Centers for Disease Control
National Institute for Occupational Safety and Health
Subcommittee on Dose Reconstruction Reviews
Thursday, May 23, 2019

The Subcommittee convened via teleconference, at 10:30 a.m., Eastern Daylight Time, Dave Kotelchuck, Chair, presiding.

Members Present:

David Kotelchuck, Chair
Josie Beach, Member
Bradley P. Clawson, Member
James E. Lockey, Member
Loretta R. Valerio, Member

Also Present:

Ted Katz, Designated Federal Official
Nancy Adams, NIOSH Contractor
Bob Barton, SC&A
Kathy Behling, SC&A
Liz Brackett, ORAU Team
Ron Buchanan, SC&A
Nicole Briggs, SC&A
Grady Calhoun, DCAS
Rose Gogliotti, SC&A
Jenny Naylor, HHS
Beth Rolfes, DCAS
Mutty Sharfi, ORAU Team
Scott Siebert, ORAU Team
Matt Smith, ORAU Team
John Stiver, SC&A

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(10:32 a.m.)

Call to Order

Mr. Katz: Okay, preliminaries. The Advisory Board on Radiation and Worker Health Dose Reconstruction Review Subcommittee.

David Kotelchuck, Dr. Kotelchuck is the Chair and he's present. And along with him we have Josie Beach and Brad Clawson and Loretta Valerio. And we will not have David Richardson, Dr. Richardson, but we are expecting Jim Lockey to join us.

Let me just make a note about conflicts of interest with the Members because we have cases from different sites. So please Members, remember what your conflicts are and don't speak -- Dave Kotelchuck has no conflicts so when he asks for other Member's opinions on cases if it's a case for a site where you're conflicted please just hold off on that one and that will work.

And I can just mention up front for Brad it's INL, for Josie Beach it's Hanford, for Jim Lockey there are an assortment of sites. A lot of them are the Tennessee sites, Oak Ridge sites as well as Fernald in Ohio.

And let's see. David Kotelchuck has no sites, no conflicts for sites. That should take care of it for now.

Loretta has the -- in particular the New Mexico sites and a few others other than that because she deals with cases that cross state borders.

So anyway, just recall your conflicts when we're in discussion.

Okay. And the agenda for today's meeting is posted on the NIOSH website. There are no materials. They're all full of Privacy Act information for the most part so there are no materials posted.

Moving on from that let's see what else I need to cover. Actually, that takes care of it other than I'll do roll call for the rest of the crew.

Chair Kotelchuck: Now, Ted, we do have a quorum, do we not?

Mr. Katz: We do have a quorum already. I'll check on Lockey after I do roll call for the rest of the group. So let's go for NIOSH ORAU group, who do we have on?

(Roll call.)

Mr. Katz: And with that just let me remind everyone to mute your phone except when you're talking, *6 if you don't have a mute button.

And Dave, it's your meeting.

Rerunning of IREP Iterations for Completed Blind Review Sets

Chair Kotelchuck: Okay, very good. So, let's start on the first item on the issue of possibly considering rerunning of IREP iterations for the completed blind review sets.

Folks will remember we've had a lot of discussions about this, but let me summarize a bit.

I think the Subcommittee Members and staff looked into the blind case where we had apparently a different compensation decision after the runs from NIOSH and SC&A.

And we've seemed to realize that -- the Subcommittee Members at least came to realize that the IREPs were being run differently.

And you'll remember that NIOSH as they had been doing for some time, I'm not sure forever, but for some time have been -- were feeding their data into IREP and for 30 runs of 10,000 iterations each.

And we came to realize, as we Subcommittee

Members, certainly I just as an individual came to realize that SC&A was not running it that way. They didn't have access to the enterprise edition of IREP and they were running one run of 2,000 iterations.

So after SC&A you'll remember last July it was actually, after SC&A received -- got access to the enterprise edition that the Subcommittee instructed SC&A to run future -- that with NIOSH.

That was at that time the 28th line, two of which were run a long time ago and all the rest have been run in these years certainly while I've been on the Board.

A question. How do we want to handle the early blinds, or the first 27 or 25 of those 27 blinds.

And also by the way the side question for me was whether -- for Set 26 have the folks in SC&A been running the full 30 runs and 10,000 iterations. I just didn't know. I mean, I didn't know what stage --

Ms. Gogliotti: Yes, we have been running all of them for the entire time.

Chair Kotelchuck: Okay, great. Ever since 28. Are they W.R. Grace one that we?

Ms. Gogliotti: Well, beginning with case B33 which was the start of the 26th set.

Chair Kotelchuck: Oh, okay, fine. So all the 26. Good. But question folks is for the Subcommittee folks is what do we want to do about the early blinds. They were run slightly differently.

And you'll remember that they were a compensation decision. We were in full agreement except for that one case and when that one case was rerun again I think it -- with the data I think Scott reran it and showed that in fact the compensation decisions were the same if they ran the -- if they ran the SC&A data on IREP for the 30 runs.

So I wonder what folks want to do. I have opinions

and thoughts about it. On the other hand I'd like to open it up to -- do people feel that it is of value to rerun the earlier iterations. And obviously we're talking about a lot of work and time.

But the question is is this a value to us in terms of our understanding of the blinds and how well we are doing dose reconstructions similarly by the two folks, NIOSH and SC&A.

Thoughts or comments?

Member Clawson: Dave, this is Brad. We've never really been that far off.

Chair Kotelchuck: Right.

(Simultaneous speaking.)

Member Clawson: We're relatively short. I don't think going back and doing this would buy us anything. But fast forward we want to do the best, you know, the closest we can to everything.

I would suggest from this point on that we continue and do it the same. I don't think that going back is going to buy us anything particularly.

We didn't see any real big problems.

Chair Kotelchuck: We certainly did not at all.

Member Clawson: But that's my opinion.

Chair Kotelchuck: Good. Well, I appreciate that. I've come to share it. At first I wanted to rerun it because I wanted to see how really close our PoCs were. I wanted to assess that.

Folks have raised questions as to whether that's even a worthwhile effort. But now thinking about all that would be involved in going back I'm also of the same opinion, Brad, that we just don't gain anything.

We've in fact made a big improvement in our blind

cases effort and I see no great point in going back.

Member Beach: Dave, this is Josie. I think we did rerun the one that we had the differences on and that would have been my main concern.

But if there are no others that show a big difference between the two I am in agreement with both you and Brad on this one.

Chair Kotelchuck: Yeah. Loretta?

Member Valerio: I agree with everything that Brad said.

The other thought I had was if there are multiple cancers and at least one of those falls under the SEC is there really value both time and cost to rerun the IREP iterations.

Chair Kotelchuck: I don't think we're running any -- we haven't run any that were in an SEC. Or I should say that weren't -- I mean, the only ones, blind reviews we've done are ones where we had almost all the best estimate. So we didn't run ones that went through the SEC and we'd have to redo them again.

Member Valerio: So what I meant, Dave, was if they have multiple cancers and one of the cancers is an SEC cystitis cancer but the others are maybe multiple skin cancers that's what I'm talking about.

Mr. Katz: Loretta, just to explain, if it were a case that's compensated should be SEC then it would by definition be a partial DR because there's some doses that can't be reconstructed.

And those I don't think -- and correct me, I don't think those would be collected and given for blind reviews in the first case.

Chair Kotelchuck: Right. I don't believe we've had a partial DR of blind reviews.

Mr. Calhoun: This is Grady. The only way we would

do that is if in fact we ran a query and they ended up between 45 and 52 percent. But I can't recall one that we did but maybe we have.

Chair Kotelchuck: Yes.

Member Valerio: Okay.

Chair Kotelchuck: So I think we're in agreement on that. Is Jim Lockey on by the way? I don't know if he might be coming. We think he might be coming.

So, I think we have an agreement on that. And as I say thinking about -- I've changed my mind over time. I'm onboard with everybody else.

So, should we say formally that we will adopt this now as confirming the decision that we did last time to go forward with both IREP runs by SC&A and NIOSH identical? And we will not go back and redo the earlier ones for which we did not see any serious problems except one was resolved.

Ms. Gogliotti: Dave?

Chair Kotelchuck: Yes.

Ms. Gogliotti: On that note we had discussed previously that we would not revise the W.R. Grace case until this was discussed.

Do you want us to revise that case? Would you prefer to do a memo? The comparison.

Chair Kotelchuck: Well, I'll tell you, we would like to put the table into the report. And I think it would be -- I would like to see that rerun or let's put it this way.

If Scott, if you took the data from SC&A and you ran it on an IREP and you got a result at that point that agreed with your initial run, if you have that I don't even see the need to rerun it if you've already done what SC&A would have to do.

Mr. Siebert: I will look through my files, but I'm

sure I can come up with that. What would you like, what the value was or?

Chair Kotelchuck: Right. I would like to know what the PoC was when you ran it in the -- as we are now running all blinds cases.

Mr. Siebert: Absolutely. I can get that information over to Grady for you.

Chair Kotelchuck: Okay, great. That sounds perfect. Then I don't see, Rose, I don't see any need to rerun.

Ms. Gogliotti: Okay.

(Simultaneous speaking.)

Chair Kotelchuck: We will put that in our table and we'll obviously make note that from then on or actually the next couple we still had the old run. We may need to put a little asterisk in the -- in what we put in the report. But we can handle that. That's a technical.

Basically it's done.

Ms. Gogliotti: Okay. For my own clarification you're not expecting any further documentation on that case from SC&A.

Chair Kotelchuck: No, I don't think so. Unless anybody else have any thoughts? I don't see any need for it. Thank you for asking.

Mr. Katz: Yeah and this is Ted. As long as it's documented in the report that we put together and has the right PoC by it that works for me too. That makes sense.

Chair Kotelchuck: Okay. Alright. So, I think we're ready to go on now.

As folks know we are skipping discussion of the draft Secretary's report. I believe all the Subcommittee Members got a copy of my first draft.

And Ted and Jenny worked on that.

There are apparently even some legal issues and a lot of editorial changes which I've taken a look at and certainly agree with.

We'd like to -- I would like to work with Ted, deal with some of those and send you a cleaner copy where the decisions that we have left are policy decisions for the Subcommittee consideration and then Board consideration.

So, we're going to drop that a little bit. There will be issues of timing because I don't know if we can get another meeting in with the draft, the new draft, draft 2 before our meeting in August.

But let's deal with that later.

Member Lockey: Hey, Ted?

Mr. Katz: Yes. Oh, Jim Lockey's on.

Chair Kotelchuck: Jim, how are you.

Member Lockey: Sorry, the password I got wasn't working. It works now.

Chair Kotelchuck: Alright.

Mr. Katz: We're glad to have you, Jim.

Chair Kotelchuck: Yes, we are. By the way, in your absence we did talk about item 1 and all of us felt that there was no real value in rerunning the IREP iterations from before that number 28, the one from W.R. Grace.

We're now doing -- both groups are doing the same input into IREP, the same number of runs and iterations.

Member Lockey: I agree.

Chair Kotelchuck: Good, good. Okay, fine.

So, just finishing the comments about that we're

going to hold the draft Secretary report until we go through a number of both editorial changes and of course if there are any issues, legal issues which Jenny posed then that certainly has to come first. We must be legally -- all the legal issues and statements that have legal implications have to be made properly.

So we are now ready to go to Set 26 blind dose reconstruction cases. And we have a lot of cases and challenging ones at that I think. Some of them.

So, how would you like to proceed?

Ms. Gogliotti: If it's okay with you I think we should just go down in order of blind number. Is that okay?

Chair Kotelchuck: Yes. That sounds fine.

Ms. Gogliotti: Okay, and before we get started on this I just want to point out that we did these a little bit differently from what we've done in the past.

As a result of a meeting we had last fall with the Dose Reconstruction Methods Subcommittee, the Work Group I believe, we decided to add an additional section to these reports that highlights the biggest professional judgment differences that were made in the case or sometimes the same.

Chair Kotelchuck: Right.

Ms. Gogliotti: So you will see that under the different --

Chair Kotelchuck: Absolutely. And if I may say I found those most useful and a very nice addition to what we're doing. I'm sure that we will talk about that -- I would like to talk about that in the report that we turn in. But we'll come to that later.

Okay, great. Thanks.

Ms. Gogliotti: Okay. So we'll start off with West Valley.

Chair Kotelchuck: Okay, great.

Ms. Gogliotti: Ron, I believe you're on the line?

Dr. Buchanan: Yes, this is Ron Buchanan.

Ms. Gogliotti: Can everyone see my screen?

Chair Kotelchuck: Yes.

Ms. Gogliotti: Okay, great. Thanks.

Mr. Calhoun: Right now all I see is the cover page of the report to the Advisory Board.

Ms. Gogliotti: It's not a blind comparison?

Member Beach: I'm not seeing it either.

Mr. Calhoun: No, I don't see it.

Ms. Gogliotti: It shows that I'm sharing it.

Mr. Calhoun: Wait, I guess this is it. Now I see an index or something.

Ms. Gogliotti: Do you see the table of contents currently?

Mr. Calhoun: Yes I do. I got it. I got it now. Thank you.

Ms. Gogliotti: Okay, great.

Mr. Katz: Scrolling. Very good.

Review Set 26 Blind Dose Reconstruction Cases

Dr. Buchanan: Okay, Rose, if you're controlling the projector there I'm working off my copy that's marked up here on my screen. So I'll just tell you what page I'm on and if you'll go to that page then they can follow along.

I'm on page 7. And you see this is the West Valley demonstration project in West Valley, New York.

This was an original dose reconstruction. It was

done in October of 2017 and then SC&A was charged with a review of this case in Set 26 and they completed their report in October of 2018.

Now, both DR methods used estimates of doses that resulted in PoCs greater than 50 percent. That's for the multiples of compensation.

And when I go through this discussion I'll just use the term party rather than parties, meaning NIOSH and SC&A rather than repeat that phrase each time.

We go to page 8. We list the comparison of some of the doses and the type of doses that were assigned. We see that both parties assigned recorded dose, missed dose and internal dose.

The worker fortunately was monitored for external, deep and shallow dose and for -- and bioassays for internal dose.

You see the worker had a number of cancers, skin cancers and a cancer that was non-skin.

As we go down to page 10 we see that we list in Table 2-1 there we list the cancers, the skin cancers and the non-skin cancers.

As we go to page 11 Table 2-2 we compare some of the data and assumptions made by both parties. And what I'll do is emphasize, just kind of cover the differences as an overview and then go into more detail as we go through the individual section of the report.

As we did -- there's a little dash to the right there and so I won't discuss those. I'll just highlight the differences.

The recorded photon dose was done pretty much the same by both parties. The missed photon dose was done very similar except for SC&A assigned the photon energy into two ranges, a 30 to 250 keV at 25 percent and a greater than 250 keV at 35 percent for the missed photon dose. That was the

main difference there.

We see at the bottom of that table missed shallow dose. SC&A assigned 30 percent of the shallow dose to the non-cancer -- excuse me, the non-skin cancer and NIOSH did not assign a shallow dose to that organ.

You see on page 12 that for internal dose that NIOSH used OTIB-54 and the TBD values for SC&A used just the TBD values for intakes.

NIOSH used urine and the in vivo counting and SC&A used just the urine counting for some of the mixed fission products.

That takes us to the details on page 13 where we start talking about external dose. We see that both NIOSH and SC&A used a dose conversion factor of 1 for the skin recognized -- by OTIB-17 and used the appropriate dose conversion factors for the non-skin cancer according to IG-001.

Now, the difference there, we got identical doses and used the same data and everything except NIOSH applied Monte Carlo calculations to the dose conversion factor and came out with slightly different doses but very similar. And so that was the main difference in the recorded dose, the photon dose.

The recorded shallow dose. The worker was monitored for shallow dose. So both parties assigned it using the correct values. And an attenuation factor for clothing of 0.855 for covered areas according to OTIB-17.

And was assigned as 100 percent greater than 15 keV electrons. And so we agreed with that and assigned slightly different doses because one of the sites, NIOSH took some consideration of extremity dose for part of the arm dose and SC&A did not fold that information in. And so NIOSH assigned a slightly higher dose to one of the sites. But other than that very similar results.

Now, we look at missed photon dose starting on page 13 and continuing on page 14. And you see that NIOSH assigned missed photon dose using a dose conversion factor of 1 for the skin. And the appropriate dose conversion factor depend on the various details for dose equivalent for the non-skin organ. And assigned a missed photon dose as 100 percent 30 to 250 keV photons.

SC&A did very similar calculations except that they divided it at 25, 75 percent on the photon dose and used the appropriate dose conversion factors for that. And so that was the main difference there on missed photon dose, dividing it up into two energies as was done in recorded dose that SC&A used.

Missed shallow dose. I'm on page 14. We had a system where you had open window and you had a shielded window on the dosimetry readings and so the criteria that both parties used was as in the TBD stated. If only the acid reading was -- reported as zero you recorded as a missed dose for details. If both the open window and the shielded window reported as zero you assigned it as a non-penetrating dose.

