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Advisory Board on Radiation and Worker Health
Subcommittee for Procedure Reviews
Wednesday, November 3, 2021

The Work Group convened via teleconference at 11:00 a.m. EDT, Josie Beach, Chair, presiding.

Members Present:

Josie Beach, Chair
Loretta Valerio, Member
Paul Ziemer, Member

Also Present:

Rashaun Roberts, Designated Federal Official
Dave Allen, DCAS
Bob Anigstein, SC&A
Bob Barton, SC&A
Kathy Behling, SC&A
Elizabeth Brackett, ORAU Team
Ron Buchanan, SC&A
Grady Calhoun, DCAS
Rose Gogliotti, SC&A
Darin Hekkala, ORAU Team
Alek Kranbuhl, DCAS
Lori Marion-moss, DCAS
Robert Mcgolerick, HHS
Wade Morris, ORAU Team
Steve Ostrow, SC&A
Mutty Sharfi, ORAU Team
Scott Siebert, ORAU Team
Tim Taulbee, DCAS

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Proceedings

(11:00 a.m.)

Welcome, Roll Call and Introductions

Dr. Roberts: Well, I have 11:00 a.m. Eastern, so I think we need to go ahead and get started. So good morning everyone. Welcome to the Advisory Board on Radiation and Worker Health. This is a meeting of the Subcommittee on Worker Health. This is a meeting of the Subcommittee on Procedures Review.

I'm Rashaun Roberts, and I am the Designated Federal Official for the Board. There is an agenda for today. You can find it on the NIOSH website under scheduled meetings for November 2021. Since the Subcommittee will be discussing a number of different documents today, we do need to address conflict of interest.

I don't think we're dealing with any documents today that relate to Subcommittee Members' conflict of interest, but if a conflict does happen to come up, Subcommittees and others do need to recuse themselves from the discussion where the conflict of interest applies.

So as we move through the roll call, Subcommittee and other Members and others please state where you have a conflict of interest, and we can start with you Josie.

Chair Beach: I'm here, and I have a conflict at Hanford.

Dr. Roberts: Okay. Valerio? Loretta, are you on? I'm not hearing anything. I think I see you.

Ms. Behling: Okay, this is Kathy Behling. I believe that they are using the audios through Skype as opposed to calling in on this line, because I can hear Paul and I can hear Loretta and Paul talking, but they don't hear us.

Dr. Roberts: Okay. Yeah, I can see Paul talking. Okay. Let me try to post the call-in information so they can call in.

Chair Beach: I just talked to Loretta. She was on, but she -- she's going to call in on a phone.

Dr. Roberts: Okay, great. So we'll just give them a minute.

Chair Beach: I think we get so used to using our computers through the Zoom that people --

Dr. Roberts: Yeah, well yeah. And Tim says that he can't hear, so they need to -- yeah. Maybe people just called in.

Member Valerio: Hello? Hi, this is Loretta, I'm on.

Dr. Roberts: Okay, great. I can hear someone talking. I posted it in Skype as well. Okay. So Loretta, in the meantime I put you down as in attendance, and then we just need to hear from Paul.

Chair Beach: And then I think Loretta didn't mention her conflict Rashaun.

Dr. Roberts: Okay. We'll get her to come back around to that.

(Pause.)

Dr. Roberts: Okay, it does sound like there's some music. Loretta, can you address your conflict?

Member Valerio: Looking over the documents, I don't believe I have any conflict for this meeting.

Dr. Roberts: Yeah, no. I don't think so either, but if you could state your usual conflict, that would be great.

Member Valerio: All right. So Loretta Valerio, no conflict.

Dr. Roberts: But you're typically conflicted for the Nevada sites and others.

Member Valerio: Yeah. I don't think I have anyone at Nevada Test Site right now, but I'll go ahead and I'll conflict myself out of it. Sorry about that.

Dr. Roberts: No, not at all. Paul, are you able to speak with us now?

Member Ziemer: This is Ziemer. I'm on the line here now.

Dr. Roberts: Okay great, and if you could cover your conflicts of interest, speak to that?

Member Ziemer: I'm conflicted on Oak Ridge. I think that's the only one.

Dr. Roberts: Okay great. Thank you. All right. Let's move into roll call for others, and let's start with NIOSH DCAS ORAU.

[ROLL CALL]

Dr. Roberts: Thank you and welcome to all of you. I do need to go over a couple of additional items before I give the floor to Josie Beach, who's our Chair for this Subcommittee. I can hear some, already hear some static or something going on in the background. So if you would please mute your phones unless of course you're speaking. If you don't have a mute button, press *6 to mute and to take yourself off, press *6 again.

The agenda and the presentations and background documents that are relevant to today's meeting can be found on the NIOSH DCAS website if you'd like to follow along. All of these materials were sent to the Board Members or Subcommittee Members prior to this meeting. So with that, I'm going to go ahead and turn the floor over to Josie.

Chair Beach: Thank you Rashaun, good morning everyone. The agenda is posted on Skype. Hopefully

everybody can see that, and as Rashaun pointed out this morning we have a very full agenda, a lot of items. We are scheduled to adjourn at 3:30, and if -- I'm wondering. I would like to adjourn at 3:15, if that doesn't cause any problems for anybody. I have another meeting at my time 12:30. So if we could try to get it done about 15 minutes early.

The other question I have is normally when we're meeting we take a lunch break. I think we should be able to just go with a 15 minute break in between, our agenda for a comfort break. Is everybody okay with that? If there's any objections, just speak up. Hearing none I'm -- oh go ahead?

Member Valerio: I'm fine with that Josie. That works for me.

Chair Beach: Great, and Paul are you fine with that as well?

Member Ziemer: Yes. I'll be good with that, and I would have to leave no later than 3:30 myself. So 3:15 is great for me.

Chair Beach: Okay, perfect. Hopefully we'll get through the full agenda. But the last, the one thing that isn't on here is there are some carryover items from the past couple of meetings that I want to just briefly go over those at the very end, to see how we're tracking those. But I'll leave that to the end and if we don't get to it, then I'll send the details around.

So I -- Kathy, are you presenting our first?

Ms. Behling: Yeah. I'm ready to -- if you don't mind, I was hoping to start with the second item on the agenda, which is the reply to NIOSH's response to SC&A's Observation 6 on DCAS-PER-057, which is the General Steel Industries. That's going to be a brief presentation from Bob Anigstein, and then he doesn't have to remain on the line if he chooses not to.

Chair Beach: Oh, and I was going to ask if there were any other changes. So is that the only one that you want to take out of sequence? I'm fine with the --

Ms. Behling: Yeah, the steel. That's the only one.

Chair Beach: Let's start there, then.

SC&A Presentations

Ms. Behling: Okay. So, Bob, go ahead.

Dr. Anigstein: Well, this Observation 6 arose during the SC&A review of PER-057.

(Simultaneous speaking.)

Chair Beach: Excuse me. Hello?

Dr. Anigstein: Huh?

Chair Beach: Bob, is there a presentation to put up for that?

Ms. Behling: There is not. Because this is very brief, there was no presentation included. We felt that this could be verbal, and so we did not make a presentation. Sorry about that.

Chair Beach: Okay. I think Rashaun was trying to chime in.

Dr. Roberts: Yes, and I'm still hearing -- I don't know if other people can hear some background noise.

(Pause.)

Dr. Roberts: Okay.

Dr. Anigstein: Can I resume?

Dr. Roberts: Yes.

Chair Beach: Yes. Yes, please.

Dr. Anigstein: Okay. Like I said, PER-57 was a redo of the Site Profile for GSI, General Steel Industries, and one of the comments about it that we had, SC&A had on the observations was that we could not -- we could not match the numbers, the dose numbers for the intake, for inhaled intake, and we found out that the reason was that NIOSH was using an efficiency method, and that there were some workers.

If a worker had worked an entire year, January through December, our calculations matched the NIOSH calculations. We used a different technique, we used the DCAL, DCAL code written by Oak Ridge, and thus it was a totally independent check. We had very, very close results.

However, if a worker had not worked a full year, either he left during the year or he was hired the latter part of the year, we did not match the doses for the first the first couple of doses afterwards, and the reason was that NIOSH was using a technique, an efficiency method, which was then coded into this Chronic Annual Dose Worksheet, the CADW, and by that tool they would simply say, well, let's just take the -- calculate the total intake over the course of the year, and divide it up among the number of days, the 365 days, and this would smooth out the intake for the whole year.

