underestimation of dose and compensated. So there's a partial dose reconstruction that's based totally on external exposure that's recorded. So are there any findings at all on this, Kathy?

MS. BEHLING: No, there's no findings.

DR. BEHLING: No findings. That's an easy one.

MS. MUNN: You just wanted to get through.

MR. GRIFFON: If anybody's interested, there are X-10 records for this person, so --

MS. MUNN: Oh, good.

MS. BEHLING: You know, I think we're referring to a case in the third set where there might have been an X-10 and Y-12 situation and there were no X-10 records. I may be wrong, but if my

recollection serves me correctly, I believe that was during the third set of cases. I don't know. We'll continue on.

DR. BEHLING: Okay. So we're making progress. We're on case 76, and this is Fernald. Now this was an overestimation of dose, POC modestly high -- not modestly high, somewhere in the middle between zero and 50. Okay, first finding, failed to properly account for all missed photon doses.

MS. BEHLING: Yeah, this is a bit complex. I'm reading through this also.

MR. HINNEFELD: Since you guys just got this, you might just, you know, read the response and see later on --

DR. BEHLING: Yeah.

MR. HINNEFELD: -- if you agree with it. It has to do with a change in LOD, not a change in monitoring frequency.

MR. GRIFFON: Right.

DR. BEHLING: Let's see --

MS. BEHLING: I'm sorry, Stu, I couldn't hear you.

MR. HINNEFELD: No one else can either.

MS. MUNN: He said it has to do with a change in LOD.

MR. HINNEFELD: Yeah -- yeah, not change in monitoring frequency. That's the difference.

MS. BEHLING: Oh, okay.

MR. HINNEFELD: So just read our write-up and see if you agree with it. I mean later on, don't --

MR. GRIFFON: Yeah, might -- might want to re-evaluate that later, Kathy.

MS. BEHLING: Okay, I will do that. I'll mark it on here.

DR. BEHLING: Okay, 76.2, failure to assign unmonitored neutron for all years employed. Claim is that he should have been monitored -- or should have been assigned unmonitored neutron doses for all 33 years of employment.

MS. MUNN: It says OCAS is looking at that.

MR. HINNEFELD: We're re-evaluating.

DR. BEHLING: Okay. Okay, so you want to leave that as an open issue?

MR. HINNEFELD: Well, we owe a response on that because I believe it's a correct comment that the -- there is insufficient evidence in the person's file to exclude the possibility of neutron exposure. Clearly there was neutron monitoring, and based on what we've written in the site profile, it looked to me like it -- neutron should have been in there. So it's -- I believe (unintelligible).

DR. BEHLING: Finding 76.3, I guess we're using again the statement that the methodology that involves TIB-2 may be inappropriate when in fact the person has extensive monitoring data that

could have been used or should have been used, especially in the case -- for this individual, he was monitored for uranium no fewer than 157 times, which 156 out of 157 had positive samples in terms of -- defined in terms of micrograms per liter, so -- and -- and I'm just reading quickly here through the bullets, the highest urine values occurred in '57 through '61 with maximum values of 60 micrograms per liter and an average value I calculate at 35 micrograms per liter. I think what we concluded is that this person defaulted to a hypothetical intake because he was maybe not sure how to use IMBA, I don't know.

MS. MUNN: I think your -- your response from NIOSH may address your concerns there, Hans.

DR. BEHLING: Yeah, let me -- let me -- 76.3 -- yeah. Yeah, I think what -- what concerned me here was a person just blindly said let's just do a hypothetical and -- and, you know, maybe was done --

MR. MAHER: I don't think that's a -- you can conclude that.

DR. BEHLING: Well, you know, it's -- it's --

MR. MAHER: I would guess they compared the two and found the hypothetical more claimant favorable.

DR. BEHLING: Well, usually we go behind the scenes and see what was done, and -- and if it

wasn't done, then -- you know, if -- usually there's a paper trail that you can find and say okay, what's -- what's the actual data used to assess it. And if so, what did it show and was the assumption of a hypothetical intake in fact higher and therefore defaulted to it. I don't think we found any evidence to suggest that the real data was ever used.

MR. HINNEFELD: Yeah, I think -- I think we've actually done that subsequently.

MR. GRIFFON: Subsequently.

MR. HINNEFELD: Yeah.

MR. GRIFFON: Subsequently, right, yeah.

MR. HINNEFELD: I think we have.

MR. GRIFFON: But if it was done prior, it should have just been provided.

MR. HINNEFELD: Yeah.

DR. BEHLING: I mean and this is what's triggered --

MR. HINNEFELD: Yeah.

DR. BEHLING: I mean if I would have seen some -- some evidence that this was done -- I'm not debating that the hypothetical still (unintelligible).

MR. HINNEFELD: Right.

DR. BEHLING: The question is are people doing this more or less routinely, saying well, that takes an awful lot of work, why bother; we'll

just go with a hypothetical -- on the blind assumption that it's going to yield a higher dose when that necessary doesn't have to be the case.

MR. HINNEFELD: Yeah.

MR. SHARFI: This I believe is back when -- when -- we had taken OTIB-2 and, based on the uranium intakes, figured out what kind of bioassay results would be required to cause a dose greater than what OTIB-2 assigned. And if all the bioassay data was below that point, then we -- it was already determined previously that, you know, if you required at least a 200 microgram per liter result and all -- his highest at 60, at that point we still know OTIB-2, without even having to assess the bioassay because we've done some general assessments to see what kind of a -- what kind of doses would be associated with OTIB-2 over a general bioassay level.

DR. BEHLING: I mean if there were screening methods that were available that says okay --

UNIDENTIFIED: Well, that's what he was saying.

MR. SHARFI: (Unintelligible) on this was is they didn't provide the --

DR. BEHLING: There was no --

MR. SHARFI: -- (unintelligible) assessment because they had already done the prescreening stuff to determine that these results are below a level that OTIB-2 would cause an overestimate.

DR. BEHLING: You know, it would be really nice for us if -- if a -- if the real data were run that showed that the doses would have resulted in something less than hypothetical, we'll default to hypothetical. And -- and like I said, I would have no doubt, but I -- my concern is that somebody might do this at the wrong time and place without --

MR. MAHER: Are you sure the DR doesn't say that, 'cause they often do say things --

DR. BEHLING: No, I don't think there was any evidence --

MR. SHARFI: At this -- this point they'd done the prescreening, then they would have just looked at the value of the results, not assessed them, 'cause if you would have assessed them, then at that point you might as well just use -- you've assessed --

MS. BEHLING: Uh-huh.

MR. SHARFI: -- we've already done the work.

MR. GRIFFON: But is this -- is this prescreening -- it's not necessarily proceduralized. It's probably in these meetings that you were talking about before -- right? -- that --

MR. SHARFI: I would assume from an efficiency point of view that in trying to apply the OTIB in the most efficient method they looked at those intakes -- this is a while back, I don't know if

they still use this process (unintelligible) a lot of the quick cases, but they -- they would have looked at the intakes that OTIB-2 assigns, and if the cancer was applicable, you would expect that OTIB-2 would result in -- the intakes from that would result in bioassays at a certain level. If all your bioassays were below that point, then OTIB-2 would have to assign --

MR. MAHER: I think Mark was asking is that document anywhere.