And so both parties followed that convention.

We see there at the bottom of page 14 NIOSH applied a clothing attenuation factor and a skin dose conversion factor of 1. And did not assign missed shallow dose to the non-skin organ.

On page 15 we see that SC&A did similar dose assignment but additionally the 30 percent of the shallow dose to the non-skin organ. According to their interpretation of OTIB-17 page 18.

So, we see that there in Section 3-5 the unmonitored photon shallow dose, there was no need to assign any coworker dose because the worker was monitored and so neither party assigned an unmonitored dose.

The neutron dose, West Valley. The job description

for this worker probably did not present significant neutron dose. Neither party assigned any sort of neutron dose for this case. We agree on that.

And then in Section 3-7 had occupational medical dose, see that X-rays were taken offsite for all West Valley employees and so there was no X-ray dose assigned by either parties.

So that covers some of the details of the external dose assignments and comparisons.

Now if we go to page 16 we go to Section 4 we look at the internal. And the EE did have a number of bioassays for uranium, plutonium, americium, strontium and cesium.

And the uranium bioassays were used by NIOSH to assign uranium thorium intake using a 2 percent enrichment in the specific activity of 1.6 picocuries per microgram and found a type after uranium resulting in highest dose that was used.

They looked at acute and chronic intakes and assigned a dose each year that provided for the highest overall dose to the organs.

Now, I would like to state that the TBD does not state the specific activity of the uranium enrichment and so we see on page 17 that SC&A used a specific activity of 2.2649 picocuries per microgram as recommended in the Hanford site which supplied a lot of the uranium process. West Valley was a fuel reprocessing demonstration plant. They took in spent fuel and reprocessed, separating off the good uranium and such.

And so we used -- SC&A used the Hanford site information. So again of course this is higher specific activity so it led to indicate an overall greater intake of activity resulting in slightly greater dose.

For this SC&A also found that the site past uranium provided for the greatest dose and was used. And

compared the chronic and acute, and using slightly higher specific activity found that the acute annual doses provided for the greatest dose and was assigned in IREP tables.

Similar but slightly different assumptions of specific activity.

Next is on page 17. The plutonium and uranium, americium intake. Section 4.2. And now there both NIOSH and SC&A did use the bioassay data. Unfortunately bioassay data did not specify the radionuclide of the plutonium.

In this case NIOSH chose to use plutonium-238 and look at the acute and chronic intake and assign doses accordingly.

Or as SC&A assumed a Pu-239 bioassay adjusted for the daily 1.4 liters per day and derived the Type S plutonium as the same as NIOSH used Type S, plutonium-238.

And the annual dose was assigned as a chronic intake, analyzed and assigned chronic intake in the IREP tables. So the main difference was the selection of the type of plutonium since it wasn't specified.

So, if we go to page 18 then we go to the strontium and cesium fission activation products. The worker was monitored for strontium and cesium intake periodically and had several positive values.

So, for the strontium intake NIOSH used a NUMA program to evaluate the urine data. And OTIB-54 up to the year 2000.

There's two ways to address strontium intake at West Valley. You can use OTIB-54 or you can use the recommended TBD values in Table 5-10.

So NIOSH used the OTIB-54 with strontium as the indicator up until the year 2000, through 1999, and assigned according to that results. And then used

the results from 2000 onward in Table 5-10 to assign fission activation products.

In contrast SC&A assigned strontium intake using purely the Table 5-10 in the TBD for West Valley as opposed to incorporating any of the OTIB-54 for any of the time period.

So those were the two differences in the strontium assignment. The result was slightly different in doses, but small compared to the alpha emitters of course.

At the bottom of page 18 you see we also address the cesium intake. The cesium intake had a urine bioassay result and also some in vivo results.

NIOSH looked at the urine bioassay results and compared them to the in vivo bioassay results and used the in vivo which capped the possible intake. And so it limited the amount that could be assigned, still get those results in the in vivo and so NIOSH assigned that.

Whereas SC&A took the approach that the urine data would be used and used that data for cesium to assign it the doses which would result in a slightly higher dose. Again, not significantly compared to the alpha emitters.

So we see that on page 19 there we address the radiological incidents. We see that both parties addressed several incidents that took place.

And in view of the recorded data that the worker was monitored internally and externally while working there that they did not impact the dose reconstruction.

In addition, NIOSH identified a few other incidents in the records of dosimeter and nation advance. SC&A did not address but did not impact the dose reconstruction.

Okay, so this brings us to the new section on page

20 and that's Section 5, decision points required professional judgment which we were asked to make a summarized list of it.

And so these judgments are listed there and as we briefly discuss, we discussed all these but this summarizes it.

The assignment of shallow dose, the non-skin organ. SC&A assigned 30 percent of the shallow dose to the non-skin organ which resulted in some additional dose assignment.

And when it came to the skin there are obviously some places on the face and such are open and not closed, covered with cloth. However, on the side, the arms and stuff there could be areas of debate. And in this case there's a slight difference in that we both used -- both parties used the cloth attenuation factor on some of the organs.

However, SC&A assumed two organs were covered while NIOSH assumed four. And so again slightly greater dose that SC&A assigned to some of the skin in this case.

So it would make about a 14 and a half percent difference in dose assignment.

Now assignment of internal dose. As we just discussed this is the judgment on the enrichment of the uranium at West Valley.

And the interpretation of plutonium results that it was 238 or Pu-239. So when it comes to bioassays there are some areas that require some judgment and you can see here that we pointed this out here.

So that brings us to the summary on page 21 that compares the doses and the PoCs, Table 6-1. And we see that the doses and PoCs are very similar. Both of them were greater than 50 percent. And so eligible for compensation.

And the modest difference in some of the

external/internal sites arose from items we just discussed on the external/internal dose assignments.

Are there any questions?

Member Lockey: Jim Lockey. I had one question. In the issues of plutonium, I'm just curious why 238 versus 239?

Dr. Buchanan: It wasn't specified, the plutonium bioassay, and it wasn't specified the radioisotope. And so when the dose reconstructor performed it they assumed one or the other. And so this is what happened.

Member Lockey: And so professional judgment is which way to go with that? Is that correct?

Dr. Buchanan: That's correct.

Member Lockey: Okay.

Member Beach: This is Josie. That was in line with my question also.

Is there any reason to use 38 over 39? I guess I'm wondering in a professional judgment situation why did you choose 39 versus the 38. Ron?

Dr. Buchanan: No, I don't know. Doug did this, so --

Member Beach: Oh, Doug did. Okay.

Dr. Buchanan: Yes. I don't know why he chose 39.

(Simultaneous speaking.)

Mr. Siebert: This is Scott. I can tell you why we used 238. It's based on the values in the TBD and the tables of the breakdown in plutonium mixture. The activity fraction of 238 is larger than the 239. It's the majority component. So that's why we normally use that for the same processes.

Member Lockey: Jim Lockey. One other question. In your shift to shallow dose for the test is that -- does

NIOSH normally calculate shallow dose with relationship to breast cancer or not?

Mr. Siebert: This is Scott again. Yes, the information is in OTIB-17. However, there is also direction in OTIB-17 that if it's a likely compensable claim that portion of the assessment does not need to be conducted. So we did not conduct it.

If it had come out less than 50 percent we would have assessed that portion of the shallow dose as well.

Member Lockey: I see. So because it was over 50 percent you found no need to go ahead and do that.

Mr. Siebert: That is correct.

Member Lockey: Okay, I understand. But normally if the PoC is under 50 percent you would have done it.

Mr. Siebert: That is correct.

Member Lockey: Okay. Perfect.

(Simultaneous speaking.)

Mr. Katz: Hi, I'm just going to suggest going forward -- I mean, we've already started with this case, but going forward it might be just efficient if after SC&A does its presentation of the blind case since the NIOSH ORAU folks haven't had a chance to respond if they can address then the professional judgment matters. And then the Board Members can weigh in.

And then a lot of the Board Member's questions will probably get answered without them having to ask the questions.

Member Lockey: Yes, Ted, but we like to ask questions.

Member Clawson: Some people like to show up late too to everything, but you know. We want to do the best we can, Mr. Lockey.

Member Lockey: Okay I'll shut up now.

Chair Kotelchuck: This is Dave. I wondered -- first, I really, I said before, I really like the new section on professional judgment.

But it does seem to me that the NIOSH folks might have different opinions about what areas really were professional judgment. There is a value to adding on their input, or getting their input on these assignments and then the next step it seems to me is that as soon as these blind cases pass from our consideration it would be valuable to have some sort of record of the types of professional judgment, or a listing of them.

For the moment they seem totally all over the map. And they will be for quite a while. After a while as we develop more and more blinds and more and more of these I hope that we'll see patterns develop.

And those patterns could be considered probably by the Methods group, the DRR Methods group and that will help inform any changes we might want to make, or any improvements in the process.

So, I would -- right now looking at the six blinds that we're dealing with today I don't see how to make a sensible listing, that is, a nice format.

And I would wonder, I'd like to suggest if others from the Subcommittee agree that folks from SC&A give some thought to how -- to a listing that would make sense and help build up a body of data that we can then come back to and look at after the first 6, 12, 18 blinds going forward.

Is that something that others think would be useful?

Member Beach: Yes, I think that's a great idea, Dave.

Chair Kotelchuck: I don't think it will be easy. And so I'm not saying -- I have no idea what the format

would be. And I would be open to suggestions from SC&A about what would be a good format for that. Not just the program, but the kind of format.

Ms. Gogliotti: We'll brainstorm and I'll give you some ideas and you can let us know what you like.

Chair Kotelchuck: That would be great. That would be great.

Ms. Gogliotti: And I do want to point out that those are only professional judgment differences that resulted in dose differences.

Chair Kotelchuck: Right.

Ms. Gogliotti: The most impactful in a case.

Chair Kotelchuck: Right. Right. And I agree, they are the salient ones. There are lots of small -- I've noticed that too. I mean, there are a lot of small differences that really are inconsequential. And there's no great point in adding those.

But do we need -- and folks, this is -- I'm asking everybody. Do we need some NIOSH input about the decision on professional judgments?

Member Lockey: Jim Lockey. I think NIOSH input would be valued. I think from the scientific perspective professional judgment is a valid approach to take when there's not enough data to make a decision to go one way or the other. If both NIOSH and SC&A agree on that then we can leave that alone. But each circumstance is going to be somewhat different.

If it's a real disagreement about professional judgment, which direction they went, then that has to be resolved.

Chair Kotelchuck: That sounds right. So the issue -- that NIOSH before the four blinds -- the professional judgment on the blinds get listed in the SC&A database there needs to be an agreement by either Grady or Scott as you decide.

But NIOSH needs to weigh in before we put it in.

Mr. Katz: This is Ted. In terms of process it's just like resolution of other issues. I think you need NIOSH's input and then you need the Subcommittee to consider where there are differences between the ultimate opinion of NIOSH and SC&A about whether something is a professional judgment in the first place.

I mean, you need the Subcommittee to oversee that resolution of those differences.

Chair Kotelchuck: Yes. Certainly that's a good process.

Mr. Calhoun: This is Grady. And I would just have to look to see -- it would kind of be nice to see what Rose puts forward and then we could see what kind of effort and how we could do that in the next blind.

Chair Kotelchuck: That would be good. The main thing is that you have input, that there's something in your process such that SC&A will hear from you or your designated person that all's well and go on and list it. And if not you'll inform me and Ted that there's an issue and it should come before the Subcommittee.

Mr. Katz: This is Ted. I think just for transparency's sake I think the best route would be for -- I mean, if NIOSH contests a they have identified those needs only identifying the ones for which there's substantial dose difference. That sort of cuts down on the work for the NIOSH group.

But I think the NIOSH group, I think in every case we just need, we need a written response from NIOSH. And they can cover the whole set in one memo or whatever, but of any professional judgment matters for which they differ about whether that was even a professional judgment matter. And even if it wasn't professional judgment any other questions they have or issues they have about the interpretation.

We get that in a written form and that way we have the documentation.

Chair Kotelchuck: Good. Good.

Mr. Siebert: Ted, when NIOSH agrees there's a professional judgment I don't think we need an explanation of why NIOSH agreed, just where they disagreed.

Mr. Katz: Exactly. Exactly. When they agree they simply say I agree.

Chair Kotelchuck: One sentence written memo, we agree.

Mr. Siebert: Two words, we agree.

Chair Kotelchuck: Right.

Mr. Katz: One memo to cover the whole set would be fine. And in terms of process, so we can just get that memo from them after Rose has done all this and pulled it all together, the comparison reports and so on. That's just one more step before we actually meet that they can do that, get that piece done.

Chair Kotelchuck: Good. So, Subcommittee members do we have any more questions about the dose reconstruction?

Hearing none do we want to approve both of these dose reconstructions?

Member Lockey: Yes.

Chair Kotelchuck: Do others agree?

Member Beach: Yes, I agree.

Member Valerio: Yes.

Chair Kotelchuck: Okay. Then we have so decided. And ready to go on to the next one.

Dr. Buchanan: Just a second. This is Ron again. And

I just wanted to come back and say something.

I did look further into this question of Pu-239. The bioassay -- I'd like to make a correction. The bioassay did say 239 or 238 and I was reading Doug's write-up here and he says SC&A chose to evaluate Pu-239 data points because there was more data and more individual data points with 239.

So, that was the reason that SC&A used 239 because the data was divided in 238, a few data points, and 239 there was more data points. So Doug felt he could get a better estimate of the intake using 239. So that's -- I'd like to add that explanation.

Chair Kotelchuck: Good. Thank you. Good, that's helpful. Alright.

So, I think we're ready to go on to the next one. It is 11:25 East Coast time. I don't know, I guess let's -- should we start? I would like to start the next one. What do others think? That may mean that we'll go on until 12:30 or so here at this time which would be 9:30.

Member Clawson: Let's keep going. We just won't stop.

Chair Kotelchuck: Alright.

Mr. Siebert: Let's do these.

Chair Kotelchuck: Alright. Excellent. So, the next one is -- let's see.

Ms. Gogliotti: If it's okay, I'm sorry to throw a wrench into this. LANL is the next one but for whatever reason my computer is not opening the LANL file. So can we skip ahead to the Ames one until I can figure out why this LANL one won't open.

Chair Kotelchuck: Oh yes, surely, surely.

Ms. Gogliotti: Kathy, are you on the line?

Ms. Behling: Yes, I am. I'm ready.

Ms. Gogliotti: Sorry.

Ms. Behling: That's all right. No problem. I'm anxious to talk. Okay, let's tackle Ames. I think we have it on the screen.

This blind comparison with the Ames Laboratory which they produced uranium and thorium metal and operated research reactors and several radiation-generating machines.

And so if we move to page 6 we will see that -- we'll see that Table 1-1 shows this individual, this energy employee was diagnosed with four cancers. And you'll see the diagnosis dates there.

And if we move on to Table 1.2 we'll see a comparison of the doses for external and internal between NIOSH and SC&A.

And as you can see the recorded external dose for neutrons is very similar and also the missed photon doses are similar.

And it's when we come to the missed neutron doses that we have a significant difference. Also environmental dose is very similar.

And so we'll spend quite a bit of time on that subject. And as a result this NIOSH calculated PoC that was less than 50 percent and SC&A calculated a PoC of greater than 50 percent. So we have a difference in this case.

So let's move on to Section 2. And Section 2 provides information on the individual's job function and also shows that both SC&A and NIOSH primarily used -- the key technical documents were the Ames Technical Basis Document, OTIB-5 for the internal dosimetry and also the implementation guide, the external implementation guide.

Table 2-1. Again, when there's a dash it shows that there was no difference in the data and the

assumptions as used by the two DR methods.

And if we scroll down you can see missed dose there was a difference in the number of zeroes that were calculated between NIOSH and SC&A.

And for the missed dose, the missed neutron dose also a difference in the number of zeroes.

And here's where the major difference in dose came in is SC&A assigned a correction factor of 2 to the missed neutron dose.

Lastly, with the internal dose there was a slight difference because the intakes were calculated by NIOSH on the 365-day calendar year and SC&A is 250-day working year.

So I'll go into the details. Going on to Section 3. And the first is the recorded photon doses. The individual was monitored and all of the recorded photon doses showed LODs of less than 2. So they were treated as missed dose.

There were also recorded neutron doses. Both DR methods identified that there were 10 positive neutron exchanges. They assigned the dose based on assuming 0.1 to 2 MeV neutrons energy range. They also applied the ICRP-60 correction factor. And they used OTIB-5 for finding an appropriate surrogate organ for the four cancers.

For one of the cancers NIOSH used a triangular distribution of their DCF and that resulted in -- the Monte Carlo analysis resulted in the data being entered into IREP in a little bit different manner than SC&A. SC&A used the mode of all of the DCF values.

Based on those assumptions you can see the last paragraph there just before Section 3.3 nearly identical doses, identical or nearly identical doses were calculated by the two DR methods.

If we move on to missed photon doses. Again

missed photon dose is based on one-half of the LOD from the TBD. And both parties, both DR methods used the TBD and OTIB-17 for calculating the missed photon doses.