But the fact is that because uranium has a long residence that really shows up in the lung cases, that uranium has a long residence time in the lung, an intake during the first six months -- I'll just arbitrarily say the first six months of the year -- will have a greater effect in later years than an intake during the second six months of that same year, because the uranium would simply have been in the lung longer.

So this was pointed out to NIOSH and at first there was -- at first there was a response that the CADW tool took that into consideration. But what it did was it simply relieved the dose reconstruction to a hand

calculation, and it actually calculated the average intake, but it still had that problem.

So when this was -- it was actually resolved at the last Procedures Subcommittee meeting when Dave Allen was in attendance, and that they settled the thing. They said that if the POC was close to 50 percent, that he said between 45 and 52 percent range, then it's possible that this change in the intake could make a difference in the outcome.

And consequently, in such a case, the dose reconstructors were asked to actually do the IMBA run for that individual case. And IMBA does take the actual exposure regimen and calculates the doses according to day by day when the intake was taken. So this is completely satisfactory and SC&A accepts that resolution and recommends that the Subcommittee closes the issue.

Chair Beach: Okay. And Bob, that was Observation 6. And that's the last one for PER-057. Is that correct?

Dr. Anigstein: That is correct. There was also a Finding 2. The reason it was duplicated was because there were -- the PER consisted of doing five cases -- reviewing five cases. And so we -- I wrote that we listed the observations case by cases when going along. And so there was one case where there -- For one case was Observation 6. And the same issue came up in another cases -- in another case where it had a greater impact, so we called it Finding 2.

Chair Beach: Okay.

Dr. Anigstein: And so there were both -- They're both resolved by this change in our procedure.

Chair Beach: Okay. Thank you, Bob. Loretta or Paul, any comments or questions?

Member Ziemer: This is Paul. I'd just point out that the Subcommittee Members do have a copy of Bob's memorandum on this. Even though it's not on the

Skype right now, it was distributed with the other documents that the Subcommittee got. I'm not sure whether the website included it for today's materials or not. Rashaun, I'm not sure. But the Subcommittee Members do have Bob's memo on this.

Chair Beach: Correct.

Member Ziemer: And I'm fine with this resolution.

Dr. Anigstein: This is Bob. It's not under the meeting agenda on today's meeting, but it is on the website. I was able to retrieve it myself.

Member Ziemer: Oh, okay. So it is there for other participants in this meeting to look at if they want to see it in writing. And as I said, the Subcommittee Members had it in advance as well.

Chair Beach: Correct. It was sent out August 17th, 2021 or that's the day that the document -- You're correct. There's also a reference in the document. It was with the documents that Rashaun distributed to us for this meeting.

Chair Beach: Yeah, and there's also a reference to the transcript where we discussed it on the February meeting. So I'm fine with closing this also. Loretta? Thanks for --

Member Valerio: I'm fine with closing this. I'm good with closing it.

Chair Beach: Okay. Bob, I think -- and Kathy, are you keeping track of this for the BRS?

Ms. Behling: Yes, we are.

Chair Beach: Thank you. Okay, so we can consider this closed unless there's any other comments or questions. Okay, then let's move back to our first agenda item -- the Site Profile for Grand Junction.

Ms. Behling: Yes. And hopefully I am sharing my

screen. And what I'm going to try to do is toggle this up. Hold on.

Ms. Gogliotti: And I'll confirm you are sharing your screen, Kathy.

Ms. Behling: Okay, thank you. And this is actually going to be presented by Ron Buchanan.

Dr. Buchanan: Can you hear me? I dialed back in. Can you hear me now?

Chair Beach: Yes. We can hear you, Ron.

Dr. Buchanan: Okay, thank you.

Ms. Behling: Okay. Are you seeing that?

Dr. Buchanan: Yes.

Chair Beach: Yes. We are, Kathy.

Ms. Behling: Okay, Ron. You can proceed.

Dr. Buchanan: Okay. This is Ron Buchanan. I'll now be presenting today a SC&A review of TBD-0060 for the Grand Junction facility. Now the Grand Junction facility was located in Grand Junction, Colorado. The covered period is 1943 to 2006. The site was under contract to the AEC to support uranium processing, assaying, and milling remediation. There was some limited thorium exposures.

Now in 1986, they started Grand Junction Remedial Action Project. And in 2006, the Grand Junction site was released. There was a Special Exposure Cohort from 1943 through 1985 due to the lack of internal dose reconstructability. Now before the TBD was issued -- now here's a dose reconstruction template for Grand Junction that was issued in 2015. And the TBD-0060 Revision 00 was issued in May of 2018. And the Subcommittee tasked SC&A with a review of this TBD in February of 2021.

Now some other documents pertinent to this site was the PER-047 was issued in 2014. SC&A did a

pretty extensive review of a lot of the data in response to that PER-047. And they issued a report in 2015. And NIOSH issued an addendum to the SEC in 2015 and SC&A reviewed that addendum in 2016 and issued a report.

Now NIOSH also issued PER-090 in 2019 to address the DR methods modified by issuing the TBD to replace the DR template for the facility. And SC&A has not -- They've been tasked to review PER-090. This tasking was only to review the recent TBD that was issued.

Now of course the TBD-0060 has the standard six sections as we see in all TBDs. We will go through those in a little more detail. Okay, I know we reviewed each section. And in Section 2 is the site description. And it contained a reasonable amount of information about the facility and usual background for the dose reconstructor. Table 2-1 summarized the buildings and our usage periods. And we had no findings or observations in this section.

Now Section 3 was our occupational medical dose. Now at the Grand Junction facility, they switched off and on having the x-rays taken off site and on site. In the early years from '43 to '46, they had a preemployment manual and a post-employment x-ray exam used to be assigned. Now '47 through '61, it was taken off site, so no medical dose would be assigned. And then from '62 to '69, again we had the pre, the annual, and the post-employment x-ray to be assigned. In 1970 to present, it was taken off site, so no dose would be assigned for medical doses.

And we found that these recommendations in the medical x-ray was consistent with other DOE sites and the records at the Grand Junction Facility. And we had no findings, but did have one observation. And that was a carryover observation in that the term "each year" needs to be clarified or replaced because the recommendation from 1943 to 1946

contains the term "each year". And this could be misleading to the dose reconstructor because all exams wouldn't be assigned for each and every year.

We also identified this in 2015 in our PER-047 review as Observation 2, but it did not appear to be changed in the recent TBD. And so that really needs clarified so that a dose reconstructor wouldn't assign all of those three doses each year.

Now Section 4, overhead, we did with onsite ambient and environmental dose. And it recommends that no on site ambient and environmental dose be assigned because it's accounted for in a co-exposure data assigned to unmonitored workers. And there was no indication that the ambient was extracted from the monitored dose. As I said, back in 2015, we went through the records -- or Dr. Hans Behling did. And so we also concur that there was no indication that the ambient dose was extracted. And we had no findings or observations in Section 4.

Okay, Section 5 had to do with internal dose. And we verified the prorated intake values for the categories listed in the tables. We verified the ingestion values according to TIB-9. And we concur with those sections and had no findings. We did have two observations. Okay, Observation 2 was apparent inconsistency in the DAC values. In the TBD in Section 5.3.4, NIOSH recommends a thorium-230 to derive their concentration. That value is 3 to the -12 microcuries for milliliter to derive the intake values for Table 5.6 for co-exposures after 1990. And we did verify those numbers were entered correctly.

However, we also noticed in an older memo -- 2017, a memorandum indicated a DAC value of 7 and a minus 12, about twice as high microcuries per mL was being used at the site. And so therefore there appears to be an inconsistency in DAV values used in the TBD and this memo that was issued in

2017. We need a clarification of why there was a change or why this was done.

Okay, Observation 3 was potential radon calibration chamber exposure. And so the TBD on Page 20 states that any exposure from radon while working around radon calibration chamber was calculated as a working level month and should be provided in a worker's exposure file. And we had to question where some of the files examined of claimants that perhaps were working around the radon exposure chamber to see if there's actual working level months recorded in their file. Because in general, the site was bound by the 5.7 picocuries per liter found in Building 30B, which would apply to most of the most employees. But if a person was working with a radon calibration chamber, it's going to be higher in responding. Now it wasn't verified that there was some workers that had working level months recorded in their files.

Okay, and the next section is 6, occupational external dose. Now according to the SEC unmonitored external dose cannot be reconstructed (audio interference) for 1960. Therefore this section applies to the period 1960 and forward. Now SC&A reviewed the references in the TBD for the (audio interference of detections and exchange frequency and found that they were correctly represented.