MR. GRIFFON: Exactly, that's what I --

MR. MAHER: -- and I don't know.

DR. BEHLING: I'm (unintelligible) what -- what --

UNIDENTIFIED: -- documentation like that be -- there's an appendix to OTIB-18 that's similar, but I don't know if we ever came up with an attachment to OTIB-2 to show that.

DR. BEHLING: I didn't --

MS. BEHLING: I've never seen any screening information. The other thing that's sort of interesting in this particular case -- I know in previous cases we've -- the previous case, we -- we made a finding for the fact that they used 28 radionuclides as opposed to the 12. In this particular case they did only use the 12 radionuclides, and I have to admit, I don't -- I didn't sit down and put all the bioassay data in

for this particular case because it is somewhat time-consuming, so it did -- it did beg the question.

DR. BEHLING: Yeah, and I'll read you the words and in fact it's written in our dose reconstruction review that -- and I'll read what I've stated here. On the basis of numerous bioassay data which consistently showed high levels of uranium and contaminant radionuclides, the use of the hypothetical dose model is inappropriate and the blind assumption that the hypothetical internal dose, quote, greatly exceeds any potential intake is a statement without validation. And -- and if -- if in fact there is such a guidance document that are used, you should have mentioned it and that statement -- and -- and our finding --

MR. MAHER: It may not be in the guidance document. It may be a table that was given out at our meeting.

MR. SHARFI: That was given out, yeah, so I don't -- I don't think there was a blind assumption that the hypothetical intake is --

MR. GRIFFON: Is this --

MR. SHARFI: I think they've done the pre -- the prescreening and then they came up with tables based on certain scenarios saying that if you fall in this scenario, then this -- we know that

this a -- an overestimate, and then you don't have to every time rerun --

MR. MAHER: I could guarantee this is not done blindly.

DR. MAURO: This is John Mauro. I would suggest that that seems to be important as a procedure or an analysis that would prop up a lot of these decisions, you know, if that was a document that could be available for review.

MR. SHARFI: I don't think it's (unintelligible) documents.

MR. MAHER: Well, but it may be in a memo or something and --

MR. SHARFI: Sure.

MR. MAHER: -- we'll talk to Liz and see if you can get it.

DR. BEHLING: Yeah. I mean I -- I would have liked to have seen -- for instance, the hypothetical dose model greatly exceeds any -- any measured intake as -- as defined by the records. I would have said -- think they must have looked at something here to come to that conclusion. But the way it says greatly exceeds any potential intake, were you looking at the real numbers or not, and --

MR. MAHER: Well, they have done that I guarantee you that.

MS. WINSLOW: This is Susan Winslow.

MR. MAHER: Too dangerous.

MS. WINSLOW: That document that you're referring to was something that was put into a table form, but not in a formal procedure, and it was passed out in DR meetings back in 2004.

MR. SHARFI: So it never became a controlled document.

MS. WINSLOW: No, it never became a controlled document, correct. And we are not using that method any longer. We're -- we are instead analyzing the bioassay data in an overestimated fashion if we're going to compare --

MR. GRIFFON: When you have the data. Right?

MS. WINSLOW: -- to TIB-2.

MR. MAHER: Which is what we should be doing I think in all of the cases now. I think (unintelligible) change.

DR. WADE: So the finding is valid; the answer is valid.

MR. GRIFFON: Can you provide that reference, or is that not -- can that be distributed to the Board?

MR. HINNEFELD: The table? I don't know there's any reason we wouldn't distribute it.

MR. GRIFFON: Yeah.

MR. HINNEFELD: Got to just find it.

DR. BEHLING: It would -- it would help us, too --

MR. GRIFFON: Yeah.

DR. BEHLING: -- in -- in doing the audits --

MR. GRIFFON: We can close it out, yeah.

DR. BEHLING: -- if we can make these comments --

MR. MAHER: Can you scan it --

MS. WINSLOW: Yes, I can get it --

MR. MAHER: -- Susan?

MS. WINSLOW: -- scanned and send --

MR. MAHER: And send it to me e-mail?

MS. WINSLOW: Yes.

MR. GRIFFON: I mean don't -- it doesn't have to be real time or anything, but --

MR. MAHER: Thank you.

MS. WINSLOW: Uh-huh.

MR. GRIFFON: And would -- would that have been referenced in the DR guidelines that come up like -- like this is Fernald. Right? Fernald DR guidelines, would it --

MR. SHARFI: In the TBD?

MR. GRIFFON: -- indicate that --

MR. SHARFI: At this -- the time of this DR --

MR. GRIFFON: -- how you may screen like this -- yeah.

MR. SHARFI: At this time of this DR, I don't -- I think this was of when we were going complex-wide, looking at efficiency methods for obvious comps and obvious non-comps, but I don't think we started full-blown into Fernald doing the -- the

TBD till after this, so the more -- best estimate claims would have came after this when we had the TBD, where these were obvious comps or obvious non-comps that you could do either based on the available data --

MR. GRIFFON: So this might have preceded any DR guidelines --

MR. SHARFI: Correct.

MR. GRIFFON: -- that you would have had. Okay. All right.

DR. BEHLING: I think there's one more issue that wasn't raised in behalf of this -- this finding is that the EE worked plants 4, 5, 6 and 7, and those locations may have exposed him to recycled uranium, which may have contained plutonium, neptunium, technetium-99, and so the -- my question was if those particular radionuclides might have been included in addition to the uranium bioassay measurements, to what extent could that have potentially increased the real dose.

MR. SHARFI: The recycled component is actually small compared to the uranium dose. They're in parts -- I believe the default is 1,000 parts per million. The recycled component looked at the actual numbers. But I mean usually the uranium dose for any of the organs --

DR. BEHLING: Dominates.

MR. SHARFI: -- this sizeable over the -- I mean we're looking at orders of magnitude over the recycled uranium component. I mean they do provide a -- a -- obviously a measurable amount of dose, but comparably to the uranium it's -- it's very small.

MR. GRIFFON: This might get into Fernald site profile stuff --

MR. SHARFI: Correct.

MR. GRIFFON: -- but doesn't that vary by location -- work location?

MR. SHARFI: Definitely.

MR. GRIFFON: Yeah.

MR. HINNEFELD: The assessment that was done, you know, afterwards where we actually got the IMBA run on this specific data included the recycled components in the dose number, and that dose number is less than the TIB --

MR. GRIFFON: Can you provide that, as well, Stu --

MR. HINNEFELD: Yeah.

MR. GRIFFON: -- you said you'd -- yeah.

MR. HINNEFELD: Yeah, I'm going to provide --

MR. GRIFFON: Plus that reworked one you're referencing.

MR. HINNEFELD: We're going to provide that and we're going to provide this TIB-2 screening.