Again, NIOSH used triangular distribution for one of the cancers and SC&A used mode.

Now, in some of the cases the DOE records, when there was a positive neutron dose identified the records would often show a zero for the photons or the betas. And so both SC&A and NIOSH assumed that a blank could equal to a zero.

SC&A also for one year there were some gaps between the dosimetry and so they filled in those gaps with zero which NIOSH didn't do. But this resulted in NIOSH calculating 86 zeroes and SC&A -- I think this is wrong here. I think SC&A actually calculated 97, not 87 as shown in here, as shown in this section.

This resulted in doses that were obviously slightly higher because of the additional zero doses that SC&A assumed.

Now, we'll go on to the missed neutron dose. Again, both parties assigned neutron dose based on one-half the LOD of the neutrons that was stated in the TBD and they applied the ICRP-60 correction factor of 1.91.

NIOSH calculated 76 neutron exchanges and SC&A calculated 84 zeroes for neutrons.

The difference in the doses is that according to the TBD there is supposed to be a neutron correction factor of 2 applied to various areas at the Ames facility to correct for NTA film that was used.

And NIOSH or SC&A applied that correction factor and that ended up with the doses being more than twice -- more than double of what the NIOSH doses were.

So the comparison between NIOSH and SC&A is the fact that we did apply this correction factor.

Now, thereafter when we actually got to look at the files there is something, I always call it a DR note. I guess it's titled the DR guidance document, it's a file that's not a published document that was put into this individual's administrative file.

And according to that it indicates that the correction factor does not get applied to missed neutron dose.

Now, this is not a published document and this information, this document was not available to SC&A and we based the decision to apply this correction factor on information that we read in the Technical Basis Document.

We move on to Section 3.5, the onsite ambient dose was not calculated by either NIOSH or SC&A based on TBD guidance. No, actually PROC-60 guidance.

And same with the occupational medical dose. It was not calculated because of guidance in OTIB-79.

And let's move on then to Section 4 on page 13. There were no bioassay records for this individual. So environmental intakes were based on data in the TBD. And they were calculated by both NIOSH and SC&A.

And as I previously mentioned SC&A used a 250-day work year for calculating the intakes and NIOSH used a 365-day calendar year. And the results of those assumptions are shown in Table 4-1. And obviously they were very modest doses.

Lastly, there was no evidence in the CATI report of any instance or yet unaccounted for exposure, so there was no additional dose added based on CATI information.

Okay, if we go on to our Section 5 now, our professional judgment decision points. Obviously as we discussed the missed neutron dose correction

factor being applied by SC&A based on our interpretation of the Technical Basis Document, and this was not added by NIOSH.

And then lastly, the assessment of number of zeroes to go into the both neutron and photon missed doses. SC&A did fill in some gaps in a one-year time frame with zeroes in those gaps. NIOSH did not do that. And I guess obviously the professional judgment comes in. It highlights how assignment of missed dose can be looked at differently.

I guess in certain situations these gaps could have been filled in with coworker models because they are available for Ames.

Lastly, we'll go into the summary conclusions in Section 6. And that again shows the comparison of external and internal doses between SC&A and NIOSH for the four cancers.

And again, the combination of PoCs for those four cancers, SC&A was greater than 50 percent and NIOSH less than 50 percent. And as we talked the differences are highlighted below there. I don't know that we need to go through those again. If you'd like I can.

And there we have it. So, do we have any questions?

Chair Kotelchuck: Okay. Comments? Questions first?

Mr. Siebert: This is Scott. Would you like me to address the neutron thing?

Chair Kotelchuck: Yes.

Mr. Siebert: I figure that's probably the biggest question.

Chair Kotelchuck: Well, it is not only the biggest question. It's the biggest difference in PoCs of any that we've come across so far, so.

Mr. Siebert: Correct.

Chair Kotelchuck: So this is of major importance.

Mr. Siebert: Okay. And I can address that. And Kathy mentioned this, just based on the fact that there is direction to assess it the way we did. We'll get into that in a second.

But this question of applying the correction factor to missed neutrons at Ames during that timeframe was actually -- we addressed that five years ago when we did a change out of the 13th Set. And at that time, we spent a lot of time going back and forth to demonstrate that the accurate way to assess it is to not apply that correction factor.

Once the Subcommittee agreed, what we did is we put it in the dose reconstruction guidance document, as was mentioned. And that document goes along with every claim that is assessed during that time. So, the methodology itself is not a question of professional judgment because we have direction on how to do that.

The question seems to be more of an issue of whether SC&A had access to that document or not. I can't really address that personally. Based on the fact that the way we handle it on our side is that DR guidance document not only goes with every claim that is assessed with it, but it also is in our tools folder, which is replicated over to, I believe, the DCAS side where all of our tools are replicated as well, so that SC&A has access to our tools.

I don't have access to that, so I don't know. But my understanding is that everything in that folder is replicated, so the DR guidance document should be over there as well. Now, like I said, I can't speak to that, and Grady, I apologize if I kind of put you on the spot.

Mr. Calhoun: Well, that's okay because I don't know either, because I have no reason to look at that.

Ms. Behling: And this is Kathy. Obviously, when we're doing these blinds, we do not look at -- we don't have access to any of this, NOCTS folders. We have access, but we don't look at any of those folders. We strictly -- this is a blind and we go forward with the technical documentation that we have. And I'm sure this is --

Mr. Siebert: Can I clarify on that?

Ms. Behling: Yes.

Mr. Siebert: Once again, this is not something that would be in the -- it is in the files along with the case, but I'm not saying that's where it would just be located. It's also located with the default tools that we use. Tools that are, you know, the blank tools that are used before they're used by any claim.

So, wherever those are placed, that's where I'm thinking that should also be accessible to you. That's what I'm saying.

Ms. Behling: Okay. Yes, I agree. And I guess my question is -- and I guess based on what you're saying, Scott, and my recollection is not as good as yours.

But in thinking about this logically, when I look at the TBD and look at the data that's provided in the TBD, and the fact that we are basing missed dose on our dosimeters. And so it's the dosimeter -- if we're going to do a correction factor for recorded, wouldn't that also apply to this? I guess, we had that discussion?

Mr. Siebert: Yeah, I understand your concern. And, yeah, we did have this discussion. It's actually documented in the transcript of April 2nd, 2014, of this Subcommittee.

Ms. Behling: Okay. Because I would be -- I'd have to go back and refamiliarize myself with that, because the other thing that I always go back to

with this issue, we do have this, what I always call a hierarchy of data. And, to me, the TBD should be the document that we go to when we do our blinds, along with the OTIBs, and not necessarily some guidance document that's not necessarily published. Am I correct?

Mr. Calhoun: Well, I will state that, yes, that I understand that. However, the whole point of the guidance document is, until a TBD is updated to reflect that information, this ensures that we are doing it consistently on our side for updated methods. We wouldn't want to wait until the TBD is updated to start applying correct methods.

Ms. Behling: Well, if this was done back in 2014, I guess it didn't get reflected into the TBD yet. Because, obviously, the most current TBD is 2012. So I --

Mr. Katz: Can I ask, Kathy, does the SC&A use any of the tools? Or do you do everything by hand, in a sense? Not by hand, of course, but do you use the tools that DCAS uses to do the DRs?

Ms. Behling: We do go in and use the CADW tools and IREP tools and other tools that have been developed for the OTIBs, yes.

Mr. Katz: Okay. So, anyway, this is one of those tools. But I think it's fair to appreciate that SC&A, which doesn't do these DR cases voluminously like NIOSH, I think it's fair to recognize that their awareness that there is a tool for this, maybe that's the problem here. They wouldn't necessarily know that there was a tool they should be going to for this. Right?

Chair Kotelchuck: Yes. Sounds like it.

Ms. Gogliotti: To my knowledge, we don't have access to these DR guidance documents. So if we do have access and we don't know where to find them, perhaps we could figure that out offline. But this comes up again and again for dose reconstructions,

where we think there's a problem and really they fall in the guidance document we didn't have access to. And it's not always included in the claims file.

Mr. Katz: Right. But, Rose, this isn't a guidance. This is a tool. This is one of the things you drop your data in and it produces a calculation rate.

(Simultaneous speaking.)

Ms. Behling: Right. This is not a tool.

Ms. Gogliotti: It's found with the tools. Right, Scott?

Mr. Siebert: That is correct. This is implemented in the tool. Correct.

Mr. Katz: Okay. Got it.

Ms. Behling: And I don't believe -- although maybe today I'm incorrect here, Scott can correct me -- are there these, quote, DR guidance documents for every facility? Because that wasn't always the case, and it wasn't always the case that they got attached to the files.

That was something that I remember Mark Griffon was very adamant about, and ultimately they were incorporated in on the later cases. But we didn't initially realize that these even existed as an interim reconstruction method.

Mr. Katz: Right. But we have a long track record of this now. And Mark Griffon's long gone. Right?

Ms. Behling: Yes.

Mr. Katz: And we have been doing this for a long time. But you don't see the cases until after you've done the blind review. So you wouldn't see what's in the file, so that's understandable.

I think at the point that SC&A does, you know, after the DR case has been reviewed and you're doing your comparison, at that point, is that the point where you are looking at the files to see what -- to

understand what NIOSH did? Or do you actually look at the file for what NIOSH did after the comparison has been published?

Ms. Behling: No. In order to complete the comparison, we first publish our PoC and then, when we've been given permission to go ahead and do the comparison, then we look at the NIOSH files.

Mr. Katz: Got it. Got it. So then, at that point, it seems like, just thinking about the future, there's nothing to do here on this case, but thinking of the future, when you look at those files, then it seems like that's the cue. You see the DR file. You see that there's that guidance document, and you know that you can then address this then, and you don't have to put out the comparison report with, you know, a mistake about this issue.

Ms. Behling: However, we've already published our PoC.

Mr. Katz: Yeah, that's not a problem. I mean, it's just you supplement the comparison report. I mean, at least you can address it. For that matter, you can go back and say, we've got to recalculate the PoC because we didn't do the PoC right. Whatever. Because we didn't include the right -- again, you can correct it for defects. What we don't want is the review to be defective. If the review case is defective, then it's not helpful as a comparison.

Chair Kotelchuck: Right. Correct.

Mr. Katz: Yeah, that's all. I'm just talking about going forward.

(Simultaneous speaking.)

Member Beach: This is Josie. But it's fair to say that this one should be possibly re-ran by SC&A?

Mr. Katz: Yes.

Chair Kotelchuck: I mean, that seems to me. And that's exactly what we're looking for. We want to

make sure that on each of these two -- the Subcommittee is trying to see that each of these two cases are valid and now we discover, and it's understandable, it's not a mistake on SC&A's part that there was information that they did not have access to. And that they need to go back and redo it with having that access.

And it's that later comparison which has to be run through the Subcommittee that will get it published, if you will. And we'll see whether people agree or not in terms of compensation decision. Yes, I think it needs to rerun.

Ms. Behling: Okay.

Ms. Gogliotti: And we can certainly do that. Just for my own clarification here, so you're directing us to, after we've completed our blind, sent our memo, and locked in a number, when we start the comparison, if we realize there's a problem like this one -- you're going to see another one like this on LANL, but different -- you would like us to go back and revise the blind, adding some kind of discussion? Or you want the new run to be in the comparison report, "had SC&A done this correctly, these are the new values"?

Chair Kotelchuck: I think there has to be a revised comparison report. I mean, it's --

Ms. Gogliotti: In the comparison or in the blind itself? Because we view them as separately even though they're published together.

Chair Kotelchuck: Okay. My feeling is that I'm thinking of the report to the Secretary. And it is that corrected one that I want to go in there. I don't think there's any point in leaving a number in which we know is not appropriate. And, again, not any fault of SC&A's.

I mean, it's just an unfortunate situation that -- well, it's not unfortunate. I mean, as Ted said, DCAS is doing dose reconstructions, SC&A has a

more limited role and there are things that they may not know and they only find out later.

Member Clawson: Dave, this is Brad. Can I ask Rose a question, please? One of my things was, I was listening to what you were saying, Rose, and you're saying that going back and changing your original blind -- myself, I don't see that as -- I want to show that this is what we did. This is how blind we were in this. We didn't see any of these. This is how we did it, you know. But in the final report, couldn't we put that, you know, after evaluation we come to find out this tool is used to be able to do this, or whatever.

Because I think it's saying, actually, I look at this as this is a very good thing because it shows how precise these blinds have been being done. I just think in the final report --

Mr. Katz: So, Brad, consistent with what you're saying, and I think what Rose was asking about, I think as long as -- you don't have to go back and redo the original blind that you turned in, case report that you documented way before. But when you put in that comparison report, do the right calculations, and then if you could just have a footnote. And the footnote's just in case someone goes back to the original and wonders why they're different, that footnote would take care of that.

Member Clawson: Yes.

Mr. Katz: I think that's nicely transparent and yet doesn't end up with wrong results, because when the Subcommittee prepares reports to the Secretary and so on, they're going to look at the comparison reports anyway. They're not going to go back and look at the individual cases. I mean, the original blind review. So, yeah.

Chair Kotelchuck: So that will be done?

Ms. Gogliotti: Yes. So, going forward, we will make that change.

Chair Kotelchuck: Okay.

Ms. Gogliotti: We obviously can't change what's been done for this set, but we will revise this comparison report to reflect that.

Mr. Katz: That sounds good.

Ms. Behling: Okay.

Chair Kotelchuck: And then, with that, I think that is our resolve for this case. Right? And it's this Ames case. And then we will see the revised comparison report and, if you will, approve it or accept it. Right? Later.

Mr. Katz: Right.

Chair Kotelchuck: That is, the revised report will have to come back to us at a later meeting, and we will get through it. It should be straightforward, I hope, at that time.

Mr. Katz: Yeah, it can come back at the next meeting, Dave. My question before you leave this case is, I don't know whether NIOSH had a chance or needs to address anything else in the professional judgment category. I know this was the biggest matter, but I don't know whether it was the only matter of concern or not.

Member Beach: Yeah, and, Ted, thanks for -- this is Josie. I had a question on the 365 days versus the 250. I don't know if we've addressed why SC&A chose the 250 work and NIOSH the 365. Small matter, but just curious.

Mr. Katz: Scott Siebert, I think the differences -- I mean, so, SC&A presented those other differences. Do you want to address any of them?

Mr. Siebert: Sure. The 250 versus the 365, all of our ambient doses and environmental doses are based upon a 365-day year. We don't break it up into the 250. So, that is a standard calculation that's done on our side. And when one goes back

into the TBD and determines how the numbers were assessed based on breathing rate over the full year and so on, 365 is the way to assess it. So, that's that difference.

The other one is dealing with that short period of unmonitored treatment. We looked at that and the fact that the individual did not have badging during a very short amount of time, whereas they did during the rest of the time.

This is one I do believe is a reasonable professional judgment difference. That the dose reconstructor made the determination that they were not being monitored for a reason, because they were monitored at other times, and assigned ambient, whereas SC&A went in and filled in that area of that brief timeframe -- and it's about a month, month and a half, if I remember correctly -- with bi-weekly zeroes instead.

Mr. Katz: Thank you, Scott.

Ms. Behling: Yeah, it's about a three and a half month. I'm sorry, this is about a three and a half, four month period. And it's a claimant-favorable approach.

Chair Kotelchuck: Just coming back to your report, on Page 11, you said you thought there was an error in the missed photon dose. And you were right. I looked at it. I'm sure some others have looked at it also. But on the SC&A count for total number it's not 87. I believe it's 94. Double check, but I think that needs a correction in there for the dose conversion --

Ms. Behling: Yes.

Ms. Gogliotti: We'll take care of that when we redo the run also.

Ms. Behling: Yes.

Chair Kotelchuck: Yeah. Okay. Alright. Folks, are

there any other questions from the Subcommittee before we wrap it up?

Dr. Buchanan: This is Ron Buchanan. I'm not on the Subcommittee, but I would like a clarification

Mr. Calhoun: Yes.

Dr. Buchanan: Okay. The site guidance documents have been a problem since day one, knowing what the current one is and where they're at. Is there any way NIOSH could put those where we can find them on the AB drive so that we know what sites have them and that they're up to date.

Because I have some I've collected here and there, and they're like '05 and '07. I know they're not used still, probably. Where can we get an up-to-date, when we're doing a blind dose, or any dose, and go and get the current site guidance documents? Could NIOSH let us know that, maybe offline sometime?

Mr. Calhoun: Yeah. This is Grady. I'll check into that.

Dr. Buchanan: Okay. That would be much helpful and appreciated. Thank you.

Mr. Katz: And Grady, if you'd just copy me at least when you've got that result, however it is. And I can just make sure everyone knows. Thanks.

Mr. Calhoun: Sure thing.

Chair Kotelchuck: Very good. Excellent. Okay. So, we've disposed of this in terms of how it will be handled, the Ames case. And it is almost noon here on the East Coast, so it seems appropriate to take our hour break for lunch and reconvene at 1:00 p.m. East Coast time. Is that okay, folks?