And also the assignment of the energies, the different radiations were appropriate for uranium and the decay products. No issues there. And we analyzed the co-exposure methods for photons, betas, and neutrons presented in the TBD. So we'll cover each one of those in more detail of how the photon co-exposure dose. Again, we went through that data and found that they were applicable and how no issues there, just some thought notes.

Now the beta dose in the TBD on Page 27 recommends using a beta to photon ratio of 1.5 derived from the REMS database. And we reviewed that REMS database in 2015 and concur with the

beta to photon ratio of 1.5. And since that is the same value recommended in a TBD and we had no findings or concerns with the co-exposure beta dose or its application.

Now for the neutron dose -- that was in Section 6.5.3, SC&A checked the missed dose data used in Table 6.3 using the appropriate LODs and exchange frequency. We derived the same values as in Column 5 of that table. We had no findings concerning co-exposure neutron data, but did have two observations concerning the assignment of co-exposure neutron doses.

Observation 5 was assigning a 95th percentile to only geologists. If you've ever been around a logging site, you know that probably the geologists aren't the ones that handle the source, it's the floor workers that get out and transport the neutron source to the logging tool, open it up, put it in, and then retrieve it -- restore it. And so we think that perhaps that workers that indicated they were tool workers worked on the drilling floor probably would be a higher exposure than the geologists. And so we would recommend that workers with any indication in their records showing working on the floor with a neutron source be given the 95th percentile also.

The Observation 5 is that we need some sort of substantiation for not assigning co-exposure neutron dose after 1985. TBD states on Page 28 that after 1985 based on a review of the records, neutron dosimetry records are assumed to be complete. Therefore no unmonitored dose should be assigned after 1985. Now we looked through the information with TBD and the references there and we didn't really see anything that supported that. It might be true. There might be some indication that there would be no need to assign co-exposure dose after 1985 because everyone that handled neutron doses or had exposure to neutron doses was monitored. And we would recommend some sort of support for this assumption.

So in summary, we reviewed the TBD and compared it to the -- compared the present TBD to the previous templates and our previous reviews of those templates. We found the TBD to provide reasonable and technically-based recommendations, which was consistent with other DOE sites and previous templates used for the facility.

We had no findings in this review, but had five observations that could benefit from some clarification or re-wording. And that's the text in the occupational medical section concerning each year. That value is used in radon calibration chamber potential exposure above the norm, assigning the 95th neutron -- percentile neutron dose to some of the floor workers. And support of neutron recommendation after 1995, not assigning co-exposure dose. Okay, any questions?

Chair Beach: Any questions, Loretta or Paul or comments?

Member Ziemer: Well, this is Paul. I have a couple questions. On Observation 1, which is the medical exam for the 1943 to '46 period, that period had pre-employment annual and post-employment x-rays. And the issue had to do with the use of the term "each year". And it's not clear to me how that was misused. Certainly "annual dose" means each year, so was there -- were there some sentences that would lead one to believe that, that's not what was meant? Ron, could you clarify what was misleading about the use of "each year".

Dr. Buchanan: Well because if a person started working in '43 and terminated in '46, you wouldn't assign a pre-employment and a post-employment x-ray for each -- for '43, '44, '45, and '46. You'd only assign a pre-employment for '43 and termination x-rays of '46. You wouldn't assign all three every year that, that person worked there.

Member Ziemer: So whatever the sentence was in the document, it implied that you would assign all

three for each year. Is that what you're saying?

Dr. Buchanan: Yes, for each year.

Member Ziemer: How should it be worded?

Dr. Buchanan: Well, it should be assigned as appropriate or something like that, rather than --

(Simultaneous speaking.)

Dr. Buchanan: Yeah, as appropriate, instead of assigning those three doses each year.

Member Ziemer: Yeah. Would someone actually take it to mean that? You're saying there's some ambiguity. I'm okay on clarifying. I just wasn't sure what it actually said besides the words "each year." You're saying that it implies that you assign the pre and post, as well as the others each year.

Dr. Buchanan: Right. And I can read it verbatim here. It says "pre-employment, annual, and post-employment, BHS, and AP pelvic x-ray exam for each year during the operation period before 1947."

Member Ziemer: I see, okay. Well I assume that NIOSH can figure out what to do to clarify that. Okay. I'm fine with clarification. I just wasn't sure what it said that was wrong.

Chair Beach: And Paul, I also had a comment. Because this was also written up in the earlier document and it wasn't changed. Correct?

Member Ziemer: Right. It came up off before. Yeah, I just didn't recall what exactly was going to be clarified.

Chair Beach: Yeah. And you said you had a couple other questions.

Member Ziemer: I had a question also on Observation 3, the radon chamber. I've used radon calibration chambers and in no case could a person enter one. They're big enough to put instruments in.

So I wasn't clear. Is their radon chamber big enough a person could walk into it?

Dr. Buchanan: That I couldn't -- I couldn't answer. I don't know the details.

Member Ziemer: The biggest one I've seen is about the size of a 55-gallon drum, but maybe there are bigger ones that are as big as a room. But the implication on Observation 3 is that a person could go into the chamber. Was that your understanding of it, Ron?

Dr. Buchanan: No, I debated that.

Member Ziemer: It talked about people who could enter the chamber.

Dr. Buchanan: Well yeah, I guess that should say "work around a chamber". What our intent there was if -- Yeah.

Chair Beach: You do say "working around the radon calibration chamber."

Member Ziemer: Well, the second bullet says "Workers who enter the chamber".

Dr. Buchanan: "Enter the chamber", right. And that should be "working around the chamber" because what our idea was whether you could enter it or couldn't enter it, you would be working -- taking the lid off or whatever you did, putting instruments in. Would that person be exposed to more than the others? And apparently they thought it might be because it says that the radon calibration chamber would be recorded as working level months. Our main question whether you get in it or just work around it or whatever is did they actually see any of that in any of the workers files?

Member Ziemer: Yeah, okay. So your second bullet, you really mean workers who worked around the chamber versus --

Dr. Buchanan: Right.

Member Ziemer: -- not necessarily entering. Okay, I've got you. Thank you.

Chair Beach: Good catch, Paul.

Member Ziemer: What's that?

Chair Beach: I said that was a good catch. Yeah, just a wordsmith. Anything else, Paul?

Member Ziemer: No. No.

Chair Beach: Okay, thank you. Loretta, any questions?

Member Valerio: The only question I had is what Paul just asked about the radon chamber because of the, you know, the verbiage that was in there. I thought the same thing, well are they going in or are they just working in close proximity? So that was my only question.

But now that I look back, I do have one question regarding the occupational medical. And looking at the dates that the occupational medical was done off site, it appears that it was done off site more than on site. Is there a reason for that?

Dr. Buchanan: I don't know. I would say that Grand Junction, you know, was a fairly small site compared to the other DOE sites. And I would just have to assume that they didn't have all the facilities there all the time. I can't answer that for sure, but that would be my impression that they didn't have all the medical staff there to do it on site all the time. But you know, perhaps (audio interference) can shed my light on that. I don't know for sure.

Chair Beach: Okay. And are we ready -- NIOSH, are you ready to go through any of these?

Dr. Taulbee: This is Tim Taulbee. Actually we are

not at this point. As you know, Tom Tomes was the lead for the Grand Junction site for us and he retired at the end of August. Alek Kranbuhl is the new DCAS lead for this and he just got assigned this site a couple of weeks ago. So we're actually not in a position to go through all of these one by one. But we will follow up and get back to you all on them.

I do want to say as far as the x-ray discussion that was just going on, I mean that's a simple clarification that we can do. And you know we've done -- had to do that at multiple sites. And this is more of an oversight that we missed it in this revision here. But the clear indication here is, you know, you do a pre-employment regardless of when they start, an annual one for each of the years afterwards, and then a post-employment. That's the intent and that's what we're doing in dose reconstruction. But we can simply clarify that language. That's not a problem at all. And the others, we will be following up with you all on.

Chair Beach: Okay. Thank you, Tim. I was pulling back to that very first one that Paul talked about, if you had any comments on that one. Where was it? Okay, we'll wait for you.

Member Ziemer: That was just the each year annual --

(Simultaneous speaking.)

Member Ziemer: -- that they would take care of that. That was Observation 1.

Chair Beach: Yeah, I was just -- and, Tim, you probably can't comment on why they didn't change it because it was an observation in --

(Simultaneous speaking.)