MS. BEHLING: I didn't hear everything that Mark

stated, however this, in my mind, brings up another issue, that as we're sitting here auditing these dose reconstructions -- and not just in this particular case or internal dose -- I have to assume that the dose reconstructors do have some guidance documents out there as I believe I heard Mark say something about DR guidance or some user's guides out there. And it would be something -- I realize some of these things are not published, but if they could be shared with us or somehow made part of some of these files at times, it certainly would answer a lot of questions for us and possibly reduce some of our findings if we had an understanding of what was going on behind the scenes at times. I realize that's outside the -- the scope of this particular issue, but the fact that there was some screening method possibly used here that we were not aware of, it's these types of things and these types of documents or user's guides that might be out there --

MR. GRIFFON: I think that --

MS. BEHLING: -- that aren't published, if we could also have access to that information it would be very helpful for us.

MR. GRIFFON: I -- Kathy, I'd be -- I agree with you in general. I think I'll -- I'll work with Stu on that down -- as we go forward, but I think

in this particular case I don't know that they could have anticipated to include this screening table, you know, that -- that -- but the DR --

MS. BEHLING: I understand.

MR. GRIFFON: -- if there's sites that we're covering in the sets of cases that --

MR. SHARFI: Those documents are in flux because we update them --

MR. GRIFFON: Right.

MR. SHARFI: -- I mean they're not controlled so we don't have historical documents at --

MR. GRIFFON: Oh, you don't have --

MR. SHARFI: -- at the time the DR --

MR. GRIFFON: -- all revs of them or something?

MR. SHARFI: No, 'cause --

MR. GRIFFON: Oh --

MR. SHARFI: -- they're flux documents.

MR. GRIFFON: -- yeah, yeah.

MR. SHARFI: I mean you -- obviously you don't want to --

MR. GRIFFON: Right.

MR. SHARFI: -- a DR going to an old guidance document --

MR. GRIFFON: Yeah, that'd make it difficult --

MR. SHARFI: -- if the information has changed, so those are kept as flux documents, as up-to-date as possible.

MR. MAHER: And the other thing you missed, too,

which I don't think would -- I mean would complete your inf-- the information we need to get there is that each of our DRs go through three to four days of training. We have updates training, refresher training and we have weekly meetings. And you're all missing that information and sometimes some -- some of this information that's exactly what we're talking about is passed out at that meeting, and Susan's -- was one --

MS. BEHLING: Yeah, I understand. Thank you.

DR. BEHLING: Okay, running -- getting things moving here again, case 77 had no finding, it was a compensated claim, so we can go directly to claim 78. Claim 78 is the Mound facility.

MS. BEHLING: And I believe, again, the first finding is -- associated with 78.1 is the reoccurring theme of the dose reconstructor misinterpreting OTIB-8.

DR. BEHLING: Yeah, this, again, is a maximized dose, by the way, so we're looking at an inflated assignment of doses.

Where's the next one -- finding 78.2, incorrect selection of organ for assessing occupational medical --

MS. BEHLING: Once again, this is --

DR. BEHLING: Yeah, yeah.

MS. BEHLING: -- the selection of a very

claimant-favorable organ as opposed to the actual organ of interest.

DR. BEHLING: Yeah.

MS. BEHLING: This is an overestimation of the dose.

DR. BEHLING: They -- the person had bladder cancer and they chose something that was obviously at a much higher risk for exposure.

MR. GRIFFON: And no action? It's resolved --

MR. HINNEFELD: It's previously addressed, yeah.

MS. BEHLING: And if we can move on finding 78.3, once again this reoccurring theme of selecting an inappropriate organ as opposed to the correct organ of interest for running a hypothetical internal dose model.

MS. MUNN: No action again. We've done that. Right?

DR. BEHLING: Yeah, been there, done that.

MR. GRIFFON: This -- this person was in the '80s to '90s at -- at Mound? I'm just skimming through what -- no bioassay or any --

DR. BEHLING: No, there's nothing --

MR. GRIFFON: -- records? Is that the deal?

DR. BEHLING: -- nothing really to suggest any significant exposures.

DR. MAURO: This is John Mauro, I got a quick question. When -- in the work we're doing now on, you know, the newest cases, I assume when we

do come across these same old-same olds we are to note them down just so that we're keeping track --

MR. GRIFFON: Yeah.

DR. MAURO: -- right, okay. So I just wanted to --

MR. GRIFFON: And we'll -- we'll -- we'll try to --

DR. MAURO: make sure of that -- that we put them down and --

MR. GRIFFON: -- expeditiously go through them --

DR. MAURO: -- as just a way of keeping score, so to speak.

MR. GRIFFON: Yep.

DR. BEHLING: Yeah, we're not sure whether we should default to a new terminology that says an observation has been resolved as opposed to a finding that is still subject for -- for resolution. There's so many of these things that are repeat problems that have long ago been -- been taken care of.

MS. MUNN: It would certainly be helpful and, from my point of view, not in any way diminish the thoroughness of the review to do just exactly that, Hans, to identify we -- we understand what happened at the time. It really is not a finding now, it's an observation that has been cleared. If we could do that, I think it would really be

helpful for everyone concerned.

DR. BEHLING: And chances are they would not be on the matrix anymore. As an observation that has been resolved in a previous assessment, I would assume that we don't want to necessary track this on a matrix, unless you have a different opinion on that, Mark.

MR. GRIFFON: I kind of want to -- I don't know, I have -- I want to think about that, but I agree that we shouldn't be having -- if we can indicate somehow so we don't have to have a discussion again about it, that certainly would be helpful. I think the other thing we can do is try to -- in our case selection try to avoid some of the cases that were done --

DR. BEHLING: Yeah, it's based on time --

MR. GRIFFON: -- in time periods --

DR. BEHLING: -- time periods --

MR. GRIFFON: -- where some of these generic approaches -- you know, then we'll get out of doing those cases that --

DR. BEHLING: I think --

MR. GRIFFON: -- have the same findings.

MS. BEHLING: What I have done in this last set of cases for a situation like this, I have identified it as a finding. It has gone into the matrix, but in our dose reconstruction audit I've put an asterisk alongside of that finding, put a

footnote indicating that this is an issue, although it's a finding and it was appropriate -- or it was associated with a certain time frame, it has been resolved. So it was my feeling that we might be able to go right into the matrix and fill out quite a bit of the matrix -- and it would still be captured, but we can do it any way. That was just another -- that's what I have -- I've done in this last set of cases, just so that we -- we still captured it in the matrix, but we could easily fill out that matrix because we've -- it's already been an issue that's -- that was resolved in previous cases.

MR. GRIFFON: Yeah, I think that's fine.

DR. WADE: I would make a point -- this is Lew Wade -- that, you know, when we meet in December, the subcommittee and then the Board, there will be a selection of the seventh round of cases. So you might want to start to give some thought to that process and then let Stu know what your thoughts are so he can have the right materials present.

DR. BEHLING: And -- and I guess the -- the selection process could focus on a time frame of adjudicating claims that exclude the issues that have already been resolved.

MR. HINNEFELD: We could --

MR. GRIFFON: Or at least consider that as part

of our parameters, when was the DR completed, you know.