Member Beach: Sounds good.

Chair Kotelchuck: Okay. And hopefully we'll be able to go on to the LANL case when we come back. Rose, I hope things are --

Ms. Gogliotti: I've got it pulled up here. I don't know why it wouldn't open from the hard drive, so I just emailed it to myself.

Chair Kotelchuck: And by the way, I spoke to you before the meeting began that I couldn't get back on to my proper place in my CDC computer, and I got back into it long ago.

So, folks, see you all at 1:00 p.m. East Coast time.

Mr. Katz: Thanks.

(Whereupon, the above-entitled matter went off the record at 11:58 a.m. and resumed at 1:01 p.m.)

Mr. Katz: So this is the Dose Reconstruction Review Subcommittee. And, Dave, it's your meeting again.

Chair Kotelchuck: Okay. So, I think we were going to start with the LANL blind case.

Ms. Gogliotti: Yes. Can you see my screen?

Mr. Katz: Yes.

Member Clawson: We can see it.

Ms. Gogliotti: Okay. Great. Nicole?

Ms. Briggs: Yes. Okay. So, this is the report of G34, which is for the Los Alamos Site. Now, for this case, there are pretty different PoC values between NIOSH and SC&A. NIOSH's was over 50, and SC&A was under 50. And we'll get into those reasons during my discussion.

So, I'll go through some of the tables. Page 6 has Table 1-1, which is a list of all the cancers that are involved for this particular case. And Table 1-2, which is on Page 7, presents a summary of the occupational doses calculated by both NIOSH and SC&A.

And for their dose reconstructions, NIOSH stated that they calculated doses using best-estimate

methods and claimant-favorable assumptions. And SC&A said that they used reasonable and claimant-favorable methods. Let's see, and then on Page 9, Table 1-3, there's a comparison of the final PoC values.

So, if we go to the beginning of Section 2, which is on Page 10, that gives a little bit more detail about the employee's work history. And Table 2-2 presents a comparison of all of the documents, the assumptions, and the dose parameters used by both parties. And as, I think, Ron mentioned before, the dash in the second column simply means that both SC&A and NIOSH used the same parameters and procedures for that particular dose assignment.

So if we go to Section 3, which starts on Page 12, that presents the details of the external dose calculations. Now, this employee was actually not monitored for external exposures, so both parties used the data from the LANL TBD to assign only occupational medical dose and onsite ambient dose.

So, for the occupational medical dose, both parties assigned the dose using the documented X-ray exams for this employee in the DOE records. And, let's see, Table 3-1 on Page 12 lists those occupational medical doses assigned by both parties and for each cancer.

Now, although both parties used most of the same methods in terms of the original data, this is where we have the largest difference in dose and is what is attributed to the large difference in the PoC values.

So, both parties assigned dose from a pre-employment X-ray exam that was listed in the records. Now, NIOSH assigned it as a photofluoroscopic exam, a PFG exam, and SC&A assigned it as a conventional X-ray exam. And, as we know, the doses for PFG exams are much larger than doses from regular X-ray exams. And that's particularly the case if it involves certain target organs.

So, now, the medical records for this pre-employment exam, this one in particular, did not specify the type of the scan. So, the LANL TBD does say that if a medical record has a certain film number notation involved with it, then it should be considered a PFG. Now, this was honestly an oversight on the part of SC&A, which did not take this notation into account, and therefore assigned the doses as conventional X-rays.

Now, the PFG doses in some cases can be, you know, three or as much as ten times higher than the conventional X-rays. And this difference was compounded by the fact that we're dealing with several cancers for this particular case. And this is really the main reason for that big difference in PoC.

So, I can pause there, if anybody has any questions.

Chair Kotelchuck: No. Do go ahead.

Ms. Briggs: Okay. Let's see. Next we'll talk about the ambient dose. So, both parties assigned the external onsite ambient dose using the doses presented in the TBD, and that information is on Page 14. And all of those doses are listed in the report on Table 3-2.

Now, there were just small differences in these assigned ambient doses, which are attributed to small differences in the type of the dose conversion factors used, a small difference in the number of working hours per year that were assumed, and some of the distributions used in the IREP calculation.

Now, for the working hours per year, NIOSH used PROC-60, which was appropriate at the time of the original DR. I guess these DRs, they hit an unusual time in terms of the publication of some of the documents. So it was appropriate for the time of the original DR, but that has since been canceled. So SC&A used the work hours information from the site TBD.

Now, for the dose conversion factors, NIOSH and SC&A chose different values. NIOSH used the isotropic, and SC&A used the AP, which also contributed to just a small difference in the ambient dose.

Now, we also should note here that for one of the cancers we found an error in the IREP input. So, SC&A inadvertently omitted the dose conversion factor. I guess it was a copy and paste error in the IREP program, and that resulted in just about an additional, I'd say 200 millirem for one particular cancer site and for the ambient dose.

The last part is -- well, for the doses -- the internal doses. So this EE was not monitored for internal exposures. Both NIOSH and SC&A assigned dose from environmental intakes using the information from the LANL TBD. And both parties used identical methods and arrived at the exact same doses, and those doses are listed on Page 15 in Table 4-1.

Just going to get myself there, too. Okay, that brings us to the section regarding decision points. So, for this case, SC&A identified the area of dose conversion factor selection. And there can be some uncertainty regarding the exposure geometry for a particular worker, for a particular target organ, and these geometries can vary based on the EE's duties and their work environment.

The example for this case is that NIOSH used the isotropic DCF for the ambient dose, and SC&A used the AP geometry. Now, I know the new external dose reconstruction document, OTIB-88, they were actually pretty clear about the use of the isotropic dose conversion factors for ambient dose, but I'm not sure if this document was available around the time we were tasked with these blinds. The document is dated in September of 2018, and I know we were probably working on this one at the time, when SC&A performed this dose reconstruction.

So, let's see, I think, at the time, SC&A chose the

AP dose conversion factor for ambient because those dose conversion factors are higher and then would be claimant-favorable. So that explains the difference in that assignment.

But for the assignment of dose conversion factor selection, specifically for ambient dose, I think the new OTIB, OTIB-88, actually takes away any of that confusion. I don't know, we can discuss that if anyone has any opinions about that.

Let's see. And just to summarize, the last page, Page 18, Table 6-1 has the comparison and breakdown of all of the assigned doses and the PoC values.

So the largest difference came from the assignment of the PFG versus the conventional X-ray exam for occupational medical dose for that one particular year. And this accounts for the majority of the difference in certainly the total assigned dose, and the primary reason for the difference in PoC values.

And the other differences I had mentioned were the work hours, the conversion factors for ambient dose, but these small differences really didn't contribute a significant amount to the total assigned dose. And that's pretty much it for this one.

Chair Kotelchuck: Okay, you're saying that the difference was primarily just due to that one year that you used the PFG exam versus the X-ray?

Ms. Briggs: Yes.

Chair Kotelchuck: -- doesn't make sense to me.

Ms. Briggs: Right, the PFG exam in some cases can be as much as ten times higher.

Chair Kotelchuck: Oh, it is?

Ms. Briggs: Yes, in certain cases. I think it varies but it's not unusual to see an order of magnitude higher or ten times higher. And also, I can't specify but there are several cancers for this case and it

really did add up once we got them all together.

Chair Kotelchuck: It did appear to me that the cancers in the extremities, if I may use that term, were where the large effect occurred. The one case of PFG had happened once years before.

It doesn't accumulate and the differences are enormous in the PoC. Not enormous, pardon me, just very large.

Mr. Katz: Dave, the whole PFG matter, that's sort of understood by everyone pretty early in the program, long before you were on the Board.

But I think just to summarize, those doses are very large with PFG and I believe, early on in particular, there were a lot of cases that were compensated basically because of their multiple PFG exams, not really because of other occupational exposures.

Chair Kotelchuck: Well, but I thought the PFG, if I recall, and I believe I just heard that was just for, what, one year?

(Simultaneous speaking.)

Ms. Briggs: Right, so one year for one particular exam but it's the dose from that exam to each of the target sites, cancer target sites, of which there were many.

Chair Kotelchuck: Right, there certainly were. And between NIOSH and SC&A, for each of you do you consider whether -- have you discussed the difference or the different assignment for that one year?

Is there evidence that one of those is correct and one is not?

Ms. Gogliotti: In this situation SC&A agrees it should have been a PFG scan. When we were looking at the records, it simply doesn't say the scan type and it's an interpretation of the scan.

Chair Kotelchuck: Okay. To my mind, it would be worth looking at the --

Ms. Gogliotti: We will absolutely recalculate these numbers for you with the PA scan rather than the PFG.

Chair Kotelchuck: Okay. Do other people have questions or concerns or does that satisfy the concerns of others?

Member Beach: Dave, this is Josie. That was going to be my question, or re-running or not so thank you.

Chair Kotelchuck: Yes, and that's good and that will come back to the Board. Any other questions, though?

Mr. Siebert: This is Scott. If you don't mind, I do want to point out Nicole was correct, especially about the one that comes out under professional judgment on here as being the selection of the DCS.

The OTIB-88 update is very clear on that so she's correct on that. Prior to that, the information is in both OCAS IG-1 and Procedure 60.

Procedure 60 actually has not yet been cancelled because there's information in there that is being transferred to other TBDs.

OTIB-88 is replacing it but there's still some specific information in 60 that we need to use and reference. So, it hasn't been cancelled yet, it's still active.

But there is information in there as well about using the isotropic DCS so I think there has been guidance on that.

Chair Kotelchuck: Okay.

Mr. Siebert: It's much clearer now in OTIB-88 however.

Chair Kotelchuck: Okay, right, and SC&A now has that or you will make sure they have it?

Ms. Gogliotti: We now have access to it.

Chair Kotelchuck: Okay, good.

Ms. Gogliotti: It was just issued right in the middle of our DRs.

Chair Kotelchuck: Right, and that has happened before. Things change and you are informed of the change or it's in the process of change.

Okay, so unless there's objection we'll go on, with this returning to us at a later date. Does that sound okay?

Member Clawson: Fine with that.

Member Beach: Yes, sounds good.

Chair Kotelchuck: Okay, fine, let's go through B.

Ms. Gogliotti: Okay, the next one here is going to be B32.

Chair Kotelchuck: Yes, sorry.

Ms. Gogliotti: Paducah and Hanford. And, Ron, are you on the line?

Dr. Buchanan: Yes, I am on the line and again, if you'll turn to Page 6? I'll go by my marked up copy here and I'll tell you when to turn the pages.

This is a Paducah Gaseous Diffusion Plant worker in early years, and that's important we'll see a little later. And with a very, very short stay at the Hanford site.

And so the initial DR was formed by NIOSH in April 2017. We were assigned the case on September 26th and we submitted our report in October of 2018.

And both methods arrived at PoC less than 50

percent, therefore, it wouldn't be compensated, as shown there on Page 6. Now, if we go down to Page 7, Table 1-1, it gives us an idea of what doses were assigned.

The worker wasn't monitored so we had to do use coworker dose assignments for both external and internal, and medical and environmental is listed there.

We see that the internal involved fission products, tritium and environmental. And the main difference in this dose reconstruction is whether you're assigned coworker or environmental for periods that it isn't available in the TBD.

We go to Page 8 there and we see Table 1-2 which compares the final PoC. You see that they both range between 45 and 50 percent but most were under 50 percent.

And we go to Page 9 there and we see the EE was not monitored for external dose or internal, and so we have Table 2-3 which compares some of the dose reconstruction methods.

And we have a coworker dose for Hanford and coworker dose for Paducah, and the main difference is that NIOSH used the Hanford workbook as opposed to we did not, and the Paducah workbook.

The coworker doses at Paducah was the main difference in that NIOSH assigned it for '52, used coworker dose. SC&A did not assign coworker dose because there was none listed in the TBD for 1952 so they assigned environmental, and so that was the main difference.

And of course, that carries on all the way down to shallow dose and neutron dose as we shoot further down the page there.

And then it also carried on into ambient on Page 11 because SC&A assigned some ambient dose instead of coworker dose, so there was a tradeoff between

those two.

We see that the medical doses were assigned the same, internal doses, again, SC&A used environmental and NIOSH assigned coworker and so there was a difference of opinion there. That leads us into the details of the external dose in Section 6 and starts on Page 13. And so since the worker was monitored --

Ms. Gogliotti: Rose here, I just got kicked out.

Dr. Buchanan: Oh, okay, we're on Page 13.

Ms. Gogliotti: Okay, can you see my screen still?

Dr. Buchanan: Yes, if you go to Page 13 we'll start on external dose. Okay, so now we're all on the same page literally and we'll get on to the external dose.

We see this was monitored, both parties assigned coworker doses for Hanford and Paducah, and used a dose conversion factor of 1 for the skin dose and the relevant dose conversion factors for the non-skin dose.

They assigned a dose of 30 to 250 keV photons. Both parties used the information for coworker dose out of the Paducah coworker dose listing and adjusted it for construction trade worker in OTIB-52 and both parties used Table B-3 appropriately.

And we see that, again, the main difference since Paducah started to actually handle radioactive material on September 1, 1952 and so unfortunately, the TBD did not list anything for 1952.

And so what happened there, NIOSH extrapolated from 1953 backwards and used that prorated for 1952. SC&A did not use the back extrapolation, instead they used environmental dose for that partial year of 1952, which would be a third of the year.

And so that made it slightly different. SC&A assigned a slightly lower dose for the coworker dose and then a greater dose for the environmental dose.

For Hanford at the bottom of that page of 13, we see we both assigned coworker dose -- well, we both assigned it as 100 percent, 30 to 250 keV.

We used the 50th percentile coworker dose and assigned identical doses there to the skin and non-skin organs at the bottom of Page 13.

And so if we go to Page 14 now, we see there is the total coworker doses assigned and, again, NIOSH assigned a greater dose because they assigned it to 52 and SC&A assigned environmental dose.

Now, for shallow dose in Section 3.2 we see both parties assign it as greater than 15 keV photons and used the information in Table B-2 of the Paducah TBD.

And there was a slight difference in the final year of employment, how you calculate the final dose and also, of course, 52 since we didn't -- SC&A didn't assign it 52. It wouldn't have been a shallow dose.

So, we see Table 3-2 shows the comparisons of the shallow dose and again, SC&A is slightly less just because of the reasons I mentioned. And we look at Section 3.3 on Page 14 and then on Page 15 we have unmonitored neutron dose.

Of course, we wouldn't monitor for neutrons and so we used the recommendation in the TBD for neutron dose, coworker dose, and that's summarized on Page 15 of Section 3-3 for Hanford.

And then we have Paducah in 3.1 and used the neutron ratio of 0.2 and dose conversion factor of 1, skin, and the appropriate one for the other organ.

And we see that, of course, since SC&A assigned environmental dose for 1952, our dose is a little bit less than NIOSH.

And that brings us to Hanford there in 3.3.2 and both parties assigned unmonitored dose there using the appropriate tables and the ratio and energy values.

We used the same parameters, the ICRP correction factor of 1.91 and same energy range and everything, the same neutron to photon ratio of 0.8.

However, in the end it appeared that NIOSH's assignment was about 35 percent higher than SC&A's.

And so we tried to find out why since we used all the same parameters and the same adjustment factors and so we went through the TBD to try to find out where 35 percent comes in. And we could not find it anywhere except for where they state that neutron dose management form of TLDs implemented in 1972 are considered accurate except for a period from 1978 to 1983 and adjust the neutron dose to 1.35 times the recorded the neutron dose.

And that was the only thing we could find that might have influenced that, however, that wouldn't apply to 1953. And so when NIOSH gives their discussion, maybe they can shed some light on that.

We just couldn't find out where that extra factor of 35 percent is coming in. And so just a while ago I searched the Hanford guide, DR guide, and I could not find anything that mentioned 35 percent or a factor of 1.35.

So, we'll let NIOSH address that when we get to that. Okay, so we have comparison of neutron doses there on Page 16 and we see that mainly, the factor 1.35 and the exact days you use for 1954.

And of course, the fact that we didn't assign coworker doses in '52. So, that brings us to the occupational medical dose in Section 3.4 on Page 16.

We find that there was no medical records for this EE in the DOE files so we assigned it coordinates TBD, initial hire two-year periodic and a termination exam and we assigned identical doses to both the skin and non-skin organs as shown there in Summary Table 3-4 on Page 16.

There was no differences there. Now, external, it would be in Section 3.5 on Page 16. NIOSH did not assign ambient dose because EE was assigned coworker dose for all the time that it was in employment.

SC&A, as we previously discussed, could not find information on 1952 coworker dose. We tried to use the environmental dose, that wasn't stated in the TBD either so we went to Procedure 60 and used their maximum Paducah environmental dose of 0.260 rem for a 2600 hour work year and prorated that to the appropriate time period for 1952.

And again, we came up using the ambient dose conversion factor, AP, whereas NIOSH used the ROT geometry.