Member Ziemer: It sounds like it might have been an oversight from what Tim said.

Chair Beach: Yeah. Okay. Any other comments

before we move on to Clarksville and Medina site, PER-087?

Member Ziemer: Do we have to close observations or are these just going to -- these are going to remain in abeyance, I guess. Right?

Chair Beach: Yeah, we're going to carry them forward until we hear -- until NIOSH --

Member Ziemer: Yeah.

Chair Beach: Yeah, and I don't know that we would -- we would just leave them open at this point since there's no --

Member Ziemer: Yeah.

Chair Beach: Yeah. We did close 057, though.

Member Ziemer: Right.

Chair Beach: But these other (audio interference) NIOSH is ready, we'll just leave them open.

Member Ziemer: Thank you.

Chair Beach: Okay. Thanks, Paul.

Member Valerio: Josie, it's Loretta. I have a question for you.

Chair Beach: Okay.

Member Valerio: He did say that SC&A may have not been tasked to review our PER-090.

Chair Beach: Oh, thank you.

Member Valerio: Is that something that, you know, should be assigned to SC&A?

Chair Beach: Good question. I had that written down in my notes too and just went right over the top of it. That is something that I thought we should look at also. Paul, what is your thoughts on assigning PER-090?

Member Ziemer: Well at some point, it certainly has to be tasked. I wasn't sure of the hierarchy of things. Do we put that in the -- kind of in the list for Rashaun to look at in terms of other tasking that may be coming. I don't have a feel for where that would be priority wise.

Chair Beach: Yeah, I'm not sure either. So Kathy, could you make a note of that for tasking for the future and Rashaun also?

Ms. Behling: Actually Josie, in my final presentation on supplemental topics, it's newly issued documents and supplemental topics is my final discussion. I've included that as one of the slides that I was going to point out to the Subcommittee that has not been reviewed. So that's already on my list. And I was going to have that written down too.

Chair Beach: Okay. We will discuss that later.

Ms. Behling: Okay, great.

Chair Beach: Okay. And is Ron -- is he going to present Clarksville also?

Ms. Behling: Yes. Ron's up for Clarksville.

Chair Beach: Okay, I think we're ready.

Ms. Behling: Ron, are you ready?

Dr. Buchanan: Okay, I'm ready. Can you hear me okay?

Ms. Behling: Yes. We hear you now.

Dr. Buchanan: Okay. This is Ron Buchanan and today I'll be presenting SC&As review of PER-087 for Clarksville and Medina Modification Center. The co-author on this was Joe Fitzgerald.

The Clarksville Modification Center was located in Clarksville, Tennessee. The covered period is 1949

to 1967. The Medina Modification Center was located near San Antonio, Texas. And covered the period 1958 to 1966. The two sites were under contract at AEC to support nuclear weapons and weapon components, maintenance, and storage.

PER-087 was issued in January of 2019 for the two facilities. The earlier revisions to the TBD-39 primarily resulted in a decrease or no change to the dose estimate. So there's no need to issue a PER-087. However, PER-087 was issued in 2019 because Revision 3 of the TBD was issued in 2017 would increase some external dose assignments.

Now the potential area of external dose increase, there was three: Lumbar spine exam dose to some organs increased because of the use of OTIB-0006. The dose to the lower torso organs could increase for some workers due to establishing scaling factors for workers who held weapon pits in their laps in a sitting position. So dosimetry on the chest wouldn't necessary give a correct reading. And so it was modified by scaling factors. And unmonitored external shallow dose increase for all years due to the incorporation of OTIB-0086 into the Pantex technical-based document.

Now in this case as we'll find out a little later, the external exposure for Pantex was used as a co-exposure for these two facilities. Now, the internal dose, there was no changes in Rev 3 of the TBD that resulted in increased internal dose. And so PER-087 didn't contain an internal dose modification or recommendations.

Now a little history of these two facilities and dose reconstruction. Initial dose reconstructions were based on the complex-wide methods or other documents. The first TBD Revision 00 came out in (audio interference). And you can see Revision 001, 002. And then 003 came out in 2017. So the important ones are Revision 00 and Revision 003, which resulted in increase in external dose. So we'll cover those.

Now the cases to be evaluated under this PER-087 was all of them because there was a variety of methods used in the past. So no population of claims were excluded from reevaluation because of this PER. All claims associated with the two facilities were considered.

Now a little background on this. In March of 2021, the Advisory Board tasked SC&A to review PER-087, which came about because of the issuance of the TBD Revision 003. And to do that then, we had to also look at Revision 00, our findings from our review of that. So really a three level process going back to find out where it stood on our findings in Revision 00. And in evaluating Revision 003 to see if it addressed them. And then see if those changes were addressed in PER-087. And then evaluating PER-087. It's kind of a three tier report approach. And of course, a standard PER review has four subtasks as listed there. And we issued a Revision 1 of our report on September 28th of 2021. And so we'll go into a little more detail on each of these subtasks next.

Okay, Subtask 1 was to identify the circumstances that necessitate the PER-087. In SC&A evaluation, we found that NIOSH correctly identifies the changes in the Revision 3 and addressed them in PER-087. And had no observation of finding concerning Subtask 1.

Subtask 2 was we were to assess the specific methods for corrective actions, including a review of the TBD Revision 3. And so our methodology was we evaluated the status of the findings from SC&A's review of the TBD Revision 00. And reviewed TBD Revision 03 that created PER-087.

So we'll go back a little bit in time here and look at Revision 00. We were tasked to review that. And SC&A issued a report in 2012 and identified findings that could impact dose reconstruction. And we identified four findings -- excuse me -- seven

findings concerning internal and external DR.

Okay, there was four findings concerning internal dose. Finding 1, 2, 3, and 5. However, all of these dose findings are (audio interference) by the SEC for all Classes for both the (audio interference) the operating years due to the inability to reconstruct internal dose. So that just left us with the external findings.

And so the external findings from our original review, in Revision 00, we had three of them. Finding 4 was neutron-to-photon ratio method that was cited. It was replaced with a correction factor for neutron film, coupled with a Monte Carlo N-Particle -- MCNP-based estimate for missed dose below the 0.5 MeV energy ratio. In other words, when they abandoned the neutron-to-photon ratio and went to correction factor created to compensate for the below half MeV energy ratio that NTA neutron film suffered from back in early years. However, we still had some questions concerning that and an original review of Revision 00.

Now Finding 6 concerned the use of surrogate Pantex external dose distribution for the two facilities because of the lack of dose records in earlier years, uncertainties, and operational information. Now Finding 7 was lack of dose records and source term characterization for the two facilities led to inadequate justification of surrogate data.

So we'll go into those findings in a little detail here. These are original findings way back in 2012 or so and how they were resolved. We found that for Finding 4, concerning neutron dose, the N/P ratio has been replaced by the MCNP-based. However, in the following TBD revisions, the MCNP approach was not used and the correction factors were invoked. In other words, the different corrector factor for fading angular such as that all came out to an overall correction factor of 2.9. Now we evaluated these individual correction factors and resulting correction

factor of 2.9 and satisfied this was claimant favorable and was a better approach than the previous MCNP approach. And we considered that Finding 4 has been resolved.

Now Finding 6 was the use of the surrogate Pantex external dose distribution for the centers. And NIOSH re-worked all the previous claims using PER-087 and Revision 3 of the TBD -- I mean, excuse me -- In PER-087, they used Revision 3 of TBD and OTIB-0086. And therefore the change in external dose was accounted for. We had previously reviewed those OTIB-0086 and we are satisfied with this resolution and consider this issued Finding 6 resolved.

Now Finding 7 however was -- Finding 6 was concern with using -- how it was applied. Now Finding 7 was more concerned with does this surrogate have a fit for these facilities? And our Finding 7 back in our original review did not find that it was addressed adequately. Now we reviewed Revision 3 of the TBD and did not find additional information that would address this. So we recommend that the original Finding 7 remain open as Finding 1 in our review of PER-087. In other words, support for the fact that the data for Pantex would apply to Clarksville and Medina in the earlier years especially when Pantex was more gearing up. And the other one -- Well, especially Clarksville was in operation. So that's why we recommend that Finding 7 remain open as Finding 1 for this review.

Okay, now the issue of the TBD Revision 3 that resulted in PER-087 -- we covered these briefly and we'll go into our evaluation of the three technical issues was the surrogate organ use for lumbar spine, the pits in the lap adjustment -- adjustment factor, and a shallow dose assignment. So we'll look at these individually now.