MR. HINNEFELD: We could provide the pool and include the date -- and I would recommend the date that the draft dose reconstruction was approved.

MR. GRIFFON: Right.

MR. HINNEFELD: There are a number of dates that occur after that.

MR. GRIFFON: I think that's good, yeah.

MR. HINNEFELD: I don't know if we would include the exact date, but we might group them as a -- because the exact date is like -- it's kind of identifying information.

MR. GRIFFON: Oh, yeah, yeah.

MR. HINNEFELD: So we could group them by approved between June and -- and December of '06, we could group them in three-month intervals and things like that, and we should -- at the end we should discuss what kind of selection pool -- I could -- or I could -- the Board's not here. I could send, you know, a suggestion --

MR. GRIFFON: Yeah.

MR. HINNEFELD: -- to the Board about -- how about we do a selection pool like this to select the seventh group, 'cause we could do something like that that will allow the selection pool to choose newer cases and avoid some of the ones --

you know, keeping sampling from the entire population.

MR. GRIFFON: Right, right.

MS. MUNN: And it wouldn't seem that -- that one would even have to break down those time periods so carefully. It --

MR. HINNEFELD: Right, maybe a six-month period.

MS. MUNN: -- seems to me that prior to the rewriting of TIB-8, you know, prior to redo of TIB-2, and that --

MR. HINNEFELD: Yeah.

MR. GRIFFON: Think about how tight it has to be or how wide --

MR. HINNEFELD: Yeah, and we'll -- we'll come up with some --

MR. GRIFFON: -- know best on that --

MS. MUNN: I'm sure they would.

MR. GRIFFON: Yeah.

MR. HINNEFELD: -- some corrective actions that have been done because of DR reviews and put those dates --

MR. GRIFFON: Yeah.

MR. HINNEFELD: -- available -- in there as well --

MR. GRIFFON: Yeah.

MR. HINNEFELD: -- to kind of inform the selection a little bit.

DR. WADE: Well, I would suggest there be some

discussion between Mark as the chair of the subcommittee --

MR. HINNEFELD: And me?

DR. WADE: -- and you, just to make sure that you have the right materials when the subcommittee and the Board meet.

MR. HINNEFELD: I'll call you when I can talk.

MS. BEHLING: I have started to put in, too -- the cases that I'm doing now, in our summary up front, I've included the date that the dose reconstruction was completed, just so that it gives us some understanding. That was a comment made by the Board -- one or two of the Board members during our conference calls, also.

DR. BEHLING: Are we ready to go to our second to last? Los Alamos National Laboratory --

MR. GRIFFON: I was just -- I was following up -- I don't know if someone answered me, but did this person -- the Mound person -- have bioassay records, no bioassay records? I saw a couple of uranium samples.

DR. BEHLING: Hold on.

MS. BEHLING: I'll have to look.

(Pause)

I believe there were bioassay records, but activities were less than levels of detection. I'm reading that in our section three of this case.

DR. BEHLING: Yeah, I'm -- I'm looking at this...

MR. GIBSON: Could we -- could I get a time period on this individual's employment, or would that be --

DR. BEHLING: Yeah, I can -- I can give you the years without the exact date.

MR. MAHER: '81 to '92.

DR. BEHLING: '81 to '92, yeah.

MR. GIBSON: Okay, '81 to '92, have we also looked into the Price Anderson findings that -- that fined Mound for basically doubling the background of their -- their lab on the -- the -- they got a background that they deduct from the bioassay sample, and it was built into the Canberra, and the lab manager went in and added that background in again so these records could be underestimated.

DR. BEHLING: In this I think --

MR. GRIFFON: So far everything I'm seeing here --

MS. BEHLING: The bioassays.

MR. GRIFFON: -- is zeroes.

MS. BEHLING: That -- that is not something that Hans and I would have looked into, but if we are looking at the Mound site profile, that's certainly something that should be looked into on -- in the Task I level.

DR. BEHLING: Yeah, and if we were aware of it,

Mike, we would probably look at it. But there doesn't seem to be any indication that this person was even monitored, so that inflating the background level --

MR. GRIFFON: No, they had a couple of uranium samples, that's found on --

MS. BEHLING: Yeah, he was -- he was monitored.

MR. GRIFFON: Yeah, there was some monitoring, but --

MS. BEHLING: Yes.

MR. GRIFFON: -- very -- very minimal and like -- I agree with Kathy, all -- everything I saw so far is below -- you know, zeroes below detectable limits.

MR. GIBSON: Was what -- below what, Mark?

MR. GRIFFON: Below detectable limits, and that's just scanning through here quickly, so --

MR. GIBSON: Maybe that's something we should do in the site profile, but there were -- the site was shut down for inappropriate monitoring of workers by Price Anderson and DOE on at least two, maybe three, occasions during those years.

MS. BEHLING: Oh, it was during the years of this person's employment?

MR. GIBSON: Yes. Yes.

MS. BEHLING: Okay.

MR. GIBSON: All radiological work was shut down.

MR. GRIFFON: Does anyone know the work history

for this individual, what type of work?

DR. BEHLING: I'll go to the front -- REDACTED was the official title.

MR. HINNEFELD: Mike, we can sort out what we know about that. I don't know today what we've done about this bioassay issue at Mound, but I can find out. We have a number of people on the project who pretty much know what's happened up there in the -- in the past, so I think we can sort it out.

MR. GIBSON: Well, I'm recused as a Board member, but I could certainly be an expert witness and I have -- I have the documentation that --

MR. HINNEFELD: You could certainly --

MR. GIBSON: -- (unintelligible) a lot of things about that.

MR. HINNEFELD: You can certainly share what you know, if it's conflicted or not. So we'll -- if we don't learn -- we'll get ahold of you --

MR. GRIFFON: Cert-- certainly there --

MR. HINNEFELD: -- or talk to you when we know what we have found out or what we know --

MR. GRIFFON: I mean --

MR. HINNEFELD: -- we'll talk to you and see if that matches.

MR. GRIFFON: It seems --

DR. WADE: Just for the record, on the site profile issue a Board member who's conflicted can

sit at the table and contribute to the discussion. They just can't make a motion or vote. So you're more than welcome to bring that information to the table, Mike, at -- when we discuss these things.

MR. GIBSON: Okay.

MR. GRIFFON: So --

DR. MAURO: This is John Mauro. From a practical matter in this particular case that we're talking about, what I hear is that if you look at his records you see bioassay readings that are less than the detectable level. Is the question on the table that they took a urine sample, they measured it and did not see anything above the detectable level? Or is the question that they took the urine sample, took a measurement, subtracted background from it and then reported in his record below the limits of detection? I don't know if you see my question. In other words, so what -- what I'm hearing, from a practical matter, is can we believe the record that we're looking at actually means what we think it means?

MR. GIBSON: The answer -- my answer to that, in my opinion, is no.

DR. MAURO: Okay.

MR. GIBSON: What I'm saying is, when they put the new system in, Canberra software programmed

in the background level for the Mound area, and then the bioassay manager fiddled around with the software and put the background level for the Mound area in again, so it in effect doubled --

DR. MAURO: Uh-huh.