And so we just discussed that in the last DR and so that has since been formalized in OTIB-88, the rotation is correct.

Now, we come to Hanford on Page 17, environmental 3.5.2, and both assigned ambient dose for the small amount of time that the worker was there, a very short time, using the -- Procedure 60 says that for a certain date in the 1970s you assign ambient dose.

And so we both did use the same values except that NIOSH tracked it out to 20 millirem background dose.

So, this comes from Procedure 60, Page 21, which refers to the old tables in the 2005 or so Hanford. They used Table 4.3.1-1. The newer versions use Table 4-8.

And so we use the Table 4.8 and it doesn't say anything in Hanford TBD about subtracting out the 20 millirem.

It does say in Procedure 60 on Page 21 that the tables contained in it does subtract out the 20 millirem background dose.

So that was the difference, slight difference, in the environmental assignment plus the AP versus the ISO dose conversion factor instead of rotational. That was incorrect, it's ISO.

So, that is a slight difference in environmental for Hanford for a very short period of time. We didn't have too much difference in this case, it's so short, but it could in multiple years of ambient dose.

So, looking at Table 3-5 it compares them here and you see that NIOSH assigned dose is less, of course, than SC&A's assigned dose because we assigned some years as ambient instead of coworker.

So, that is the external dose and now we turn to Page 18, Section 4 for the internal. And again, there was no bioassays for either site for internal and so both parties used coworker intake according to the tables, 50th percentile uranium intakes in the TBD, finding out that Type S provided the highest dose and, of course, included the recycled uranium into that.

And SC&A and NIOSH assigned identical doses to the skin locations and a very slight difference of a millirem to the non-skin location.

And this is probably due to rounding and carrying forth the numbers because we used all the same parameters. That was for Paducah and now for Hanford, again a short period but still used coworker dose.

NIOSH used the values that included tritium, plutonium, sodium, uranium, zinc from TBD Table 5.43 for construction trade workers and used Type

S plutonium and used OTIB-49 for the appropriate organs for the Super S plutonium.

And additionally, NIOSH included exposure from fission and activation products according to OTIB-54 and so these were assigned prorated for the period of employment, using cesium-137 as the main element there in conjunction with OTIB-54.

And these all came down to a few millirems of dose assignment to the skin and non-skin organs.

And now we see on Page 19 SC&A used environmental intake and the reason they did that says that the TBD is 6-5 for Hanford, Page 68 says gen monitored internal dose for workers but no bioassay for just baseline or terminal bioassays.

No evidence of ever having more dosimeters, it should be based on that not only in fact.

So, in this case that's what SC&A did and used the environmental intake for the short period that was necessary and assigned less than 1 millirem per year to each organ.

And so this was probably NIOSH used to conserve the approach which was perhaps more claimant-favorable. SC&A went strictly by the TBD and assigned the environmental since the worker had no monitoring data, external or internal.

So, we see we have a summary of the doses there for coworker dose for Hanford in there. They're very small but they're slightly different, NIOSH had a slightly different, higher dose of course using coworker dose.

Section 4.3 radiological incidents, both parties reviewed the files and did not find anything to suggest any changes to the DR. This brings us to Section 5 on Page 20 and that's a summary of professional judgments.

We see that in one case, as I've talked about

previously, SC&A could not find coworker dose 52 so they used environmental. NIOSH extrapolated 53 back to 52 so that resulted in a slightly higher dose.

And so in this case it didn't make much difference, it would be handy, though, if the TBDs when they were revised addressed what's supposed to be done September 1, 1952 to December 31, 1952 if you need coworker data or environmental data.

Hanford coworker versus environmental intakes, again, I think there's a difference there. In this case because it wasn't very long, a longer period could have resulted in a bigger difference and that's if the person isn't monitored whatsoever.

You then assign environmental dose and that's what SC&A interpreted the TBD to say. Simply, NIOSH erred on the high side and assigned coworker dose.

So, in summary, on Page 21 we have a comparison of the doses and PoCs. We see again that the PoC is slightly higher for NIOSH and SC&A is a little lower.

Both parties used the enterprise edition of IREP to calculate the POCs and so that's essentially the presentation and I'm open for questions.

Chair Kotelchuck: Okay, questions, folks? Don't overwhelm us.

Mr. Siebert: Well this is Scott, if you'd like me to cover those two points, I'd be happy to do that.

Chair Kotelchuck: We'd be happy to have you do that.

Mr. Siebert: The first one is the discussion about the coworker versus ambient in 1952 and Ron's right, the TBD is silent on that. We've gone back and we've looked and historically we've used guidance on our own that we have extended that 1953 coworker information back for the months of September, October, November, December.

But looking back, that was not well documented so I

have ensured that that information is now placed in the DR guidance document, which I hope you guys can get access to soon.

So, that information will not be a professional judgment issue later on. During this decision-making process, I think it's a reasonable thing to say it was but we are documenting that to ensure there's consistency on that.

So, we will have that done or we actually do have that done.

And the Hanford coworker versus environmental intakes for those 19 days, and I agree that once again this is a professional judgment issue, the dose reconstructor looked at this individual.

And the fact that they were not monitored but they were a pipe-fitter/welder, they put that construction trade worker-type thought process into account and said that although there are no specific records, it seems reasonable that exposure may have occurred in those types of work such as is described in OTIB-14.

So, that's why they selected coworker instead of ambient.

Chair Kotelchuck: Got it, okay. So, you were saying that from NIOSH's point of view, you might have changed something slightly looking back.

Did I get that correctly?

Mr. Siebert: No, we would still do it probably pretty much the same way. Now we have the 1952 portion documented so it's more clear as to what you should do for those four months when the site first opened.

Chair Kotelchuck: Right, so it's going forward, the process is improved?

Mr. Siebert: Correct.

Chair Kotelchuck: Okay. I don't have any questions so any other Subcommittee Members have questions?

Member Lockey: No, this is good, thank you.

Member Beach: Yes, I don't have any either.

Chair Kotelchuck: Yes.

Member Clawson: This is Brad, I don't have any questions.

Chair Kotelchuck: Okay.

Member Valerio: This is Loretta, no questions.

Chair Kotelchuck: Alright, so I think that we've basically passed on it and approved. So, I think unless, again, if there are any comments from any other staff person perhaps?

Alright, so that's been approved, good. So, let's go on to the fifth of six. We're moving right along on these. Let's see, the fifth one is, let me look.

Ms. Gogliotti: It's Battelle. And Kathy, are you on the line?

Ms. Behling: Yes, I am, I'm ready to go. Okay, this is a blind comparison from the Battelle Memorial Institute and this is on King Avenue site in Columbus, Ohio.

There's another Battelle facility on West Jefferson in Columbus, Ohio also, which is similar to this.

But the King Avenue site processed in machine-enriched uranium, depleted uranium, and thorium and they fabricated fuel elements and they did some radiochemical analysis.

So, if we go to Page 7, we can see under Table 1.1 the summary of cancers for this individual and there are six. And if we move on then to Table 2, we'll see a comparison of NIOSH's doses to SC&A's doses.

And as you can see in this table, the internal and external pathway dose is calculated by -- both NIOSH and SC&A were identical or very similar in this case.

And the combined PoCs were less than 50 percent by both methodologies. And these comparison tables go through Page 10 and so we'll move on to Page 11.

And on Page 11 that identifies, the first paragraph identifies, the individual's job classification and this EE was periodically monitored for internal and external exposure.

And as you can see, the list of technical documents that were used, both NIOSH and SC&A used the same documents, primarily the BMI King Avenue Technical Basis Document.

And going down, scanning down to Table 2-1, this is a comparison of the data and assumptions and as we look down here you can see that most of SC&A's assumptions mirrored what NIOSH used.

There were only differences in the missed shallow dose, the occupational medical dose, and the internal environmental dose, which we'll discuss in the detailed section.

So, therefore, we can move on to Page 14 and here we'll start with the details of the external dose calculations.

So, based on DOE records they were positive or greater than LOD over two doses reported for several years of employment. Both methodologies assumed 100 percent AP, used the recorded values and appropriate DCFs and calculated an identical 30 to 250 keV photon dose that's identified in the second paragraph.

Recorded shallow dose, there was only one positive beta dose and both methods also use the AP geometry.

They assign that electron dose as greater than 15 keV, used appropriate DCFs and calculated an identical dose. Modest dose shown in Section 3.2.

If we go on to Section 3.3 the missed photon dose, again, very similar results here. Both NIOSH and SC&A identified 32 zeroes. They based the dose on one-half of the MDA values that was listed in the TBD for the various time of employment periods.

They used appropriate DCFs and the doses are shown in Table 3.1 and they were entered into IREP as a log-normal distribution with the geometric standard deviation of 1.5. The doses were identical.

If we move on to missed shallow dose on Page 15, NIOSH did not assign a missed shallow dose in accordance with OTIB-17. They determined that all of the missed dose should be assigned under 30-250 keV photons.

In this particular case, SC&A interpreted the records a little bit differently. In looking through the records, they found where there were often two dosimetry records, one from Landauer and one from Battelle.

And in some cases the same dosimeter was reported on both and after doing some research in the Site Research Database, they determined that when there was an M identified under the photons that was equivalent to less than MDA.

And it also stated in one of the documents that a minimal beta dose reading are unreported unless there's a positive skin exposure.

So, therefore, SC&A interpreted an M under photons as assuming a 0 and a blank for the beta readings were assigned a 0. Based on that, those assumptions, SC&A assigned 120 millirem to each of the cancers.

That was assigned as greater than 15 keV electrons and entered into IREP as a log-normal distribution

with a GSD of 1.52.

Also, going on to Section 3.5, missed neutron dose, the EE was monitored for neutrons for several years and both NIOSH and SC&A calculated doses using the TBD LOD values, appropriate DCFs, ICRP 60, a correction factor of 1.91 and again, resulted in the assignment of the same dose.

And we can move on now to on-site ambient. Both assessed on-site ambient in accordance with the TBD and calculated the same dose again as shown in Section 3.6.

Occupational medical dose, both NIOSH and SC&A looked at the DOE records and based their dose on what was reported in the records. They used doses from OTIB-6. The doses shown in Section 3.7 are very similar.

SC&A's dose was slightly higher due to their -- they considered that the individual also was given a termination chest PA. NIOSH did not assume that.

Okay, that's external dose and if we want to move on to Page 17, we'll talk about internal. Okay, this was monitored for uranium by urinalysis.

All results were less than MDA except for one, therefore, both NIOSH and SC&A assessed both acidic for the positive dose and a missed dose for uranium and recycled uranium.

Both methods used the same assumptions, 100 percent uranium 234. It was stated that they both used the same specific activity of 0.683. Urine excretion rate of 1.4 liters per day and they both assessed all three absorption types, Type S, M, and F.

They both found that Type F produced the highest dose and also considered the recycled uranium, radioisotopes of plutonium, neptunium, technetium, uranium -- or thorium-228 and 232.

When I look at the comparison of the results that are shown in Table 4-1, there was a slight difference and so that made me question if they used all the same assumptions, why there was a little bit of a difference. And in digging through the files, I did determine that NIOSH inadvertently entered a specific activity as 0.693 rather than 83.

So that accounted for the difference in NIOSH's dose being slightly higher. And if we move on to Page 18, the chronic uranium intake, for the missed dose a chronic uranium intake was calculated for a portion of the employment period.

Again, the error of the specific activity was inadvertently introduced which made just a slight difference in the doses.

Again, NIOSH and SC&A both compared Types S, M, and F of solubilities and in this particular case, NIOSH assumed Type M as shown in Table 4-2 and assumed two chronic intake periods where SC&A assumed a Type S and assumed one chronic intake period. And you can see the differences in intake rates on that table.

They also, because plutonium is involved, they also looked at a potential for considering Type Super S plutonium based on OTIB-49; however, this was not necessary for this particular case.

So, in Section 4.1.3, we identified a total uranium intake and based on these assumptions, the doses were very similar.

Now, if we move on to environmental intake, for an environmental internal intake, the TBD states that, and I put a quote in here from the TBD under Section 4.2, that for the King Avenue site, they were calculated in environmental intake that would have resulted in doses of less than 1 millirem.

However, if it was determined that the EE traveled between the King site facility and the West Jefferson site, then they recommend to the dose

reconstructor to calculate those as based on the intake values for the West Jefferson site.

So, in this case, NIOSH, based on information that they found in the CATI report, felt that the EE had worked at both sites and so they calculated their environmental intake using the West Jefferson environmental doses. And this resulted in a dose of less than 1 millirem.

SC&A did not assume, they did not come to the conclusion that the individual worked at the West Jefferson site and so they didn't calculate any environmental intake.

And lastly, the CATI report was reviewed and both concluded that there was no unrecorded incidents. And if we move on to Page 20, the decision points requiring professional judgments, that's what we have just gone over.

Two notable areas where professional judgment came into play and that was reconciling the discrepancies in available dosimetry data. SC&A looked at the two sets of data and did some research to try to determine what some of the notations meant. And NIOSH didn't seem to acknowledge the difference in the monitoring records.

And the impact was of SC&A assigning an additional 120 millirem of electron dose. And then also is the interpretation of bioassay data. When it comes to bioassay data, I think there's always professional judgment in play.

SC&A assumed a chronic intake for Type F and for one period of time and NIOSH assigned two chronic intake periods and assumed a Type M. Doses were similar I think because this wasn't a very complex array of bioassay data, so I think the OTIB-60 guidance was adequate to allow for similar results, even though there were differences in the approach.

And lastly, if we go on to summary conclusions,

again, Table 6.1 presents the NIOSH and SC&A doses for the internal and external doses. Again, everything's very similar and POCs are both less than 50 percent.

And again, NIOSH and SC&A ran the IREP enterprise edition. And again, I could go through the differences, the modest differences, in doses but I think they've been explained previously.

But if you have any questions, I'll take them now.

Chair Kotelchuck: Any questions, folks? Am I on?

Member Clawson: This is Brad, no.

Member Beach: You're on.

Member Valerio: This is Loretta, I don't have any.

Member Lockey: Jim. I'm fine.

Mr. Siebert: This is Scott.

One of the things I can address is the discussion of the discrepancies in the dosimetry data. There is discussion in the TBD about the beta results and so on.

On Page 32 of the TBD it's discussing those types of results and part of that discussion mentions that for reported cases, they would sometimes report doses to the skin by adding the gamma dose to the converted electron dose, which is that beta dose.

The reason that's important is because based on how OTIB-17 works for determining missed dose, it's not necessarily that there's a zero in the beta information that would trigger you to do a missed dose.

But OTIB-17 has a comparison of zeroes for the open window and shielded portions of the monitoring so that if you're talking about open window, that's not just the beta.

That would be the beta plus the deep, that's the whole idea of the skin, because everything is getting through. There's no shielding.

So, in open window zero as well as a deep zero, it's a determination of whether there's a zero in each of those and each and/or both of those is how OTIB-17 determines whether a missed dose is to be assigned.

And in a case such as Batelle, when you add together the beta result and the deeps, you have to add those together to determine whether the open window is a zero or not.

And then do the OTIB-17 process based on that. So, that's why there seems to be a little bit of difference there because we don't assign it just on the beta result itself.

Chair Kotelchuck: Okay, I don't have any questions. Other people? Anybody? Or shall we approve?

Member Clawson: I'm good.

Chair Kotelchuck: Okay.

Member Lockey: I'm good.

Member Beach: I'm good as well, thanks.

Chair Kotelchuck: Okay, fine. Now we'll go onto the very last one of the six, the Oak Ridge one.

Ms. Gogliotti: Okay, just give me a second to pull it up. Can everyone see that?

Chair Kotelchuck: Yes, I have it.

Ms. Gogliotti: Okay, great. This is a case we worked at both K-25 and Y-12. They had a fairly short employment period at K-25 and several decades of employment at Y-12.

They were diagnosed with more than one cancer and you'll see that listed here on Table 2-2. Now,

going up, you'll see the summary of the doses that were assigned by both NIOSH and SC&A.

Overall, we're fairly close though there are some differences. But both of our POCs ended up below 50 percent and on Table 1-2 you'll see the POCs highlighted. So, fairly close and we both came to the denial decision.

Moving on to Page 10 in Table 2-3, you'll see the summary of SC&A and NIOSH's assumptions.

Again, the dashes simply mean that SC&A did exactly the same thing as NIOSH so anything highlighted on the left column there would be differences that we made.

And for the most part, we used a lot of the same assumptions. You'll see the biggest differences that we highlighted here are that NIOSH used their DR workbooks and SC&A does not use those. And there are some differences in distribution types.

There is a fairly large difference that we'll talk about in the internal dose and although we used similar assumptions for internal dose, it doesn't show up here necessarily. There are some differences in those that we'll discuss.

So, starting on the top of Page 12, first for K-25 recorded in this dose, both SC&A and NIOSH did not locate any recorded dose or zero dosimetry record. So, neither assigned any missed or recorded dose to the K-25 employment period.