Okay, now the surrogate organ, we find that the surrogate organ changes in the TBD Revision 3 was correctly addressed in 087. In other words, they

were compensated for and correctly addressed for dose reconstruction purposes. Now, the pits in the lap adjustment, while SC&A concurs with the derivation of the scaling factor of 0.125, the question is application of it, as stated on Page 27 of the TBD Revision 3, and I'll talk about this in Observation 1 in the next slide.

Now, the shallow dose, SC&A concurs that application of OTIB-0086 Revision 1 should be used for shallow dose, per the Pantex external dose TBD pending, resolution of Finding 7.

Okay, so, Observation 1 was the scaling factor needs clarification. The TBD on Page 27 instructs the dose reconstructor to multiply the 95th percentile of glovebox correction factor, which he derives the numbers in parentheses by 0.125. However, this would equal 0.44, which would lower the actual dose assignment. We think that it should read as the scaling factor we have listed there. It would appear that the wording in the first paragraph on Page 27 to Revision 3 should instruct the dose reconstructor to include the 7/8 factor. Add that in. That makes it come out to 1.32 as the actual multiplication factor. Hence, we think that's probably just an oversight that needs clarification.

Okay, so, now Task 3, which we were to evaluate the PER's stated approach for identifying the number of DRs requiring reevaluation. In other words, how they were selected. And NIOSH surface (phonetic) resulted in a total of 172 claims for these two facilities. Fifty of them were reworked and 122 were removed for various reasons such as 51 previously had DRs greater than 50 percent. So no re-work was necessary. Forty-nine was included in a SEC, so no re-work was necessary. Eleven were duplicate claims identified in additional research. And then 11 were evaluated under PER for Pantex.

So that left 50 claims to be recalculated using Revision 3 of the TBD in conjunction with PER-087. Now NIOSH did re-work all 50 claims and resulted in

a new -- new PoCs below 45 percent. So our evaluation for Subtask 3 is SC&A determined that the selection process is per NIOSH, the previously completed DRs that required reevaluation under PER-087 were valid. We had no findings or observations associated with Subtask 3.

Okay, Subtask 4 is to conduct an audit of a sample set of reevaluated DRs mandated by PER-087. And in this now -- of course, this is yet to be done -- we recommend that NIOSH select at least one DR to be reviewed for each of the centers during the covered periods. And each DR needs to include the requirements of assigning lumbar spine x-ray dose or a torso dose due to handling weapon pits in the lab and external shallow dose.

And of course if all these exposures cannot be located in a single DR for each site, then additional DRs that do contain these elements would be needed. So currently we have no findings or observations concerning Task 4 because we have not yet been assigned the review cases.

So in summary, we have Finding 1 was the use of surrogate data in Clarksville, not adequately addressed in the TBD, which was originally Finding 4 from our 2012 review of Revision 00. And Observation 1 was scaling factor needs some clarification in its wording in application.

Chair Beach: Okay. Thank you, Ron. That was a good review. The Subcommittee, we have Finding 4 and 6 that SC&A recommends closure on those. That they feel those are resolved. Should we start there with questions or comments?

Member Ziemer: This is Ziemer. I don't have any questions. I'm in agreement on closing 4 and 6.

Chair Beach: Okay. I agree with that. And Loretta?

Member Valerio: I agree with that as well, Josie.

Chair Beach: Okay, so we will take SC&As

recommendation that Findings 4 and 6 are both resolved.

Member Ziemer: And then Finding 7 would remain open as a new Finding 1 for this PER. Is that my understanding?

Chair Beach: Yes.

Member Ziemer: As well as the Observation 1, mmm hmm.

Chair Beach: Finding 7 as a new Finding 1 and then Observation 1, the scaling factor needs clarification. So, yes. NIOSH are you ready to comment on either of those?

Dr. Taulbee: This is Tim. Yes, we can comment. First of all, want some clarification on Finding 1 because this one actually caused us some confusion because of the Finding 6 that you all just closed, we read as the external dose methodology was correct. But what I'm hearing from Ron and this is where I'm seeking clarification is that the methodology is correct and we applied it correctly. But this finding -- Finding 1 is that we didn't justify using that. Is that what you're saying?

Dr. Buchanan: Yes. This goes back to 2012 review in that when you applied OTIB-0086 and everything, we agreed with the methodology and the application of it. But the justification for applying Pantex external dose to Clarksville when Clarksville was up and running before Pantex was up and running was the question. That is where we'd like to see further support for why it is believed that the doses would be bound -- that the Pantex dose could bound Clarksville dose, especially in the early years.

Dr. Taulbee: Okay. So providing we do that, then the application that we've done has already been reviewed.

Dr. Buchanan: Correct. Uh huh.

Dr. Taulbee: Okay.

Dr. Buchanan: Right.

Dr. Taulbee: All right. Thank you for that clarification and we can certainly -- well, we will provide a response from that and possibly update the TBD to include that, but we will provide a response.

Observation 1, there is actually a typo in the units that's in the TBD in going through and reviewing this. And I believe this is what's causing some of the confusion. With regards to the, you know, "five hours per week" is what it should read, instead of "five hours per day". And so that does cause a little bit of confusion. And the scaling factor equation that you've got here at the bottom of your Slide 19 is the correct application. And that is what we are intending to be for the response in here. We believe we're applying that correctly right now, but we agree that we should clarify that in the TBD so there isn't any ambiguity from that standpoint and people wouldn't come up with a 0.44. But we believe this is being applied correctly right now.

Chair Beach: Okay. So any other comments or questions on either of those?

Member Ziemer: Yeah, this is Paul. I have one additional question just for clarification. So on the use of surrogate data, can you remind me whether or not when this was done originally, did NIOSH look at the surrogate data criteria and present those? Or SC&A, are you saying that they didn't actually go through the justification process?

Dr. Buchanan: Okay. This is 2012 when Joe Fitzgerald actually did this finding, so I'll speak what I know of it. Is that yes, originally SC&A did not feel that Pantex -- the use of Pantex surrogate data for Clarksville was sufficiently supported in Revision 00. And then in Revision 03, we didn't see any further additional support for it. So this is the reason we

brought it up again.

Member Ziemer: Or Tim, do you know at this point whether -- is that the issue, the use of the surrogate data without doing the justification on the surrogate data criteria or do you know whether that was done?

Dr. Taulbee: That is my understanding now that, that is what this new issue effectively is, is that we haven't documented that within the TBD, our use of the surrogate data. And so we can certainly do so.

Member Ziemer: Thank you.

Chair Beach: Great. That was my question as well against the surrogate data criteria. So thanks for raising that, Paul. Subtask 4, Kathy is that part -- I don't believe that's part of your tasking review.

Ms. Behling: No, it's not. Yeah. I'm sorry. No, it's not because typically we resolve all of the issues -- the findings and observations before we move on to the Subtask 4.

Chair Beach: Okay, that makes sense. So then anything else on PER-087? If not, I think we're ready to move on.

Ms. Marion-Moss: Hey, Josie.

Chair Beach: Go ahead, Rashaun.

Ms. Marion-Moss: This is Lori.

Chair Beach: Who is this?

Ms. Marion-Moss: Lori. I have a question.

Chair Beach: I'm sorry. Hi, Lori.

Ms. Marion-Moss: Hi. In terms of tracking the TBD findings, is the Subcommittee tracking the TBD findings?

Chair Beach: I believe Kathy is keeping a note of

those and I'm also keeping a note. Is that correct, Kathy?

Ms. Behling: Yes, it is.

Chair Beach: Yeah, that's something I was going to try to discuss at the end of the meeting also is tracking and keeping tabs. Because without the BRS to go back and look through, this might get complicated.

Ms. Marion-Moss: Well, I'm more so referring to the 2012 findings that were issued. Was the Subcommittee tracking those findings or were they tracked by some other workgroup or another Subcommittee?

Chair Beach: I don't believe there's a Clarksville/Medina workgroup, so I believe the Subcommittee would. Is that correct, Kathy? Do you know if the BRS is tracking that?

Ms. Behling: I'm not sure about that. I know Joe Fitzgerald, like you said, worked on the original. And quite honestly, I'd have to look into that.

Chair Beach: Thank you.

Ms. Behling: And I'll mark that down.

Chair Beach: Thanks, Lori. Yeah, that's something that we're going to have to address before we get too far in is tracking these. So I'll note that as well. Okay. And I think if we're ready, we can move on to PER-006, calculation of dose from intakes of special tritium compounds. Who's got that one? I haven't pulled it up yet.