MR. GIBSON: -- the -- it doubled the MDA.

DR. MAURO: I think -- I think we -- this is an important question because that would mean we -- we don't really understand the records and what they mean. We may be misunderstanding it, and -- and you're correct, Mike, if that's the case --

MR. GRIFFON: I think that's --

DR. MAURO: -- this person may have had above a detectable level but it's not being reported that way.

MR. GIBSON: Correct.

MR. GRIFFON: I think that's definitely a site profile question and follow-up here. I'm not sure --

DR. MAURO: Yeah.

MR. GRIFFON: -- it's going to affect this particular case. It looks like --

MR. HINNEFELD: This was --

MR. GRIFFON: -- a pretty conservative estimate --

MR. HINNEFELD: This was a TIB-2 case.

MR. GRIFFON: -- but --

MS. BEHLING: Right.

MR. GRIFFON: -- the question I had, though, was stepping back a little further than -- than the fact that he has two uranium analyses that I can find and they're --

MR. HINNEFELD: Uh-huh.

MR. GRIFFON: -- they're zeroes. The question I have was there's -- at Mound there's -- there has been issues or questions about not monitored but should have been monitored, so you know, depending on the job and workplace areas, if we can justify this 28-radionuclide approach, I think this is probably -- you know, we can close it out that way. But that's why I was asking about where -- you know, what this person did. It is in the '80s through '90s, REDACTED, that could put him in a lot of areas. I mean I don't know -- you know.

MR. GIBSON: Yeah, you're right.

MR. GRIFFON: So --

MR. GIBSON: REDACTED were all -- were assigned to different projects and different radiological buildings, you're exactly right, Mark. But this is probably something that'd be better to -- to look into with the --

MR. GRIFFON: And when you --

MR. GIBSON: -- site profile.

MR. GRIFFON: You know, I'm not necessarily sure -- depending on the organ, I think -- I don't

know the organ in this case. I'm not necessarily sure the 28-radionuclide approach will be bounding for every case at Mound. You've got some pretty interesting isotopes at Mound.

MR. HINNEFELD: It's a bladder case.

DR. BEHLING: It's a bladder case.

MR. GRIFFON: Oh, bladder case? So -- yeah, probably is, right.

Anyway, that was -- that was my question on that case and some of this may be deferred to site profile discussions, I think, but...

Anything else to close out on that item before we let -- Hans is just about ready to wrap us up here.

DR. BEHLING: Well, we've got two more to go.

MR. GRIFFON: Two more to go, yeah.

DR. BEHLING: And we did something I never thought we would and that's complete this review. If we go to case 79, this is Los Alamos claim, and it's an overestimation --

MS. BEHLING: Overestimate.

DR. BEHLING: -- overestimation and the POC value is just about midway between zero and 50. Let's just quickly go through the first finding, 79.--

MS. BEHLING: 79.1 and 79.2 --

DR. BEHLING: Yeah.

MS. BEHLING: -- once again, these are associated with the OTIB-- either 8 or 10 error, and so I

think we can move -- move on beyond those.

DR. BEHLING: Yeah, I'm not sure that it -- that was really the --

MS. BEHLING: Oh, okay, I'm sorry.

DR. BEHLING: This one were -- was a case where instead of LOD over 2 they used LOD, and --

MS. BEHLING: Okay.

DR. BEHLING: -- that being the case, you're talking about the 95th percentile value, and there's no need to include uncertainty when you deal with LOD as the 95th percentile value for missed dose and so therefore the inclusion of uncertainty is unnecessary or inappropriate, so that's finding number one.

The next three are -- no, 79.3 is inappropriate assignment of missed neutron dose uncertainty, I guess the same thing again here. For missed neutron dose they again used the 95th percentile value that does not require therefore the use of uncertainty.

And the following finding, 79.4, 5 and 6, they are all in concert with each other. One involves missed photon, the other one missed electron and the other one missed neutron dose. And what that involves -- I'll read it to you. The records provided by the DOE only include evidence that the EE was monitored in '69, '70 and '71. On the other hand, a companion report to the records

entitled "LANL Bioassay Repository Report" warns that the available records may not be complete. And given the fact that the EE worked at that facility for more than 14 years, which included the early years of '49 through '55, the absence of additional external monitoring records may include the fact that they were records that were lost, the failure to monitor record when he should have been monitored, and -- and possibly the third option, which would then be correct, the EE's assignment to a non-radiological work location. In the absence of information as to which one of those three options may apply, we felt that only assignment of missed dose for three years might be inappropriate given the acknowledgement that records were not necessary complete.

MR. HINNEFELD: In this instance, the -- the warning that records may not be complete is in the bioassay data repository, and it relates really only to the bioassay data repository. That database has been built within the past two years by Los Alamos and we've essentially assisted them with -- you know, NIOSH and ORAU team have provided experts that -- you know, that we paid to assist with the computerization of those LANL old records. And so I'm not eminently familiar with the work, but for whatever reason

they felt obliged to warn that they may not have captured all the bioassay ever taken at Los Alamos when they built this repository. But that's for bioassay data.

Now that does not -- that admonition should not be interpreted to the external dosimetry data, which was kept separately all those years and didn't have to be built into a repository for our program. So to the extent that -- you know, so I don't think that admonition in that bioassay repository file should be extended to the external dosimetry 'cause it wasn't intended to be when it was generated.

DR. BEHLING: I guess --

MR. GRIFFON: Your response here says now that this resposit-- now that this is available, or referring to the repository, it should not be considered evidence -- oh, it should not be considered evidence that the exter-- okay. You're consistent.

MR. HINNEFELD: Okay.

MR. GRIFFON: It's getting late.

MR. HINNEFELD: Okay.

DR. BEHLING: Was there any reason to assume that he was not monitored because he didn't need to be monitored for the early years?

MR. HINNEFELD: Well, I can -- we can go back and look and see what -- have -- what information we

have about his work location and -- and monitoring practice at Los Alamos, but our -- our un-- my understanding today is that the Los Alamos external monitoring, at least for certain periods of time, was relatively, you know, comprehensive; that people that -- in the technical areas and needed to be monitored were monitored externally and -- and the -- but not everyone at Los Alamos was monitored. And so there -- it could certainly be the case that a person moved from a monitored job to an unmonitored job.

DR. BEHLING: Yeah, the reason I say it -- because I'm going back to summary background information on each one that identifies the time period in which the claimant claims to have served in the capacity of a detonator operator inspector and involves years prior to -- I won't go -- defining the years obviously here for privacy reasons, but it clearly would suggest that if the person was doing that job prior to '71 and monitored after that, one would have to assume that whatever exposures she might have -- and I'm using gender here -- the claimant was exposed to for a certain year where the records are there, that the -- the likelihood that that person was exposed prior to that is -- is not an unreasonable assumption.