For Y-12, SC&A and NIOSH used largely the same assumptions, 100 percent, 30-250 keV photons, the same dose conversion factors. The difference here being that NIOSH used the Weibull distribution for one of the cancers and SC&A instead assigned a Kant distribution and that does change the doses assigned. But very modest differences in doses.

Moving on to Section 3.3, the Y-12 recorded shallow dose, both SC&A and NIOSH assumed shallow dose

100 percent, greater than 15 keV electrons.

No shallow dose was assigned to some of the organs based on their location in the body. We both assumed a close attenuation factor and both assigned the same doses in that situation.

Section 3.4, Y-12 missed photon dose, both SC&A and NIOSH again used very close or the same assumptions. The difference in this would simply be that NIOSH used a Monte Carlo approach and SC&A instead assigned a log-normal distribution, which results in very modest differences in doses.

For unmonitored photon dose, the E was not monitored the early periods at Y-12 and K-25. Both SC&A and NIOSH used the data in OTIB-54 and OTIB-26 and did not assign unmonitored periods each time.

So, Section 3.5.1, which is the K-25 unmonitored period doses, SC&A and NIOSH again used very similar assumptions, the same dose correction factors, the same energy ratios.

The only difference in this that we could find was modest rounding differences when we were pro-rating our doses, which resulted in very modest differences.

The exact same thing happened for Y-12 unmonitored period. SC&A and NIOSH both used the 50 percent coworker model, we just rounded slightly differently for our partial years of employment which resulted in very modest differences in the dose that was assigned.

For unmonitored shallow dose in Section 3.6 on Page 13, we both assigned unmonitored shallow dose to the skin to account for potentially -- sorry -- we both assigned dose to this organ.

And again, rounding differences which came to pro-rating for several years of employment. Now, the first difference that we see comes from our

occupational medical dose, which is on Page 14 in Section 3.7.

NIOSH assumed an annual X-ray for every year of employment, whereas SC&A instead only assigned X-rays to the years that we actually had records. So, NIOSH assigned more scans than SC&A.

When you look at the annual scans that were assigned, they're identical other than one year had two scans so SC&A did assign a higher dose to that year.

And then the second difference would be that NIOSH assigned a PFG scan in one year for the time that the EE was employed at K-25. And that's based on guidance in the OTIB or the K-25 activity.

SC&A did not assign this scan because there was no records in the actual EE file. Okay, and for our ambient dose, neither SC&A nor NIOSH assigned ambient dose because we assigned mismeasured and coworker dose during all periods of employment for K-25 and Y-12.

Moving on to Page 15, our internal dose section, where we get a little interesting. For our Y-12 intakes NIOSH and SC&A modeled almost exactly the same intakes with a difference of a percentage point using the same time periods and the same solubility types.

And we come up with the same intake rates; however, SC&A's doses are different than the NIOSH-assigned doses.

Our doses are higher and the only difference we could really find came from SC&A used the equivalent dose calculator whereas NIOSH assigned those using the CADW workbook. And we do believe that has to be discussed because we couldn't figure out what the difference was.

In Section 4.2 at the bottom of Page 15, and moving on to Page 15, it discusses our uranium

intakes and here we do have some differences in the way we address them.

And I'll just skip ahead to Section 4.2.3, which discusses those differences. NIOSH assumed an acute intake with solubility types both S and Type F, whereas SC&A only assigned Type F.

NIOSH assumed that there was an acute intake that happened in 1966 and SC&A only assumed that a missed dose occurred during this time period.

And then NIOSH began this uranium dose at the start of the EE's employment to account for their K-25 intakes, whereas SC&A limited the uranium intake to the time that they actually worked at Y-12. And so they began in a later year.

NIOSH also modeled their doses in the

CADW whereas SC&A used their equivalent dose calendar calculator.

Moving on to Section 4.3 which is on Page 17, both SC&A and NIOSH assigned environmental intakes that both used the Y-12 intake and we both came up with a dose of less than 1 millirem. So we were the same there.

For K-25 coworker intakes, there were no bioassay records for the EE and the DOE or DOL files. They were dual filed, though SC&A assigned a 50th percentile coworker uranium intakes for that period of time.

NIOSH did not assign K-25 coworker model dose for that time because they instead assigned missed uranium to that time period. So, it's just a different way that we approached the problem.

And then Section 4.5 on the bottom of Page 17, our radiological incident section, both CR reports mention that the EE stated that they had some high bioassay results and those were already included in the dose reconstruction and we assigned them

there. So, no changes were made to either as a result of that.

Additionally, NIOSH mentioned that the EE had expressed some concerns regarding exposure to several non-radioactive chemicals, and that was mentioned but no changes were made. SC&A also brought up that the EE had mentioned a criticality incident that happened in the building and several possible incidents that they believe they might have been exposed to, but no additional changes were made to the dose reconstruction.

Okay, on Page 19 is our new section on professional judgment. And here we see that the largest professional judgments that were made was the decision to assign an annual X-ray versus only the recorded X-rays.

And we see this very frequently. NIOSH assigned an annual, SC&A limited theirs to only the X-rays that appeared in the record. And then the second professional judgment issue would be the K-25 coworker intakes.

SC&A assigned coworker intakes to a certain time period and NIOSH assigned missed uranium, again differences in professional judgment.

So, in summary, the POCs and calculated doses are listed here in Table 6-1. You'll see that our POCs were very close. We both were less than 50 percent and we've gone over the differences in our approaches.

Are there any questions?

Chair Kotelchuck: Questions, anybody?

Member Clawson: No.

Chair Kotelchuck: I don't have any.

Member Beach: None here -- a discussion on some of the differences that were pointed out.

Mr. Siebert: And I could hit on some of those.

Chair Kotelchuck: Alright, if you would?

Member Clawson: I'm sure you can, Scott.

Mr. Siebert: Happy to help. First is the discussion of the medical X-rays, and I agree this is a very convoluted process because it has to do with the fact that Y-12 does not give us their medical X-ray records.

So, historically and what's in the TBD is to assign annual X-rays without any other information. Now, what makes it kind of convoluted is the fact that the individuals would transfer from Y-12 to one of the other Oak Ridge sites.

If their records went with them, usually they did, the medical X-rays went along with that and when we request it from, say, in this case K-25 or whatever, we can actually get Y-12's X-ray records from the other site's response.

So there has been a discussion on our side as to whether those are complete or not. During the timeframe this claim was established, we had gone on the claimant-favorable assumption side of we didn't believe they were complete so we went with annual X-rays unless you got further information that gave you a good indication it was complete.

We've actually looked at that more closely and we've been able to start requesting medical X-rays from Y-12 more frequently. And since we are able to do that, our present process, which is, once again, documented in the DR guidance document, is to determine if we believe if it's complete.

And if there seems to be gaps in the monitoring record, we can request those records from Y-12. So I guess what I'm saying is at the time we did the claim, we were following the direction that we -- we were using the TBD so that we used annual X-rays.

These days we would probably do it much more closely to SC&A's process based on the fact that we believe it's probably a full record of the medical X-rays that we got from the other site.

So it's one of those that I think was probably a professional judgment difference when we did it and SC&A did it.

But today, based on the new monitoring records and what we document, I don't think it would be a professional judgment day. I think we'd all be following the same process.

Chair Kotelchuck: Good.

Mr. Siebert: And the other one is dealing with the K-25 missed versus coworker dose.

And this is, once again, another one that's a little unusual because the individual was working at K-25 at the co-op for a short amount of time and then worked at Y-12 for an extended period of time in multiple roles, and only has bioassay monitored during their later Y-12 -- during the Y-12 employment.

So there's really two methodologies you could apply for those. And strangely enough, it's exactly what we both did, two different methodologies there.

Sorry, I'm looking for a message that I have, there it is. I wrote something up here and I wanted to make sure I was looking at it.

So SC&A made the assumption was because it was an earlier timeframe and there was not monitoring, and we do have coworker for K-25. They assigned the coworker for K-25 during that brief period of employment, and then the bioassay was used for the Y-12.

What we did is we actually took the bioassay in the Y-12 and made the assumption it's limiting for all employment prior to that because as long as you're

making assumptions that there was an exposure during the whole timeframe, later bioassay will actually limit it.

So we took the employment all the way back to the beginning of the K-25 era and assigned it all as missed dose.

We had two different ways to do it, I do think it's probably professional judgment, but I believe it's probably closer from the way we document things in OTIB-60 to do it the way we did because OTIB-60 does have a discussion about using later bioassay to limit all earlier employment timeframes, exposure timeframes.

So a lack of bioassay sample for several years wouldn't necessarily be considered as them being unmonitored because they can put an upper bound on the intake.

So what we did is we compared what the overall differences were and they're relatively close.

SC&A is actually lower than ours, and another piece of it that could be done from the process of how SC&A did it was to say that if coworker was used on an earlier timeframe, technically speaking, we could strip that information out of later bioassay because we don't want to double-count.

Once again, it's one of those where I think it's probably professional judgment. It's not unreasonable to call it that, but I think the documentation that we have in OTIB-60 probably defends our process a little bit more.

Chair Kotelchuck: Okay. Alright, questions, anybody? Comments? Other questions or comments? I hear nothing.

Member Clawson: I don't have any, Dave.

Chair Kotelchuck: Right, and I don't. Others? Anybody?

Member Beach: None here, Dave.

Member Valerio: None here, Dave.

Chair Kotelchuck: Okay. So, let me ask, I'm not sure, I looked over --

Mr. Siebert: I'm sorry, Dr. Kotelchuck, this is Scott. I apologize profusely, I just realized I forgot to address one other thing.

Chair Kotelchuck: Sure, I'm glad to. Go ahead.

Mr. Siebert: Because I was looking at the professional judgment bullets and I forgot about the other thorium issue. There actually is a reason for that.

It has to do with -- actually, I'm going to turn this up. Liz, do you mind talking about this? I'd rather turn it over to Liz Brackett, our internal dosimetry guru.

Ms. Brackett: Alright. So I believe that this issue has come up in the past. It has to do with IMBA and the way it was coded. It's based on earlier modules that were developed when previous ICRP models were in effect and when it was updated for the ones currently in there, it wasn't capable of implementing some of the new modeling that took place.

In particular, it has issues with nuclides that have long decay chains that have a number of different progeny and it doesn't handle them correctly.

This was documented in the documentation and there's also a section in OTIB-60, which is our internal dose reconstruction guidance document.

So it incorrectly calculates doses for several nuclides including thorium-228, 229, and 232. So it will correctly calculate intakes but the dose calculations are not correct and so IMBA is not appropriate to use for these calculations.

And that's why we used CAD in those cases, the

values in CAD were taken using DCAL, which is software that's written by Oak Ridge National Laboratory.

And we did several calculations for input into CAD.

Chair Kotelchuck: Okay, good.

Ms. Gogliotti: Where's the list of those radionuclides that can't handle for that?

Ms. Brackett: It's in OTIB-60, Section 3.2.6.4.

Ms. Gogliotti: Thank you.

Chair Kotelchuck: Alright, now, I looked over the Set 25 materials that you sent, the issue resolution materials. What I saw was primarily observations, right? You had a number of observations?

Ms. Gogliotti: Yes.

Chair Kotelchuck: I didn't see too many -- those are Category 1? Are those items you want to talk about or do you think we can talk about?

Ms. Gogliotti: Absolutely.

Chair Kotelchuck: Okay. Well, then would it be reasonable -- it's a quarter after 2:00 p.m., a little after -- to take a 15-minute break now and then go onto those?

Ms. Behling: Dave, this is Kathy Behling.

Chair Kotelchuck: Yes?

Ms. Behling: I'm sorry, can I ask a question? Maybe I missed something, but can we just go back to one of the lines very quickly?

I believe when Ron was making his presentation on the Paducah and Hanford line, he mentioned something about a 35 percent -- we couldn't account for under the Hanford neutron coworker.

Was that addressed by NIOSH? Are you in a position

to address that? I didn't hear an explanation for that and I was just curious.

Mr. Siebert: This is Scott. No, I apologize, when I was going through this I just did not catch that in the report.

I was looking at the major points and I just totally missed that one so I'm having people look into that. And if I find an answer in a relatively short amount of time, I'll let you know.

Ms. Behling: Okay, I was just curious. I didn't think that was answered. Thank you.

Chair Kotelchuck: Okay, good, and you'll talk together at some point. So, folks, if we have Set 25 issues, do we want to start with that or do people want to take a break now? Or do you want to work on it a little bit and then take a break later?

Member Clawson: I'm good to keep going.

Chair Kotelchuck: Okay. We'll keep going, folks.

Member Beach: I'm okay either way, Dave.

Chair Kotelchuck: Okay, well, let's keep going then because we took care of the other lines, the last few, very quickly. Alright, good, who will be addressing that?

Ms. Gogliotti: That would be me.

Chair Kotelchuck: Okay.

Review Cases from Sets 25

Ms. Gogliotti: I have our tracking matrix pulled up here on the screen and I'll just go through the Type 1 issues if that seems like the easiest.

Mr. Siebert: I'm sorry, this is Scott, I apologize. I haven't seen this before so I'm just curious, is this doing the DOL or the AWE?

Ms. Gogliotti: This is the DOE sites.

Mr. Siebert: Okay, thank you very much, I appreciate that.

Ms. Gogliotti: We haven't started the AWE matrix yet. NIOSH is working on getting us responses and we don't have the full group yet so those have not been started yet.

Chair Kotelchuck: Okay.

Ms. Gogliotti: Okay, so this one looks pretty similar to the ones we've been using for the past sets. I just replicated it for this set.

The first case comes from Hanford and it's Finding or Observation Number 1 from Tab Site 28 and the observations state that for the IMBA calculations SC&A is concerned that NIOSH didn't use the MBA over two and instead had to use the MBA value.

And NIOSH came back and said that they actually had used the correct MBA over two value. But the convenience actually came from the unit conversions.

SC&A reviewed their cited reference material and we found that no unit was listed next to the MDA in the workbook that they cited. And so SC&A preps wrongly concluded that it was being reported in a different unit than it was.

We assumed DPM per day, and it was actually micrograms per sample. And then when you apply the correction factor or the conversion factor or 2.02, it was kind of negating the MDA value.

So, with this one we have confirmed that they did in fact use the correct MBA over two, and we recommend closure.

Chair Kotelchuck: Very good, that sounds like it makes sense. Folks can talk and agree on that. Shall we close?

Any questions?

Member Clawson: No. This is Brad.

Member Lockey: No, I'm good.

Member Valerio: This is Loretta, I'm good.

Chair Kotelchuck: Okay, fine. That's good so let's agree that that one is resolved. 528, Hanford 528?

Ms. Gogliotti: Correct. Moving onto the next one is an INL, 10506 Observation 1, and the observation stated that for the years '63 and '64 the DOE dosimetry records show blank for the dosimeter exchanges.

And the EE was monitored monthly for those years so the number of zero readings we thought should have been 12.

NIOSH responded that for those years the NIOSH dosimeter included an X-ray component and guidance regarding this was added to the Hanford guidance document.

But that was added after the case was tasked to SC&A, so it wasn't in the guidance document that we were provided. And so it's been addressed and we recommend closure.

Member Clawson: This is Brad, I'm good here.

Member Lockey: I'm good, too.

Member Valerio: Loretta, I'm good.

Ms. Gogliotti: Okay, the next one is in the same case, Observation 2, and it states that NIOSH assigned an on-site external ambient dose using a log-normal distribution, however, the Proc 60 procedure for Hanford indicates that NIOSH defined a normal distribution with the standard deviation of 30 percent.

And NIOSH indicated that they had actually used the Monte Carlo method of combining distributions for ambient dose.

That has been updated since Proc 60 was issued and that allows for the use of normal distribution.

SC&A did confirm that the uncertainty section in the DR does state that they had used the Monte Carlo approach; however, we're just going to reiterate the importance of updating our guidance document so that these inconsistencies don't happen.

And we recommend closure.

Member Lockey: I concur.

Member Valerio: I'm good, this is Loretta.

Ms. Gogliotti: Okay. The next one is a Kansas City Plant case, Tab 512, Observation 1. Sorry, I lost it here. Section 6.5, uncertainty in the TBD refers to Section 6.4.1 and 6.4.2 for guidance of unmonitored dose and missed dose. However, this is the carryover from a previous revision of the TBD and is not applicable to the current TBD. NIOSH decided that the cross-reference was incorrect and needs to be updated.

It doesn't affect the doses or the uncertainties that were applied, so there's also no changes to the dose reconstruction and so SC&A recommends closure.

Member Lockey: Jim, I'm good with this.

Member Beach: Josie, I'm good with it as well.

Member Valerio: Loretta, I'm good.

Member Clawson: This is Brad, I'm good.

Ms. Gogliotti: Okay, same case, Finding Number 1. Our finding states that NIOSH did not use the current TBD revision to assign X-ray exam doses.

The X-ray exam organ doses contained in the workbook and used by NIOSH to assign occupational medical doses are not the ones listed in the TBD.