Dr. Ostrow: Hi. It's Steve Ostrow. This is me as soon as Kathy gets up the slides.

Ms. Behling: Yeah, I'm looking for them.

Dr. Ostrow: Kathy, if you go back to the NIOSH homepage we were just on and go a little bit to the

right of that on your screen, that's where the -- Okay. So you see NIOSH homepage on the left. Okay, just move your cursor a little bit to the right and that's where the OTIB -- down, down, down a little more. Okay, stop. All right --

Ms. Behling: Okay.

Dr. Ostrow: -- now go up a little -- go up a little, now to the right. Just go to the right --

Ms. Behling: Okay.

Dr. Ostrow: -- to the presentation focused review for ORAUT-OTIB. Down, down one. Down one.

Ms. Behling: Okay. Sorry about that.

Dr. Ostrow: Okay.

Chair Beach: No problem.

Dr. Ostrow: That's it.

Ms. Behling: There it is. I kept looking for "memo" for some memo, so sorry. Okay.

Dr. Ostrow: All right, that's it. All right, so this is me, Steve Ostrow. And before we go to the next slide, OTIB-0066 full name is the calculation of dose from intake to special tritium compounds. So just before the preface, what do they mean by "special"? In this case, it refers to tritium compounds in a metal matrix rather than tritiated water. It's also called stable metal tritides, SMT. So that's what they're referring to when they say "special".

Okay, next slide please. All right, so what's the purpose of the review? This was a focused review, which means we didn't start reviewing the entire procedure of the OTIB again. It's just to see if the latest revision -- if Revision 1 of the OTIB addressed the SC&A comments. And you can see relevant documents below where we have that on that slide. The original OTIB came out in 2007. That was Rev

7. SC&A made comments on it. SC&A made comments on it in 2008. That was a while ago, ORAU. NIOSH revised it recently -- well, about a year ago in 2020. And SC&A reviewed it. Did the focus review in April of 2021. So this slide presentation is basically a quick look at what our focused review was in April 28, 2001.

Next slide, please. How did we review it? We looked at a few things. We compared the original revision (audio interference) and Rev 1 to see where the Rev 1 (audio interference) Rev 00. We also looked while we were at it at BRS because there's a number of entries over the years on the OTIB. And then we also took a look at the procedures Subcommittee discussions. There were some discussions pertaining to the OTIB over the years. So we looked at three things.

Next slide please. All right, so what are the issues looking at? A little bit of background, this is taken from the OTIB Section 2, the purpose. And it explains that stable metal tritides are tritium compounds that cannot be detected by urine bioassay as easily as easily as tritium oxide. Because the particles in a stable metal tritide, the tritium is in a metal matrix and it's strongly retained in the lungs. So what happens is that over time, the particle of the stable metal tritide slowly dissolves in the lungs and the tritium defuses out. And eventually it's converted to heavy water, which subsequently can be treated like the standard biokinetic model for the HTO.

So what happens is that this material is more strongly retained in the lungs. You get much smaller dose fractions of the intake excreted in the urine over time. Therefore, relatively small amounts of tritium in the urine sample can indicate a large intake of a special metal tritide. But it's not a good indication of that unless you make some adjustments.

Next slide please. And the OTIB purpose of it is to

give guidance to the dose reconstructor of how to use urine bioassay data in a case where you have tritium in a metal matrix.

Okay, next slide. Okay, our original 2008 evaluation has four findings. After discussions at the March 24th, 2009 procedures meeting, the Findings 1 and 3 were placed in the Abeyance and 2 and 4 were closed. So we're only left with Findings 1 and 3. And that's what Revision 1 of the OTIB addresses. And that's what our review of the revision addresses.

Next slide. All right, this is a lot of words on this slide. I apologize. The Finding 1 of our 2008 review basically dealt with the recommended method. The OTIB refers to ORAU-OTIB-0011, which is tritium calculated in this dose estimate back in 2004 document. And we found that this methodology can't estimate the dose coefficient, which convert the concentration of picocuries to millirems. And we found that on the various references that we gave that the other references, which are mainly the ICRP ones give a factor of 1.4 times higher than the ones apply to methodology given in ORAUT-OTIB-0011. That was our first finding that basically the method given underestimates the dose.

Next slide please. Okay, how is it resolved? Well first, the BRS, NIOSH recognized and they agreed with our findings. And the OTIB itself, Revision 1 gives recommendations at the end of the OTIB. And they said because the ORAU-OTIB-0011 method underestimates those from organically bound tritium intake by about 30 percent, it could not be used for assessment. And said you have to use IMBA when it's based on urine bioassay in IMBA or Web CAD, the dose assessment. So they agree with us in this.

Okay, next slide. Finding 3, which is the second finding that was in abeyance -- and this one, we felt that the guidance was a little bit inadequate in giving background information. That the method of choice if they have available, they should use the actual personnel monitoring -- particulate air

monitoring if it's available rather than a urinalysis method.

Okay, next slide. We looked again at the BRS and NIOSH agreed with us again and committed to putting some words -- additional words into the OTIB to reflect that. They agreed.

Next slide. Okay, so the resolution, the Section 2.0, the purpose section of the OTIB -- revised OTIB expanded a lot that section. And NIOSH added a paragraph to discuss and gives more guidance to the dose reconstructor. And the slides here and earlier on the seventh slide had given some more background information on that. So finally, we looked at the two findings and how NIOSH dealt with it.

Go to the next slide please. And we concluded -- we did a focused review and we concluded that Findings 1 and 3 have been adequately addressed and resolved. NIOSH followed our recommendation. They clarified several points and so forth. So we recommend that the Subcommittee close Findings 1 and 3. So that's it. Do you have any questions?

Chair Beach: Okay, thanks. Subcommittee Members, Paul or Loretta, do you have any questions?

Member Ziemer: I have no questions. I'm pleased that they were able to resolve this. And thank you, Steve, for the presentation. I'm comfortable in closing both of these.

Chair Beach: Okay. And Loretta, anything?

Member Valerio: No, I'm good with closing them as well, Josie. Thank you.

Chair Beach: Okay. So I'm also okay with closing. So this will finish the closeout for Findings 1 and 3 in OTIB-0066 Rev 1. And Kathy, I'm assuming you're going to make note of that.

Ms. Behling: Yes, we will make note of that.

(Simultaneous speaking.)

Ms. Behling: No, we do not have any access to BRS and don't think that's coming in any near future.

Chair Beach: When I was looking through Steve's presentation, I thought oh, they've got access, but no. Okay.

Dr. Ostrow: No. Fortunately I did this before NIOSH decided to redo their computer system.

Chair Beach: Gotcha, okay. So we'll close those. How is everybody doing on -- Are we ready for a comfort break or can you go for another -- I think the next two are fairly brief -- Subtask 4 is --

Member Ziemer: I'm okay, Josie.

Chair Beach: You're okay for a little bit. And Loretta as well?

Member Valerio: I'm okay. I'm fine.

Chair Beach: Okay, so we'll wait for PER-006 Subtask 4 to be put up on the screen. And I didn't ask NIOSH, any comments or are you okay with all of that?

Dr. Taulbee: I believe we're okay with all of that. Thank you.

Chair Beach: Tim, thanks.

Ms. Behling: Okay. Then if we're ready, I'll address the PER-065, Subtask 4. And this is actually under our case review for the Anaconda Technical Basis Document TBD. And PER-065 was issued in November of 2015 for as I said revisions to the Anaconda Site Profile, which is actually addressed under Appendix G of Battelle-TBD-6000. And the revision increased external dose to all job categories for all years of operation due to incorporating changes to the Battelle-TBD-6000. SC&As review of

PER-065 was issued on June 15th, 2017 and that review included an evaluation of the Anaconda Site Profile. And there were no findings from that review.

For SC&As Subtask 4 review, we reviewed cases obviously impacted by the PER. And for this PER, the Board selected one case that met the criteria where external dose was assigned for operators and laborers and the employment was during the operational years between 1956 and 1958. SC&A issued our subtask for review on August 25th, 2021. And if you have access to that right now, I would encourage you to refer to it because during this presentation, I obviously have to be concerned about Privacy Act issues. And I can only provide limited case-specific data. So if you have that available, it may help you as we're going through this presentation.