MR. HINNEFELD: Well, I mean it'll be something we can pursue further. It might be something to address in the Los Alamos site profile in terms of completeness of the external monitoring records. I mean it'd be --

DR. BEHLING: I -- I think -- again, this is what triggered me was the assignment or the job description that crosses over the unmonitored period into the monitored period and in certain years that person was monitored, but for the same job description for previous years was not. And then you sort of ask the question why not; was there a change in policy to monitor people or was there no need to or was it group badging -- what was the issue that explains the unmonitored periods of time.

MR. HINNEFELD: Right. I'll see what evidence we have on that.

MS. MUNN: It would seem --

MR. GRIFFON: I guess -- I guess -- go ahead.

MS. MUNN: -- seem like a few sentences in the site profile would probably take care of that, wouldn't it?

MR. HINNEFELD: Yeah, if there's evidence. I mean if you have sufficient -- if you have sufficient evidence, yeah, you can take care of it pretty easily.

MR. GRIFFON: Ought to be an interesting site

profile.

MS. MUNN: Yeah, it would.

MR. GRIFFON: It strikes me -- I guess I shouldn't be surprised by this, but the data capture for this individual was one page from DOE records, and there's no -- I mean there's '69, '70 -- there's annual summary data. It does indicate on the annual summary that there is three monthly -- parentheses, October through December, three monthly badges, 1970 -- parentheses, January through December, 12 monthly badges. But you don't have that detail -- I'm sure you requested it, or did you request it and not get it?

MR. HINNEFELD: We have told the DOE sites that we needed to know not only the total dose -- we -- we wanted every badge reading.

MR. GRIFFON: Right.

MR. HINNEFELD: That's what we wanted. Failing that, because that is very difficult for very many DOE sites. Failing that, we would manage with the total, as long as we knew what the ba-- what the readings -- the number of readings per year were.

MR. GRIFFON: Okay.

MR. HINNEFELD: And then what's generally done in these cases is you assign all that measured dose to one of those exchanges and you include all the

other exchanges in the missed dose. That's generally what's done on these cases. So they were compliant with essentially our second level request -- our second tier of what we would prefer.

MR. GRIFFON: Okay. And they -- you -- all right, yeah, I guess like -- I -- I was also ask-- wondering -- follow up on the missed versus unmonitored question, so if there's clarification on where he -- where the person worked and why they -- you know, would -- would you expect -- would you have expected them to be badged and monitored in the location job they had for that time period.

Is this a short period of employment for this individual?

DR. BEHLING: No --

MR. HINNEFELD: No.

MR. GRIFFON: It's a lengthy...

DR. BEHLING: -- the person --

DR. WADE: That's enough.

MR. GRIFFON: Yeah, I don't want to go any further than that, but -- okay.

DR. BEHLING: Finding 79.7 involves occupational medical dose. I'm trying to look at what the response was. I -- I -- Kathy, do you have a comment here?

MS. BEHLING: No, it looks as if -- and -- and

I'm trying to check this right now. NIOSH is indicating that the value that was pulled off of the Table 4 from OTIB-6 was the PFG value, and I'm trying to verify that.

DR. BEHLING: Well, the -- the statement in the dose reconstruction report states that NIOSH assumed the EE was given one annual diagnostic chest X-ray for the full duration of employment -- I think those are the words -- and the statement was -- and the entry -- that the dose assigned was based on OTIB-6, Rev. 2 -- and I guess the key here is for the full duration of employment, when in fact the early periods -- I won't, again, identify the years -- were not -- were not addressed. It was only assigned for the years during which the person received occupational external exposures as was monitored for that. So we're missing a significant number of years during which the potential exposure to occupational X-rays were not included. And I would assume that occupational medical exposure would have been prescribed without regard to whether or not there was any external exposure monitoring done on that individual.

MR. HINNEFELD: There's -- there's medical exposure assigned for every year of employment.

DR. BEHLING: There -- oh --

MR. HINNEFELD: Lines --

MS. BEHLING: Yes.

MR. HINNEFELD: Lines 96 --

MS. BEHLING: Yes, there --

MR. HINNEFELD: -- through 112 on your exhibit.

MS. BEHLING: 96 through 112, that's correct. What we were questioning was the dose, not the fact that it wasn't assigned.

DR. BEHLING: Yeah, I'm sorry. I'm sorry. I misread what I -- what I have here.

MS. BEHLING: Yeah.

DR. BEHLING: The assigned dose was for the three years in question does comply with the Table 4 data. What does not apply was for earlier years, and I guess your comment here that you used data for photofluorography does not seem to jive with the statement that it was a PA chest X-ray that was used.

MR. HINNEFELD: Well, what the dose reconstructor said was they had received diagnostic chest X-rays.

DR. BEHLING: Okay.

MR. HINNEFELD: Now that didn't mean to imply that it was a (unintelligible) exam. PFG exam would be considered diagnostic chest X-ray.

DR. BEHLING: Okay. Again, this is a maximized dose and not going to significantly affect the outcome here.

Okay, now --

MS. BEHLING: Yeah, and I'm actually looking at the OTIB-6 and NIOSH is correct here, because the PFG -- if you do use the PFG dose, their -- their values are correct.

DR. BEHLING: Okay --

MR. GRIFFON: Head on to 80?

DR. BEHLING: -- the last one.

MR. HINNEFELD: Oh, my gosh.

DR. BEHLING: Oh, my God.

UNIDENTIFIED: Incredible.

DR. BEHLING: Do we get a free dinner with this achievement or something?

MS. MUNN: We ought to.

DR. BEHLING: Okay, last case, number 80 was Pinellas.

MS. MUNN: We have to slap ourselves to stay awake.

DR. BEHLING: Is it that bad, Wanda?

MR. GRIFFON: Slap ourselves, we're getting tired.

MS. MUNN: That's right.

MS. BEHLING: You're hurting my feelings.

MS. MUNN: No, no, no, no, no. I'm trying to follow what is going on --

MR. GRIFFON: I think it's a --

MS. MUNN: -- in three separate places at the --

MR. GRIFFON: I think it's a --

MS. MUNN: -- same time.

MR. GRIFFON: -- riveting matrix.

MS. MUNN: It is a riveting matrix.

MS. BEHLING: I'm teasing.

DR. BEHLING: Okay, the last one, as I said, is a case involving Pinellas, a maximized dose reconstruction, person was a machinist -- among other things. The POC -- what was the POC? Oh, it was below 40 percent and so with that, let's go and look at the findings.

MS. BEHLING: And the first finding has to do with missed dose uncertainty, and we're just indicating -- since they did maximize that missed dose -- it didn't need to be entered with a lognormal distribution and -- as a lognormal distribution with a GSD. There was no need for uncertainty in this particular case.

MR. GRIFFON: And -- and NIOSH agrees with that, I -- accept --

MR. HINNEFELD: Yeah.

MS. BEHLING: Am I wrong there?

DR. BEHLING: No, you're right.

MS. MUNN: No action planned?

MR. GRIFFON: Well -- and -- and I don't even dispute the uncertainty question in this, but the second part of your response, Stu, that -- it says is procedurally incorrect and that the unmonitored doses based on an upper bound should have been assigned as constants. How are these -

- how are these unmonitored doses based on an upper bound derived? What's -- what's the upper bound? Where's that coming from? Is it a coworker model for Pinellas or --

MR. HINNEFELD: There was a time when we did the highest recorded dose at anybo-- for anybody at Pinellas --

MR. GRIFFON: Okay.