The current revision, Rev 1, of the TBD was issued in January of 2017 and the case was revised in May of 2017. The X-ray exam organ doses were entered into the IREP table with the normal distribution with the standard uncertainty of 30 percent.

NIOSH does agree that X-ray exam doses were not in agreement with the current TBD, which is Rev 1. The use of the X-ray dose is in accordance with the TBD and would result in a decrease in X-ray doses for each of the cancers involved.

NIOSH does agree the TBD was issued in January of 2017, but the tool was revised on May 1st of 2017. This claim was reworked in April so X-ray doses increased for some organs.

There is a PER set to rework all claims done in 2017, prioritizing those that were done in early 2017. So that will be addressed with the PER.

So we would recommend closure.

Member Clawson: This is Brad, I'm good with it.

Member Beach: Do we know when those will be reworked? Or Scott, do you have any timeframe on that or how many there are?

Mr. Siebert: We have a bunch of different PERs we're working right now. I just don't have that information at my fingertips right now.

Ms. Gogliotti: Okay.

The next one is from LANL and it's Tab 523, Observation 1, and it reads through the course of the review, SC&A identified that LANL external dose has two tables identified as Table 4.

There's no impact on the DR, however, it should be corrected. And it should read that the table numbering needs to be corrected, and they will do so in the next revision.

As a result, we recommend closure.

Member Clawson: I'm good with this.

Member Beach: I agree.

Ms. Gogliotti: Okay, and I think we can wipe out the next one here. It's from Tab 524, also a LANL case, and it's identical to the last one so I think we can close that out.

Member Beach: Great.

Member Clawson: Great. This is Brad.

Member Lockey: Great. This is Jim.

Ms. Gogliotti: Okay, same case, Observation 2, NIOSH used an N/P ratio of 8.15 for the years prior to 1981, which corresponds to the 96th percentile with N/P ratios calculated for those years presented in the TBD.

Although it's consistent with the LANL guidance document, SC&A believes this value was implausibly large due to the EE job title and other records.

The N/P ratio calculated for later years were significantly lower even at the 95th percentile.

And although we think it's overestimating we can see that these were claimant-favorable, and it resulted in a missed dose larger than the EE could have received, especially in an uncompensated case.

NIOSH indicated that this ratio was based on an agreement with NIOSH and the LANL Work Group to address uncertainties from this information.

However, this observation was more just to highlight the large doses that would result from that assumption. The EE I believe had several rem assigned to them during this time period.

So, we recommend closure.

Member Clawson: Rose, could you explain that a

little bit more to me? I know you're closing, I just kind of got lost there a little bit. So I didn't understand the bigger and the smaller doses on that.

Ms. Gogliotti: Okay, so NIOSH assumed an N/P ratio of 8.5 for the years prior to 1981. So the EE has no neutron monitoring records so they're taking the photon records and applying that ratio to them to come up with the neutron dose.

So every photon is recorded 8.15 times more neutron doses assigned, which results in a much higher dose for someone who is unmonitored. And this particular worker was not a radiation worker so they were assigned large doses.

Member Clawson: And you guys are recommending to close this one?

Ms. Gogliotti: It's claimant-favorable but this is an uncompensated case so technically NIOSH can -- even if this wasn't following your guidance, they could have signed that.

Member Clawson: I understand now. I appreciate that. I'm good with this.

Mr. Katz: But a question for the Subcommittee or for the staff, Scott, whatever, it doesn't matter if it's producing implausibly high doses.

Isn't this a matter that should be discussed by the LANL Work Group about how to better handle these kinds of cases? Or is this just the only practical way to deal with these cases?

Mr. Calhoun: I don't think that this one was implausibly high because if the guy was monitored we would have assigned that ratio and it would have been all great.

So, it just was a bit of an overestimate that probably shouldn't have been an overestimate in a best-estimate kind of case.

I don't know what date this was done so off the top of my head I can't say. It seems like we probably wouldn't do that now.

Mr. Siebert: Grady, I'm sorry, this is Scott. Actually, we would and I'm sorry to interrupt you there.

But the problem is this is based on suggestions and agreements with the LANL Board Work Group, and this was the way that the Work Group in agreement with NIOSH determined that we had to move forward with how we could assign neutrons during this timeframe at this site.

So pretty much this is the methodology that has been through the Board and the Work Group that's been agreed upon. That's my understanding of the situation.

Mr. Katz: Right. Well, I think Rose mentioned something along those lines.

So, I guess I just question whether -- so as far as the LANL Work Group is concerned, this is appropriately conservative given some other problems that they had at that period? Is that what you're saying?

Mr. Siebert: That would be my understanding. I'm not part of the Work Group, but that is my understanding.

Mr. Katz: Okay, so then the Subcommittee needs to say we raised this with the LANL Work Group.

Mr. Calhoun: Scott, I'm glad you're out there.

Ms. Gogliotti: There is another issue that's almost identical to this that was compensated though that we'll get to shortly. Or if we just want to go to it now, I can find it here. I'll get to it naturally.

Mr. Katz: Okay, that's fine, we don't have to get to it now. But when we get to it, if LANL has considered all of the factors, the LANL Work Group, and decided that this is actually appropriate then so

be it.

That's why we have the issue resolution process with the Work Groups. Anyway, so I think we can carry on for now.

Ms. Gogliotti: Okay, the next one is also a LANL case, Tab 525, Observation 1. It notes that the EE had dosimetry bioassay records where we had a record of an injury report dating beyond the covered period of employment that was established by DOL.

These records spanned from '95 through 2000. They appear indistinguishable from the other LANL records. When NIOSH was doing their dose reconstruction, they discovered these records and contacted the DOL office.

DOL responded that from 2001 to 2010 the EE had verified employment at LANL at the Los Alamos area office, which is not a covered facility. However, these dates don't overlap with the dates in question.

Despite this potential oversight, the case was compensated and the inclusion of these additional records wouldn't change the compensation decision.

NIOSH responded that the data were unnecessary for the claim because it was compensated but agreed that a statement should have been added to the DR draft stating that an extended employment was not necessary to complete the partial dose reconstruction.

So on that we recommend closure.

Member Clawson: This is Brad, I'm good with that.

Member Lockey: Jim, I too am also good.

Member Beach: Josie, I agree also.

Member Valerio: Loretta, I agree. Rose, can you speak up just a little bit, please?

Ms. Gogliotti: Yes, sorry. Okay, same case, Tab 525, Observation 2. In April of 1960, the EE had a positive neutron dosimeter reading.

NIOSH assigned this dose to this time period but did not acknowledge the positive results or find a recorded neutron dose for the time period.

Prior to 1981, the DR guidance document reconstruction used the MP ratios. Although it's uncommon, the DRs are supposed to apply the measured neutron dose when it predicts a higher dose than the N/P ratio.

It was a compensated case, not including that this did not adversely affect the compensation decision.

NIOSH responded that it was a partial dose reconstruction due to the fact that it was above 50 percent, so it was acceptable to not accept this positive neutron dose and instead assign missed neutron dose based on the N/P ratio.

And on that we'd recommend closure.

Member Beach: Agreed.

Member Clawson: This is Brad, I'm good with it.

Member Lockey: Me too, Jim.

Member Valerio: Loretta, agreed.

Ms. Gogliotti: This is actually the one --

Mr. Katz: Loretta, this is just to remind you guys to remember your conflicts.

Member Valerio: Yes.

Mr. Katz: Thanks.

Ms. Gogliotti: This is actually the next one. It's what I was thinking of before I was looking for different language than what actually showed up here.

Same case, Observation 3, and it reads that

although the use of the 95th percentile for other operations is consistent with the NIOSH guidance recommendations, we questioned its applicability to the EE.

There were no positive neutron dose, no photon exposures during the time period, yet NIOSH assigned 17 rem, so roughly 41 percent of the total exposure in this neutron dose.

Nothing in that EE's record suggested that it would have resulted in an annual missed neutron dose in excess of 3 rem.

We understood that it was claimant-favorable and following the guidance document, but we question how much of a best estimate it was in a compensated case.

NIOSH responded basically the same response as before. The use of the ratio is based on agreement with NIOSH and the Advisory Board, LANL Work Group, to address uncertainties associated with the transition from film to TLD dosimeters.

Again, this was just intended to highlight that a large dose could be assigned here.

And we recommend closure.

Member Clawson: This is Brad, I agree with it.

Member Lockey: Jim Lockey, I agree.

Member Beach: This is Josie, I'm just contemplating it but I think I agree as well, especially in light of the work group having discussed this and agreed with this.

Mr. Katz: Okay, that makes sense. I'm just curious. I haven't heard Dave speak up in a while. Are you still on? Dave Kotelchuck.

Chair Kotelchuck: I've been talking.

Mr. Katz: You've been talking on mute.

Chair Kotelchuck: I certainly have obviously. Well, that shows you how much my input is worth. However, I have agreed with every single vote that we cast so far. Thank you for telling me.

Mr. Katz: Yeah, sure.

Chair Kotelchuck: A truck was going by and I cut things off a little bit. Good, thank you. We're just finishing the 525 Observation 3. Josie was commenting.

Mr. Katz: Okay.

Chair Kotelchuck: And now we'll go on to the Hanford 529, Observation 1, and I think some folks are exempted.

Ms. Gogliotti: Okay. This is actually Hanford and Pacific Northwest National Laboratory. The findings states the observation that the external dose parameter table presented on page 7 of the DR report incorrectly lists the monitoring period. The calculation is performed by NIOSH correctly, just not reflected in the table on the DR report.

NIOSH responded that this error was typographical. The dose reconstruction was a partial assessment assigning dose only to the EE's monitored periods of employment.

The doses were not assigned to the EE's unmonitored years of employment as an underestimating approach. A correction of the typographical error doesn't impact the total doses assigned or the PoC, so SC&A recommends closure.

Chair Kotelchuck: Alright.

Member Clawson: This is Brad. I'm good with it.

Chair Kotelchuck: Okay, good.

Chair Kotelchuck: Alright.

Member Valerio: This is Loretta. I agree.

Chair Kotelchuck: Good. Alright.

Now 511, Observation 1.

Ms. Gogliotti: It reads because of the substantial time difference between the original records request in 2012 and the second DR revision in 2017, SC&A believes that it would have been prudent for NIOSH to submit a second records request to see if any of the EE's records had become available.

NIOSH indicated there was no need to request additional records but that the previously provided records they considered to be complete. The telephone interview indicated that there were no X-rays performed on the individual.

SC&A understands this logic. However, we find it challenging to identify when new records became available without an additional records request. We do recommend closure but we just wonder what would have triggered additional records other than additional employment being added.

Chair Kotelchuck: Can somebody answer that?

Mr. Calhoun: This is Grady. I think only if we had some indication that the records were routinely incomplete. I'm not aware of this specific case so I don't know what we based our decision on to say they were complete, but if it looked like everything was there up to the date of diagnosis, but I don't know. I don't know that part of it.

Mr. Siebert: This is Scott. I would agree that that is the thought process. There were no indications that the site was adding any additional records. There's really no reason for us to have gone back unless there was additional employment, and then clearly we would do that.

Chair Kotelchuck: Does that resolve the issue?

Ms. Gogliotti: Yes.

Chair Kotelchuck: Alright. So then we should close

that. Do I hear anything further? Is anybody concerned or have further questions? No? Okay. Then let's approve and go on to the Rocky Flats case.

Ms. Gogliotti: Okay. This is Rocky Flats and Sandia, Tab 518, Observation 1. It reads according to Table 3-2 of OTIB-79, Rev. 1, both RFP and F&L are both duty sites where it is assumed X-ray exams are performed on site.

The TBD indicates that a pre-hire and annual X-ray exam were common to RFP. The TBD indicates that a pre-hire and some annual X-ray exams were possible at F&L.

Although these X-ray doses would have been relatively small based on the locations of the cancers, it would be helpful for NIOSH to clarify why they were not considered in this dose reconstruction. NIOSH responded that the indicated records were requested and no records were located, so on that we recommend closure.

Chair Kotelchuck: Okay. I guess there just wasn't further data available. Alright. Good. Again, if there are any questions. Otherwise, we'll approve.

And let's see. The next one is Sandia.

Ms. Gogliotti: Yes. Sandia, Tab 522, Observation 1. According to NIOSH's Sandia/Livermore workbook, the right-back shoulder. For X-ray data the correct dose for a PA test exam for the right-back shoulder is stated there which was assigned in the DR.

According to the TBD and OTIB 6, it appears it should have been the entrance skin dose instead. It's not obvious why that difference existed. NIOSH indicated that the observation was correct. The incorrect value for the X-ray dose was in the tool under the X-ray data tab and propagated through the IREP worksheet.

They investigated the tool and determined that

when the information was created for the tool, there were cut and paste errors that were not noted during the QA process. These errors have been since corrected, and the QA process for the tool reviews have been updated specifically to document the review of this type of error.

The error was based on the site-specific calculation for medical X-ray doses and doesn't impact the tools for other sites. Since this claim was already over 50 percent and it resulted in a slight increase in X-ray dose, it did not change the overall determination for the claim, and thus we recommend closure.

Chair Kotelchuck: Let me ask. Was this not a finding?

Mr. Katz: Right. That's my question, too.

Chair Kotelchuck: There was an error found and corrected.

Ms. Gogliotti: I do agree that it should be a finding.

Mr. Katz: Good, okay.

Mr. Siebert: This is Scott. There's just one other thing I want to reiterate. The matrix on the screen doesn't add the last piece of information that we had in there. We actually did search through all the previous claims that use that tool and ensured that none of them were impacted by the change there.

We did not find any problems with any of the other claims. I just wanted to point out that we did go -- we went the next step to ensure no other claims were impacted by this issue.

Chair Kotelchuck: Excellent, as is customarily done when there is a finding like that. Good, I'm glad you put that in. It's on the record now.

Okay. Now the 522. Again, Sandia 522, Observation -- this would be 1. I don't know whether you would change -- are you going to change the numbering?

Ms. Gogliotti: We do not change the numbering because that would require us to go back into the actual report to change numbering so we just change it --

Chair Kotelchuck: Just call it Observation 2. The count is correct, yeah. It will be correct. Okay. Do go ahead then.

Ms. Gogliotti: Okay. This one is from the same case, and it's just a slightly different organ that we're talking about. I would recommend following the same.

Chair Kotelchuck: Right, which would make this Finding 2. It is the same issue.

Ms. Gogliotti: Mm-hmm.

Chair Kotelchuck: Okay. This will be changed to a finding.

Mr. Katz: Wait, can I understand are they actually findings of the same issue for the same case?

Ms. Gogliotti: They are different.

Chair Kotelchuck: Different part of the body.

Mr. Katz: I mean, is this the same tool problem?

Ms. Gogliotti: It's the same tool problem. One is for a PA test exam and the other one is for an AP exam, so they could be combined.

Mr. Katz: Okay. Really it's one finding; the tool's got a problem that has caused multiple problems.

Ms. Gogliotti: Yes.

Mr. Katz: Okay.

Chair Kotelchuck: Alright. Okay. Ms. Gogliotti: This is the same case, Sandia 522, Finding 1. The finding had to do with an error in transferring dose into IREP. NIOSH states the missed photon dose for Lawrence Livermore was entered twice as part of

the neutron dose. There was an error in changing the IREP input and the correct doses result from the same outcomes of the claim.

It was a cut and paste issue in June of 2018 and implemented a part of the IREP add-on called IREP Site Merge. IREP sheets for an individual site are still prepared within a site-specific tool.

Once all the IREP sheets are prepared for the IREP, the Site Merge takes all the IREP sheets and generates a single sheet. This tool was created specifically to eliminate the copy and paste errors from multiple site claims.

We have not seen this add-on yet since they did implement it right around the time of our 25th set completion. I don't know if we are going to see it in the current set that we're working on, but we request if there's any additional documentation that NIOSH could provide, that would be helpful to us.

Mr. Katz: So if this is a finding, it's really a quality control error. Right?

Ms. Gogliotti: Well, it was an error -- yes, it was an error in moving doses into IREP that resulted from copy and paste.

Mr. Katz: Okay. So noted.

Chair Kotelchuck: Going back to this and the previous finding, the operation that was turned into a finding, they are both categorized now as QA. Right, Rose?

Ms. Gogliotti: Yes.

Chair Kotelchuck: Okay. Oak Ridge.

Ms. Gogliotti: Moving on to the next one, Oak Ridge Gaseous Diffusion Plant, Tab 502, Observation 1. SC&A found that NIOSH listed the incorrect year of 1975 into the IREP table for the organs that were done in this case. The year should have been listed as '82 instead of '75.

The dose of 16 millirems missed photon dose was correctly entered, but the error did not occur in 1982 in the skin entries. NIOSH agrees this was an error. The PoC didn't change as a result of this, so we do recommend closure.

Member Clawson: This is Brad. I'm good with it.

Chair Kotelchuck: I'm a little confused.

Ms. Gogliotti: So they listed the year 1975 instead of 1982 --

Chair Kotelchuck: Oh, I see.