Okay, NIOSH reworked the cases using the most current DR tools. They recalculated all the annual doses and they reran IREP. And the revised DR for this case was not sent to DOL because the compensation decision did not change. Although SC&As case reviews are typically limited to reevaluating only the pathways addressed in the PER, in addition to the external dose, which was addressed by this PER, SC&A also looked at the internal dose. And the internal dose was included in this evaluation because we determined that the Board would be interested in having an understanding as to why there was such a significant reduction in that internal dose. So we did briefly look at that.

Okay, a little background for this case. EE worked at Anaconda for approximately three decades and worked throughout the site. The worker was not monitored and was diagnosed with a qualifying cancer several years after termination of employment.

Sorry. This slide shows percent changes between the re-work dose reconstruction and the original

dose reconstruction. If you refer to Table 2-1 on Page 7 of our full Subtask 4 report, you can see the original and re-worked doses. But this table shows that there were reduction in all categories except for the medical dose. And as I mentioned, nearly 100 percent reduction in the internal dose.

Okay, the original dose reconstruction was actually performed prior to the issuance of TBD-6000, Appendix G. And it used Scherpelz 2006. And this reference was actually used ultimately as a basis for the TBD-6000, Appendix G. During the dose reconstruction, very claimant-favorable assumptions were made. And it was assumed that the EE was exposed at 1 foot from the rectangular uranium slab for three days in 1956 and 30 days in 1959. And that was considered a 10-hour work day at 2.08 milligram per hour. The bladder was assumed as a surrogate organ for the photon dose and a DCF of 1.523 then was applied. And this resulted in an assigned external dose of greater than 1 rem.

The re-worked external dose, NIOSH used guidance in Appendix G, Rev 1 of TBD-6000. And the external doses were calculated using annual photon doses for years 1956 through 1959 from Table G2 of the revised document. And due to revisions in OTIB-0005 during the time of this re-work, it was OTIB-0005, Rev 5 that was used, the liver was assumed as a surrogate organ. And then a photon DCF of 1.064 was applied. This resulted in the assignment of an external dose of approximately 50 millirem.

Now I will point out just for clarification that PER-065 was issued to an increase in external dose. And that's true because if we go to the original Appendix G, there is a G3 and the dose is significantly increased in Rev 1. However, this dose reconstruction was done prior to the issuance of TBD-6000 and used conservative assumptions, which resulted for this case, a decrease in the external dose.

Okay, the medical dose in the original dose

reconstruction was based on assuming an annual x-ray for each year of employment. The urinary bladder was the surrogate organ and the dose data from Table 6-5 of OTIB-0006, Rev 3 was used. And this resulted in the assignment of about 100 millirem for occupational medical dose.

In the re-work case, they also assumed an annual x-ray for each year of employment. However, due to changes in OTIB-0005, the gallbladder was assumed as a surrogate organ. And using the same dose data from OTIB-0006, it resulted in the assignment of greater than 300 millirem for occupational medical dose in the re-worked case.

Okay for internal dose, uranium intakes were assigned for extrusion and rolling in 1956 and '59 using operator data from Table 7.8 of Scherpelz 2006. And I'll just make mention that, that reference, the air sampling data was based on a summary of AWE metal-working sites. That's how they derived the data that went into this Table 7.8. For claimant favorability, a 30-day intake for each process was used for each year in 1956 and 1959. And intakes of recycled uranium from plutonium-239 and neptunium-237 were scaled according to the uranium intakes. Type M solubility was the most claimant favorable and that was used in both inhalation and ingestion intakes were applied as inhalation, which is another claimant-favorable assumption. And this resulted in the assignment of 0.250 rem.

Now for the re-work, uranium intakes were assigned based on inhalation and ingestion intakes from Appendix G Rev 1, Table G1. And Appendix G -- Yeah, Appendix G used for finding their air dose, they looked at the sampling data was based on the highest air monitoring data in the workplace from two surveys that were taken by the Health and Safety Laboratory in 1956 and 1959. And that resulted in 39 DPM per cubic meters. The doses were calculated for each year of uranium

operations, 1956 through 1959. And again, Type M solubility was found to be claimant-favorable. And this resulted in the assignment of 1 millirem.

So SC&As conclusion on the re-worked external dose, appropriate dose assignments were made based on the Appendix G information. The surrogate organ was based on the current revision of the OTIB-0005 and doses were correctly entered into IREP.

For occupational medical dose, we also found that the appropriate doses were assigned based on OTIB-0006. Surrogate organ selection was correct based on OTIB-0005 and the doses were again entered into IREP correctly.

For internal dose, we found that the appropriate intake values as specified in Appendix G were used. The input data was entered into IMBA correctly and the assumptions were claimant-favorable. So as a result of our review of this one impacted case, we had no findings. Any questions?

Chair Beach: Thank you. Kathy, back on Slide 9, you mentioned the Appendix G for TBD-6000 was published a year after the original DR. Would that have made any difference?

Ms. Behling: Yes. Yes. The doses would have been a lot less if when this dose reconstruction was originally done, if they had used Rev 00 of Appendix G, the doses would have been a lot less than what was used in this. This is a very claimant-favorable DR.

Chair Beach: Thank you. Paul or Loretta, any questions or comments?

Member Ziemer: I don't -- This is Paul. I don't have a specific question on the re-work per se, but I'm trying to recall how and why the Procedures Subcommittee is looking at individual PER cases.

Chair Beach: This is the Subtask 4. That's how we close out these other procedures. Correct?

Ms. Behling: Yes. The PER process -- the protocol that SC&A has established for the PER is under -- we reviewed the PER initially. And then we select an appropriate number of cases that meet the criteria that prompted the PER. And we look at a few of those cases to ensure that they were re-worked as specified in the PER and as corrected by whatever documents needs to be corrected.

Member Ziemer: Yeah, yeah. That's the part I understand. But I'm not clear, are we actually tracking these in the -- in the tracking system -- the individual cases?

Ms. Behling: We do.

Member Ziemer: Okay.

Ms. Behling: We do put a section in there that the Subtask 4 has been reviewed and whether there's any findings associated with that, yes.

Member Ziemer: Yeah, okay. In other words if in fact even though we approved the PER, if in fact they weren't carrying out correctly, that would be noted.

Ms. Behling: Correct, yes.

Member Ziemer: I got you.

Ms. Behling: In fact, earlier today Bob Anigstein talked about Observation 6 from PER-057. And that was, I think associated with a Subtask 4 review.

Member Ziemer: Oh, okay. I got you.

Ms. Behling: Yeah.

Member Ziemer: I just didn't remember how we were including these in the system.

Ms. Behling: Yeah. No, good question. Yes, good

question. I was making note -- When we had access to the BRS, I was making note that there would be Subtask 4 findings. That's how I entered them into the system.

Chair Beach: Right.

Member Ziemer: Yeah. In cases where they are at a location where we have a workgroup, they would be reviewing these. Is that --

Ms. Behling: That's correct. PERs would be under a specific workgroup if that workgroup is still active.

Member Ziemer: Yeah, yeah. Because it didn't seem to me -- Well, let's see. General Steel, they're still an active work -- Well, I guess it's not active. We've closed out General Steel, so is that why it would have come to this -- to our Subcommittee?

Ms. Behling: I believe so. In fact, later when I --

(Simultaneous speaking.)

Member Ziemer: So for example, Savannah River -- if there was Savannah River PER case, we wouldn't be reviewing it. Right?

Ms. Behling: No. No, we wouldn't.

Member Ziemer: Okay.

Ms. Behling: No, that would be under --

Chair Beach: Wait, wait. We would still review in Subtask 4 in our Subcommittee. We would still go through that. And if there was any findings, it would be transferred over. Is that correct, to an active workgroup?

Member Ziemer: On the PER itself versus the individual cases.

Chair Beach: Right.

Member Ziemer: Yeah, I was trying to remember

why we were looking at individual cases here as opposed to the PER itself. And I think it's because there's not a workgroup to look at it. Is that the case?

Chair Beach: I think it's part of our charter to go through once we conclude that there's no findings or all the findings have been cleared and the observations that Subtask 4, we conduct an audit basically. And I think that's part of our charter, not the workgroups. Isn't that correct? And then the next one would be Subtask 5 where we would prepare a report with our conclusions, which that's like the question I had next.

Member Ziemer: Okay. Well, I guess I'm -- I don't recall us doing this many PER individual cases in this Subcommittee. That's what I was trying to --

Chair Beach: Yeah, I think it just closes out our (audio interference) of the review. Correct, Kathy?

Ms. Behling: That's correct, yes.

Chair Beach: So and then on that train of thought, I've never seen us go farther with a Subtask 5. Have we done any of those in the past?