MR. HINNEFELD: -- as the dose you would -- as the upper bound for an unmonitored person.

MR. GRIFFON: Okay.

MR. HINNEFELD: There's -- and I think that's probably what refers to.

MR. GRIFFON: That's what this says?

MR. SHARFI: At other sites, too.

MR. GRIFFON: So it's a 95th of a distribution, it's actually the highest value --

MR. HINNEFELD: The highest recorded that was monitored, that was used for a while.

MR. GRIFFON: And you're saying that's not the practice going forward probably.

MR. MAHER: The Pinellas TBD (unintelligible) --

MR. HINNEFELD: (Unintelligible) Pinellas TBD now.

UNIDENTIFIED: Yeah, we have a lot of explaining to do with these sites we don't have TBDs.

MR. GRIFFON: And when you say the highest recorded dose at Pinellas, were there a fair

amount of monitoring data? I remember seeing that -- a high percentage of people had zeroes or very low --

MR. HINNEFELD: There were --

MR. GRIFFON: Yeah.

MR. HINNEFELD: -- there were a large number of people monitored that --

MR. GRIFFON: Monitored that probably --

MR. HINNEFELD: -- doses tend to -- not to --

MR. GRIFFON: -- didn't need to be monitored and --

MR. HINNEFELD: Doses tended not to be very high down there.

MR. GRIFFON: -- yeah, that's right. Okay. All right.

MS. MUNN: That's why we can't go to Florida.

MR. GRIFFON: Should have had (unintelligible), yeah.

DR. BEHLING: Moving here to item 80.2, failure to assign missed neutron dose, we looked at the CATI and identified the fact that the EE had claimed to have worked in buildings 300 and 400, which according to the TBD were areas for testing neutron generators. The EE also identified being exposed to thorium, et cetera, and so the finding is that he should have potentially been assigned missed neutron dose.

So you have -- what was the response?

MR. MAHER: Basically it was so over-monitored that if you had any potential you were going to be monitored.

MS. MUNN: Uh-huh.

(Pause)

DR. BEHLING: Mark, what do you --

MR. GRIFFON: So -- well, if anything, I think this is deferred to a site profile. Are we doing that site profile? Is that on our list to review, Pinellas?

MR. HINNEFELD: Yeah.

MR. GRIFFON: I think it just got added, yeah.

MR. HINNEFELD: It's on for this year I think.

DR. BEHLING: What kind of neutron generators, are we talking about sources or -- do you know what kind of neutron generators?

MR. HINNEFELD: No, different ones.

MR. SHARFI: I can't say.

MR. HINNEFELD: You have to be -- you have to be real careful about what you say about neutron generators.

MS. MUNN: Yeah.

DR. BEHLING: You didn't hear that. Okay, so we'll --

MR. GRIFFON: I mean I guess the only question is to validate the -- this -- this statement that you just made, that basically if anybody was at any risk, they were monitored. If we can show

that through the site profile review, then I think this goes away completely.

MR. MAHER: In that statement there was that 78 percent of the annual whole body doses were less than 20 millirem, which indicates a site that over-monitors, I guess, although these days it makes sense to do over-monitoring.

MR. SHARFI: Whole body dose was neutron, photon --

MR. MAHER: Right.

MS. MUNN: Uh-huh.

MR. SHARFI: -- so using the high histories all would have included.

DR. BEHLING: Finding 80.3 we came to conclude that the assignment of occupational medical dose this person (unintelligible) high value. I guess we came up with a value that's considerably less, but even when the TIB-6 values are used, they are high. And it may be due to the fact that the assumptions were that photofluorography was used instead of conventional X-rays.

MR. SHARFI: Exactly, because it does infer that these were (unintelligible) --

DR. BEHLING: Oh, yeah, I realize that. I realize that. And again, I'm not sure, I don't have the original dose reconstruction report, but at least according to -- to the statement here which suggests I tried to parallel the wording

used that it was a PA chest X-ray, would potentially suggest that this was -- should have been restated in terms of photofluorography. Anyway, it's obviously a large assignment of medical X-ray doses, and since this is a maximized dose reconstruction, so be it.

MR. GRIFFON: Is there any follow-up on that, Hans? I don't -- it --

DR. BEHLING: No.

MR. GRIFFON: -- doesn't sound like there's any.

DR. BEHLING: No, no. I mean if -- if estimates of skin dose were defined by -- by photofluorographic examination then it's obviously a position that is somewhat subjective and in a maximized dose reconstruction it's not an arguable issue.

Last finding, 80 -- no, is it the last?

MR. HINNEFELD: Not quite.

DR. BEHLING: Two more -- I must have skipped one -- oh, yeah, here we are, inappropriate assignment of hypothetical internal dose. Is this one of the old ones again, 12 radionuclides? Yeah, I guess the question is is it even appropriate to use the 12-radionuclide hypothetical.

MR. HINNEFELD: Well, it's certainly an overestimate --

DR. BEHLING: True.

MR. HINNEFELD: -- given the materials that were there. We hadn't completed a lot of research down there. We were aware of the RTG plutonium sources. The claimant in her CATI said they worked with a variety of, you know, radionuclides. And absent a completed Pinellas research where we now feel like we have better understanding, and we had the TIB-2 approach available, so we gave them the TIB-2 -- I think probably the 28-nuclide, so it was an approach available that we took advantage of at the time. Now we wouldn't do that. We don't use TIB-2s at Pinellas anymore based upon our subsequent research about exposures down there.

DR. BEHLING: Yeah, I mean I think I took it in context with the statement that the only radionuclide that was considered to be internal exposure potential was tritium, and then of course the 12 -- identified 12 different ones, and that would be an inconsistent statement with the issue of tritium being the only potential source of internal exposure.

MR. HINNEFELD: We -- well, we didn't have enough confidence at that time to really -- you know, that we wanted to stand on saying only tritium was the internal, and -- and since the TIB-2 approach would work for the case, we went ahead and used TIB-2.

DR. BEHLING: Last --

MR. GRIFFON: I want -- I wanted to ask about the end of that response of yours. I don't dispute what you just said, Stu, but the -- this statement, however, this cannot be completely proven, so it was not addressed in the dose reconstruction report. I think we've been -- we -- we've brought up this comment before, but I think it probably -- I mean you've revised your DR report, so I think this was an older one, and I think we've said that, you know, at least the DR report should address any comments that the claimant made in their --

MR. HINNEFELD: Yeah.

MR. GRIFFON: -- CATI interview, right, right. Even if it's to say that our approach is bounding anything that you brought up here.

MR. HINNEFELD: Right.

MR. GRIFFON: You know, something like that.

MR. HINNEFELD: Right.

MR. GRIFFON: The second part of that is -- or maybe this is into the last one -- I -- I -- I was questioning on how you confirmed that these isotopes that the individual did bring up in their CATI interview, how you confirmed that they were not --

MR. HINNEFELD: Well --

MR. GRIFFON: -- present at Pinellas.