Ms. Gogliotti: -- which changes the year that it's assigned. It's the same dose.

Chair Kotelchuck: Okay. Is that quality control?

Ms. Gogliotti: Yes.

Chair Kotelchuck: Okay. I'm good.

Member Beach: This is Josie. I agree.

Member Valerio: Loretta. I agree.

Chair Kotelchuck: Okay.

Member Lockey: Agree.

Chair Kotelchuck: Very good. So let's go to Observation 2.

Ms. Gogliotti: Okay. Same case. SC&A analyzed the many potential chronic and acute intakes and resulting internal doses to the many cancer sites for the radionuclide --- I'm sorry, I am trying to not reveal PA information here.

Chair Kotelchuck: Mm-hmm. Good.

Ms. Gogliotti: SC&A then compared the results that were contained in the NIOSH files. Overall the comparisons match well. One area that was difficult to verify though was an intake value listed on the

table in the DR report.

We analyzed the NIOSH files that may have been used for the intake value of 22,000 dpm for an acute neptunium intake in the year 1980. Instead 1,700 dpm is listed on the table.

This observation was supported by the fact that the resulting neptunium doses were approximately 22,000 divided by 1,700, which is 12.5 times the derived by SC&A and NIOSH's accompanying file. NIOSH responded that the IMBA run did use 22,000 instead of 1,700 dpm that should have been used.

This had a result of decreasing the dose by .005 rem. This error has been reduced by updating the Web CAD tool to allow for adjustments to the data diagnosis when there is a partial year where the previous version did not have this ability. Separate IMBA runs were needed for each component.

Additionally, the tool also allows for comparison of missed and measured doses without having to do it annually. There are tools available to generate recycled uranium. Web CAD inputs will automatically input the correct intakes based on the ratio in the TBD.

We have not seen this Web CAD tool. Is this something that SC&A is going to come across in future reviews?

Mr. Siebert: This is Scott once again. I can't speak to what version of Web CAD that SC&A has available to them. I believe it should be the same version that we're using which includes this information.

Ms. Gogliotti: Okay, we will look into that. I've never seen a Web CAD but I can email you offline and we can figure that out.

Chair Kotelchuck: By the way, is this also not a finding?

Ms. Gogliotti: I believe this should be a finding.

Mr. Katz: Right. Same issue here.

Chair Kotelchuck: Okay. That's fine to approve it as a finding.

Now, we're getting on to 3:00 Eastern Time. We have a couple of options. If people are energetic, maybe we could take a break now, or we could skip a break and go for another half hour and finish a little early if we have a half hour's worth of work. I think we do.

Ms. Gogliotti: I don't even think we have a half hour of material left.

Chair Kotelchuck: Oh, that's fine. Then I propose if folks do not mind we can --

Member Clawson: Let's cowboy up, Dave. We can do it.

Chair Kotelchuck: Okay. Alright. Let's go.

Ms. Gogliotti: The next one here is Observation 3 from the same case. The internal electron doses from tech-99 were dominated by the acute intake in 1981. However, NIOSH started to increase annual electron doses in 1980 in the IREP input table for each of the many cancers. This was a year early and didn't cover all the assignments.

NIOSH agrees this is an error. The measured dose should start in 1980 based on the recycled uranium and technetium intakes. As noted, the application should begin in 1981. They also noted that the Web CAD had been updated and that should reduce this type of error in the future, so we'd recommend closure.

Chair Kotelchuck: Okay. It's marginal as a finding, but I think it is probably a finding. It starts apparently just implemented something a little earlier. I think it's probably a finding.

Ms. Gogliotti: I will leave that up to the work group. It's a very marginal, modest issue.

Chair Kotelchuck: You are absolutely right. It is quite marginal.

Okay. Other members of the work group, finding or observation?

Mr. Katz: The definition of a finding is something that impacts dose in a measurable way. So that's the question: Does this impact dose measurably?

Chair Kotelchuck: Oh, yes, it does.

Mr. Katz: Then it's a finding. Then it's a finding.

Chair Kotelchuck: Okay.

Member Beach: There are some gray areas in that. I agree with Ted.

Chair Kotelchuck: Okay. I think we agree it's a finding.

Mr. Siebert: This is Scott. I'm not going to argue. I just want to point out, and correct me if I'm wrong, I don't believe it had a difference in dose. It was just a shifting of the dose by a year.

Chair Kotelchuck: No, but it is -- the year that it was done was a year before it should have been done.

Mr. Katz: Well, Scott, can you clarify -- I mean, are you saying that despite the fact that it's a different year it doesn't -- not just for this case but for any case, it doesn't impact -- it doesn't actually impact dose?

Mr. Siebert: The dose itself is the same. What it is is it just got shifted. Instead of starting the total dose in 1981, it started it in 1980, so everything was just shifted one year earlier. The dose itself isn't different.

Ms. Gogliotti: The dose should start in 1980 and instead it started in 1981 which is a difference of less than a milligram.

Chair Kotelchuck: The difference is very small. That's not -- could it have -- is there any sense that it could have a run-on effect at a later time? I think not. I think it wouldn't.

Ms. Gogliotti: The only way this would have a big impact is it you were assigning a big dose. They have since corrected their Web CAD tool that would prevent this from happening in the future.

Chair Kotelchuck: Yeah.

Ms. Gogliotti: In theory it's already been corrected.

Mr. Katz: Right, it's still corrected. That's not the issue. The issue is had it not been corrected, would it possibly have implications for other cases? It sounds like from what you just said that it could have had implications if this problem occurred in other cases.

Ms. Gogliotti: And a very large dose was being assigned.

Chair Kotelchuck: I don't know, I thought they -- it's a finding. And it's been fixed, but it's a finding.

Member Clawson: I think so. This is Brad, I think it's still a finding.

Chair Kotelchuck: I agree, Brad. Others? Josie?

Member Beach: I agree, it's a finding.

Chair Kotelchuck: Yes.

Member Richardson: I agree.

Chair Kotelchuck: Okay. I hear we are in agreement that it's a finding and approved. And I will admit, it's -- it's a close call. It is. It's a gray -- it's gray. But I think we have a rule and it fits. Going down at the 504, Observation 1?

Ms. Gogliotti: Yes. This is a Y-12, K-25 and X-10 case. NIOSH applied an electron dose adjustment

factor 4.8 to certain extremity cancers. Based on a report entitled Evaluation of Radiation Exposure in Metal Preparation Depleted Uranium Process Areas. And they give us the SRDB. Available as a file in the development folder that contains color and ring ratios that average 4.8. This adjustment factor in the table was not mentioned in the Y-12 TBD. SC&A also questions the derivation of the adjustment factor and its use, whether or not it has been approved by the Advisory Board. NIOSH agreed that the adjustment factor was not mentioned in the Y-12 TBD, however in a 91 Y-12 report they cite here, it references -- which is referenced in the TBD, had been added to the most recent Y-12 dose reconstruction guidance document. And they agreed to incorporate it into the next Y-12 TBD revision. And so on that, we recommend closure.

Chair Kotelchuck: Right. And it was in fact mentioned, so it's not an error -- was not left out. Fine, I would say let's approve it as an observation.

Member Clawson: This is Brad, I agree.

Chair Kotelchuck: Okay.

Member Beach: Agreed.

Member Valerio: Agreed.

Member Lockey: Agreed.

Chair Kotelchuck: Alright. Now we will go to Observation 2 for this same case.

Ms. Gogliotti: Okay. This one -- so the SC&A was able to find a file in the EE's folder that contained the values used to calculate the extremity dose. However, there was no guidance in X-10 or -- TBD, or in the X-10 guidance document that instructs the dose reconstructor how they should calculate extremity dose and how they should select the radiation type -- and enter that information into IREP. SC&A acknowledges that the TIB guidance document, TIB-10, is for workers but believes that

there should have been an X-10 specific guidance regarding -- where X-10 would benefit from having that sort of guidance. And we recommend closure.

Chair Kotelchuck: Okay. Well, it's certainly an observation. And I certainly accept. Okay.

Member Clawson: This is Brad. I am good with it.

Chair Kotelchuck: Okay.

Member Beach: I agree as well.

Chair Kotelchuck: Good.

Member Valerio: Loretta, I agree.

Chair Kotelchuck: Alright, fine. Observation 3 now.

Ms. Gogliotti: Okay, same case. According to Table 3-1 in the TBD for the period of EE's employment, NIOSH should have assigned a pre-employment PA chest X-ray exam, as well as an annual and termination exam. This would have only added a modest dose, however the dose reconstruction report states that medical doses were based on the Y-12 occupational medical dose TBD. The guidance in the TBD should have been followed.

NIOSH indicates in their response that the relevant text -- and they cite the page and location of that -- was a little unclear. And they quote it saying, in the complete absence of information about a chest X-ray screening protocol and the standard projection, including the lack of X-ray records in claim files, the pre-employment, annual and termination PA radiographic chest X-ray should be assumed for workers in screening. They did update the text in TIB-6, Rev 5 to re-clarify this X-ray dose assignment. Although they believe the process was already being implemented with the understanding, prior to that being clarified, it was changed. And so at that, we would recommend closure.

Chair Kotelchuck: Right. As a finding?

Ms. Gogliotti: As an observation.

(Pause.)

Ms. Gogliotti: They did it correctly --they clarified, basically, a source of -- where you can have professional judgment disagree.

Chair Kotelchuck: Okay. Alright. Now on to --

(Pause.)

Ms. Gogliotti: Another Oak Ridge site case. Tab 515, Observation 1. SC&A believed that the dose reconstruction report could have made more of an effort to address any potential under-reporting of doses due to the laying on top of a source by contacting DOE again for specific information regarding the incident. And lacking that, making a reasonable estimate of dose that could have been received by the EE, since the EE's description of the incident seemed reasonable. NIOSH indicated in their response that the concern was reviewed by a dose reconstructor, and there was no supporting evidence of a potential incident that would go in the record. NIOSH agrees that the dose reconstructor should have requested supplemental information, especially had the claim not been over 50 percent, which it was. So at that, we recommend closure.

Chair Kotelchuck: Oh, it's systemic. Okay. Okay, is this a quality control? I am getting a little -- slowing down.

Mr. Katz: It seems like in this case they've already went over the 50 percent level. They don't need to get more information. Isn't that what I heard?

Mr. Calhoun: Yes. And actually, just one little word difference. It wasn't just the dose reconstructor should have requested, it was that the dose reconstructor could have requested, had the claim not been over ---

Chair Kotelchuck: Okay. Alright.

Mr. Katz: I mean, the normal procedure is to be done with it if you get over 50 percent.

Chair Kotelchuck: Oh, right. Sure, sure.

Mr. Katz: Yes.

Chair Kotelchuck: Okay. Seems okay.

Ms. Gogliotti: There is one more and then we are done.

Chair Kotelchuck: Nice.

Ms. Gogliotti: Same case. The three Oak Ridge sites -- Finding 1. SC&A analyzed the files accompanying the report and found that it appeared that the raw data table for OTIB-49, the workbook, found NIOSH entered Type S annual doses into the Type M column of the workbook. And the Type M annual doses into the Type S column, which results in the workbook using the Type M doses to calculate the Type Super S, which is -- said the greater Type S annual dose of -- for Type Super S, and a slightly lower total dose assignment. According to the accompanying files, it appears that the -- oh, I am sorry. NIOSH adjusted the annual doses by a factor of 4. So basically they were using the wrong column in the wrong column of the workbook which resulted in Type M being carried forward instead of Type S. And NIOSH agrees that there were multiple tool entry errors. These issues were specific to the claim and not a systematic problem. In fact, that these changes were modest and there was no impact on the overall computation decision.

Chair Kotelchuck: Okay. And actually I was getting out of face because that's what I was looking up before. And I -- this is a quality control error.

Ms. Gogliotti: Yes.

Chair Kotelchuck: And -- fine. And certainly it's been taken care of. And it's a finding. So approve. Alright, others agree?

Member Clawson: Yes, this is Brad. I agree.

Member Beach: Josie -- I agree as well.

Chair Kotelchuck: Alright.

Member Valerio: Yes, I agree.

Chair Kotelchuck: Alright, fine folks. Well then now what we need to do is set another date. And by the next time we meet, we will have a draft of the report to submit and discuss. And I trust we will have some more Category 1s to go through by then. This will be two months.

(Simultaneous speaking.)

Mr. Katz: Correct -- I have a question on that. For two months, not only will we have more Category 1s, or all of them I guess -- would we have also the Category 2s in two months?

(No audible response.)

Mr. Katz: I guess it's a question for Grady and Scott.

Ms. Gogliotti: Well, we were still waiting on the AWE Matrix. We will have all the Type 1 and Type 2s, as long as they can get us responses so we can respond back to them.

Mr. Katz: Right. And that's my question. Are we going to have them all within a couple months?

Mr. Calhoun: I will have to check with Mr. Allen. But we could always put in some of the AWE stuff in there. It seems like that is doable, to me.

Mr. Katz: Yes, okay.

Mr. Calhoun: Of course, I am not doing it.

(Laughter.)

Mr. Katz: Right.

(Laughter.)

Mr. Katz: So in terms of timing, Dave?

Chair Kotelchuck: Yes.

Mr. Katz: The soonest we need -- we have a Board meeting. That's August 21st.

Chair Kotelchuck: Correct.

Mr. Katz: But we could meet earlier in August if that works for folks.

Chair Kotelchuck: Well, let's see.

Mr. Katz: I am looking at the week of August -- now, the only issue with having our July Subcommittee meeting is that we often try to -- we're also shoehorning in our Work Group meetings related to SECs and close to the Board meeting time as well. So that would be --

(Simultaneous speaking.)

Chair Kotelchuck: Right.

Mr. Katz: -- taking up one of those days from --

Chair Kotelchuck: And I don't want to give them the report, you know, a week before the meeting because they have all these other things. I have no -- I don't mind submitting the report a little later. We certainly want to get it out this year. Right?

Mr. Katz: Good. So how about even just -- the Board meeting is the 21st and 22nd. What about, for example, the last week in August? Towards the end of that week. That would give people plenty of -- you know, they would be home -- weekend, Friday, so on. They would have the beginning of the next week --

(Simultaneous speaking.)

Chair Kotelchuck: -- because that's getting right up into Labor Day, folks. Is it not?

Mr. Katz: So Labor Day this year, I guess is September 2nd.

Chair Kotelchuck: It is.

Mr. Katz: Yes.

Member Beach: Ted, I am actually booked on Tuesday through Thursday that last week in August. I am only available on Monday or Friday.

Mr. Katz: Okay, forget that idea, then.

Chair Kotelchuck: How about -- how about giving us a little break and let's get together in -- in October. No, excuse me, September.

Mr. Katz: Yes, what about the week -- what about the week of September 9th?

Member Beach: Clear.

Chair Kotelchuck: I think that's ---

(Simultaneous speaking.)

Member Clawson: -- that's good for me.

Chair Kotelchuck: I am not completely clear, but let's see. I am checking.

Mr. Katz: Or let me look at the 11th or 12th, maybe.

(Simultaneous speaking.)

Chair Kotelchuck: Yes, the 11th or 12th look good to me.

(Simultaneous speaking.)

Chair Kotelchuck: I may be in Vermont for my daughter's birthday on the 10th. Let me put it -- I can -- I could make the 11th, but I -- the 12th would be really good for me.

Mr. Katz: Yes, how about that?

Member Beach: That would be fine for me.

Member Lockey: That is good for me, Jim.

Chair Kotelchuck: Okay. It sounds like we have a -- we have a date, right?

Mr. Katz: Right. I am going to send a note to Dr. Richardson and check with him on that. But -- but let's -- let's pencil that in, at least.

Chair Kotelchuck: Okay, good. Good. And then after we do the August Board meeting -- September -- we'll do an October or November Board meeting. November probably. Even December.

Mr. Katz: December, December.

Chair Kotelchuck: Yes. We have a December Board meeting. Can we get -- and the Board approves, can we get the report out?

Mr. Katz: Yes.

Chair Kotelchuck: Alright, good. Then I think we are in good shape. Now --

Mr. Katz: Yes.

Chair Kotelchuck: Alright, very good. And Ted, I am going to start working on the revisions that you and Jenny worked on tomorrow.

Mr. Katz: Yes, I mean, you also have some comments. I gave you which comments.

(Simultaneous speaking.)

Chair Kotelchuck: Yes, and Grady --

Mr. Katz: Grady too.

Chair Kotelchuck: Yes, I do. That -- that we -- I think we need to discuss. Although he may well be right. Right? I am not arguing that he is wrong. I am not convinced that we are wrong. But anyway, we will find that out. We will -- and --

Mr. Katz: Yes.

Adjourn

Chair Kotelchuck: The process will begin. Okay, folks, have a very good Memorial Day weekend.

(Simultaneous speaking.)

Mr. Katz: Yes, thank you. You too.

Member Clawson: Thank you.

Chair Kotelchuck: Okay, very good. Take it easy, folks.

(Whereupon, the above-entitled matter went off the record at 3:18 p.m.)