MR. HINNEFELD: -- it's a site profile -- it's what the site profile --

MR. GRIFFON: Yeah.

MR. HINNEFELD: -- determined, and --

MR. GRIFFON: Right, right.

MR. HINNEFELD: -- as part of this, I didn't -- we didn't go --

MR. GRIFFON: But you didn't --

MR. HINNEFELD: -- search out that evidence.

MR. GRIFFON: Okay.

MR. HINNEFELD: So it'd be part of the site profile --

MR. GRIFFON: But you didn't contact the individual in any way or --

MR. HINNEFELD: I don't know.

MR. GRIFFON: -- follow up with the individual. It didn't seem like --

MR. HINNEFELD: I don't know.

MR. GRIFFON: It would have been -- that would have shown up on the file, wouldn't it? Any follow-up --

MR. HINNEFELD: If you've got his file, chances are there would be something --

MR. GRIFFON: Some communication back and forth or -- I don't know.

MR. HINNEFELD: I think -- if it were done for site profile purposes rather than the purpose of his specific claim, it might not be in his claim

file.

MR. GRIFFON: Oh, yeah, yeah.

MR. HINNEFELD: Then -- but I don't -- I don't -- I don't know that we contacted, but I'm not saying we probably did. I don't know for sure.

MR. GRIFFON: Okay.

DR. BEHLING: The last --

MR. GRIFFON: Hans, I think I kind of spilled into -- into the last one, but go ahead.

DR. BEHLING: Yeah, the last one is the issue of potential neutron exposure. You feel that these people were over-badged, if anything. In the absence of data which suggests there wasn't any documentation convinc-- shows convincing evidence that that was the case then this finding could be withdrawn.

MR. HINNEFELD: So anything that would relate to this is really a Pinellas site profile type of question if we want to resolve any of this any further. Is that right?

MR. GRIFFON: Yeah.

MR. MAHER: And the neutron exposure at Pinellas for this device was in the testing of the device itself. That was done -- I mean I witnessed the facility. It's done in an area where people around are going to get exposed. But if it is, it's very incidental.

DR. BEHLING: Okay.

DR. WADE: You have 20 more to do? We might as well, we're on a roll.

MR. GRIFFON: We have plenty of time.

MR. HINNEFELD: (Unintelligible) done --

DR. BEHLING: No, we've done, but --

MR. HINNEFELD: -- we don't have --

DR. BEHLING: -- Ready to do any of those.

MR. HINNEFELD: Right.

DR. ROESSLER: For those of you on the workgroup tomorrow, we have our homework. Arjun just sent a report, so we have something to read tonight.

DR. BEHLING: That'll keep you out of trouble.

MR. GRIFFON: Okay, I think -- I -- we're just discussing this. I'll -- I'll try to update this matrix for the December meeting, and I think we're going to have a subcommittee meeting on that first day, at least -- at least a brief subcommittee meeting to maybe update on where we are with the matrix. I -- you know, I think we've -- there's some actions that are going to take a little longer than December 11th to -- to complete, but at least I want to get an update there. And -- and Lew and I were at least talking about the possibility of leaving some of the morning open for workgroup activity as well as for a subcommittee -- a dose reconstruction subcommittee meeting, so we might apportion it that way.

DR. WADE: Right, I mean my current plan is to hold 11:00 a.m. to noon for the subcommittee. There is the issue of the selection of this -- this seventh round. Then hold the morning completely open for workgroups as they might like.

Now one potentially confounding factor is Senator Obama might want to speak to the Board, and it's possible he might want to speak on Monday morning, so -- you know, stay tuned.

MR. GRIFFON: Okay. But other than that, I'll try to update this matrix with at least -- you know, in this -- in this resolution column, at least try to put a draft of what I think we resolved today, where we stand on these issues, circulate it prior to that meeting, anyway --

MR. HINNEFELD: Okay.

MR. GRIFFON: -- and then we can maybe just get an update at the December meeting --

MR. HINNEFELD: I would think so.

MR. GRIFFON: -- and move on from there.

MR. HINNEFELD: Yeah.

MR. GRIFFON: Yeah.

MR. HINNEFELD: I would think so.

MR. GRIFFON: And we -- we have the fifth set and sixth set. Can you just give us on update on where --

DR. BEHLING: Kathy, can you give us an update on

the status of the fifth and sixth sets?

MS. BEHLING: The fifth set is complete and we've completed the conference calls, that's in the process of being finalized and sent out. I'm just putting together an executive summary for that. And we are well on our way working on the sixth set also and I'm hoping to have that done somewhere close -- I'm hoping to have the con-- the next set of conference calls on the sixth set possibly after our December -- December Board meeting, sometime close to the end of December.

DR. WADE: Kathy or John, I mean I have queued up for December looking at the definition of the seventh set --

DR. MAURO: Uh-huh.

DR. WADE: -- and we have a meeting in February where we could take on identifying the eighth set. Is that pace acceptable?

DR. MAURO: That would be ideal.

DR. WADE: Okay.

MS. BEHLING: Yes. That sounds fine.

MR. GRIFFON: I -- I will work with -- I'll talk with you off-line, Stu, to -- about the parameters and I'm also wondering what kind of cases we have in the hop-- in the pool of cases available.

MR. HINNEFELD: Right.

MR. GRIFFON: I want to keep the progress going,

for sure, but I also want to make sure we have the kinds of cases we want to look at and not some of the same cases, you know, so --

MR. MAHER: You might see more and more best estimate cases now, more difficult.

MR. GRIFFON: Yeah, that's what we're -- that's what we're -- yeah.

MS. MUNN: Arjun is swamped, too.

MR. MAHER: (Unintelligible) more funner (sic), I'll tell you that.

MR. GRIFFON: That is more fun. Okay --

DR. WADE: I think we also would be --

DR. BEHLING: Speak for yourself here.

DR. WADE: I think on the record we need to thank Stu for persevering. He obviously is on the last drop of petrol and you're welcome to sleep --

MS. BEHLING: I was about to say that he'll just do anything not to have to speak.

MR. GRIFFON: Especially since Kathy kept making him repeat everything.

DR. WADE: Thank you all very much. This is a most productive day.

MR. GRIFFON: Thanks a lot, yeah. All right, I think we're closing.

DR. WADE: We're closing, we're done.

MR. GRIFFON: Adjourned.

(Whereupon, the meeting was concluded at 4:27 p.m.)

CERTIFICATE OF COURT REPORTER

STATE OF GEORGIA

COUNTY OF FULTON

I, Steven Ray Green, Certified Merit Court Reporter, do hereby certify that I reported the above and foregoing on the day of Nov. 16, 2006; and it is a true and accurate transcript of the testimony captioned herein.

I further certify that I am neither kin nor counsel to any of the parties herein, nor have any interest in the cause named herein.

WITNESS my hand and official seal this the 18th day of January, 2007.

_____

STEVEN RAY GREEN, CCR

CERTIFIED MERIT COURT REPORTER

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