Ms. Behling: Actually Wanda and I used to talk about this a lot and we wanted to -- in that protocol, we actually are saying that are Subtask 5 is writing up the results of our Subtask 4 reviews -- our case reviews. So this is actually consider, I guess technically, our Subtask 5 is to write up what we find from the review of the recommendations under Subtask 4.

Chair Beach: Yeah, because I was thinking about that prior to this meeting.

Ms. Behling: Yeah.

Chair Beach: I was thinking the exact same thing, that it kind of --

(Simultaneous speaking.)

Ms. Behling: Yeah. Wanda and I had talked about eliminating that Subtask 5 and then we just modified the wording a little bit to say that SC&A will follow through and present to the Subcommittee our findings from the review of these re-work cases.

Chair Beach: Okay, which is what we're doing now also.

Ms. Behling: Correct.

Chair Beach: Okay. Okay Paul, anything else? Are you okay, clear?

Member Ziemer: No, I just wanted to be sure. So you're basically saying that all of the individual re-works that are selected for review by SC&A, we would be reviewing and not the workgroups themselves.

Ms. Behling: Correct.

Member Ziemer: Okay.

Chair Beach: Well and just like we have just finished Clarksville/Medina, there's still one finding, one observation. Once those are clear, then we would task SC&A to do Subtask 4, which if you remember back on those slides, they would find one case or a couple of cases to meet those requirements.

Member Ziemer: Right. But there's no workgroup for that.

Chair Beach: No.

Member Ziemer: There's no workgroup for that.

Chair Beach: Well even if there was, I believe we would still follow through with that in our Subcommittee. And if there was any issues with Subtask 4, then -- I don't know if we've ever had this to pass it onto a workgroup, have we, Kathy in the past?

Ms. Behling: I'm not sure.

Member Ziemer: Well, there's been PERs on a lot of different sites. I just don't recall this Subcommittee reviewing all those. I thought if there were workgroups, they -- not the PER itself, but the individual (audio interference) that were selected. But you're saying we do all the individual cases. I just don't remember us doing them all.

Chair Beach: Yeah. Yeah, we do.

Member Ziemer: Okay.

Chair Beach: We just don't get to that point very often.

Member Ziemer: Maybe that's the issue. Okay.

Chair Beach: Okay. So Anaconda, if there's no other questions or comments, we can consider that closed. Correct?

Member Valerio: Josie, this is -- Josie, it's Loretta. I have a question.

Chair Beach: Okay.

Member Valerio: And I have to restart my computer during part of this presentation, so I apologize for that. But on Slide 3, it shows an employment during the period from 1956 to 1958. And then if you go to Slide 8, the second bullet states that, you know, this assumed -- the employee was exposed to one foot from the rectangular uranium (audio interference) for three days in 1956 and 30 days in 1959. So can someone explain the difference in the years to me?

Ms. Behling: Okay, let me -- I have to go back and look at that. Maybe that was a typo on Slide 3. Perhaps that was supposed to say 1956 to 1959, yes. Let me look at that when we take a break and can I get back to you on that? I apologize.

Member Valerio: Yes. Yes.

Chair Beach: And if you look in the original document, Kathy -- Let me see what page I'm on. It says 59 also.

Ms. Behling: Okay, all right.

(Simultaneous speaking.)

Chair Beach: It maybe should have been 56 to 59.

Ms. Behling: Yes, correct. That was a just a typo then, yes.

Member Valerio: Okay.

Chair Beach: But then let me go back to the beginning because I think in the beginning under the -- on Page 6 -- Let me go real -- On Page 6, it also says 56 to 58. So yeah, good catch on that, Loretta.

(Simultaneous speaking.)

Member Valerio: -- I thought it said 1959 as well.

Chair Beach: Yeah, it does. So Page 6 says 58 and then Page 9. So we'll have to figure out what the years actually were if it -- I'll look into that.

Member Valerio: Okay.

Chair Beach: Good question. Thanks, Loretta. Okay, are we ready for a break or do we want to move on to 0063, Subtask 4?

Member Valerio: I'd say we move on.

Member Ziemer: I'm okay to continue. Mmm hmm.

Chair Beach: Okay. Well then, let's move on. And Kathy, we'll leave that note for you to maybe report back this time or next.

Ms. Behling: Okay, very good. I'll try to look into that when we have a break.

Chair Beach: Okay.

Ms. Behling: Okay, let's move on then to -- This again is a Subtask 4 case review. And the site is the Aluminum Company of America, Alcoa in Pennsylvania. This PER was initially issued in June of 2015 due to revisions of Appendix R to TBD-6000, which is the Alcoa Pennsylvania TBD. The revisions increased inhalation ingestion in external doses during the operational period. And if eliminated job categories and now evaluated everyone as if they were an operator. And SC&A issued a review of PER-063 on July 17th, 2017 and there were no findings.

Okay and again in accordance with our Subtask 4 protocols, SC&A reviewed a case or two based on certain criteria and in this particular -- for PER-063, there was one case that met all of the criteria that we requested. And that was -- and those criteria included PoC between 45 and 50 percent, the assignment of external dose during both the operational and residual periods, and internal dose between the operational and residual period. We issued our Subtask 4 report on September 2nd, 2021. And once again, I would encourage you to refer to that for document details as we go through this presentation.

Okay, as always NIOSH re-worked the cases using the applicable tools and most current documents. They recalculated all the annual doses and because this was a best estimate case, IREP was run 30 times at 10,000 iterations per run. The revised report was not sent to DOE because the compensation decision did not change. And SC&As review is typically limited -- obviously limited to the pathways addressed. And in this particular case, since internal and external increased, SC&A compared the original and re-worked case for all exposure pathways.

Okay, a background on this case. The EE again worked for more than three decades and worked

throughout the site. EE was not monitored and was diagnosed with a qualifying cancer several years after termination of employment. Again, here's our table that shows percent changes between the re-worked and the original doses. And if you go to Page 7 of our report, Table 2-1 actually lists the original and re-worked doses. And as you can see, there was a significant increase in the external dose. And it was just due to changes in the TBD.

Okay, the original external dose, NIOSH used the whole-body dose rates from Table R-3 of Appendix R Rev 00 for both operational and residual periods. That's back when the job categories were used. In this case, it was Plant Floor High, which is the highest dose assigned to the Plant Floor High. The bladder was assumed as a surrogate organ for the photon dose. And so a DCF of 1.244 was applied and this resulted in the assignment of approximately 0.5 rem, 500 millirem.

For the re-worked external dose, whole-body dose rates were taken from Table R-2 of Rev 1 of Appendix R. For the operational and residual periods, the same surrogate organ was used. And this resulted in the assignment of external dose of approximately 9 rem. And this is a significant increase in the external dose. And it resulted from changes in the TBD that increased dose rates for the operational years.

Okay, for occupational medical doses, the original DR assumed pre-employment annual termination x-rays for the operational year. A urine bladder was assumed for the surrogate organ and dose data was taken from Table 6-5 of OTIB-006 Rev 3. And this resulted in the assignment of -- this should be less than 100 millirem for the occupational medical dose.

For the re-worked medical dose, it was assumed -- an annual x-ray was assumed for each year of employment. The uranium bladder was assumed for the surrogate organ. Dose data was taken from Table A-7 of a revised OTIB-006. And the

occupational medical dose remained the same using these data and assumptions.

Okay, internal dose. The original DR, the internal dose was derived using uranium intakes from inhalation and ingestion calculated based on Tables R-1 and R-2 of Appendix R. And that should be Rev 00 for the original. The job category again was Plant Floor High and NIOSH compared types M and S solubility. And it was determined type M was the most claimant favorable or more claimant favorable. And this resulted in the assignment of approximately 300 millirem for internal dose.

In the re-worked case, the uranium dose was assigned based on Table R-1 of Appendix R, Rev 1. Dose was calculated for each operational and residual year. And again, types M and S solubility were compared. And it was determined type M was more claimant favorable. This resulted in the assignment of dose that was nearly identical to the original calculated dose.

So SC&As conclusion on the re-worked case, the appropriate dose assignments based on Appendix R of Rev 1 were used except -- and here again, I apologize. This should be for 1960. NIOSH slightly overestimated the dose. What happened, they assigned the 1959 dose of 15 millirems to 1960 where actually the 1960 dose should have been 12 millirems. So a minor -- you know, a slight overestimate. Appropriate surrogate organs were used base on OTIB-0005 and all doses were entered into IREP appropriately.

For occupational medical dose, again appropriate doses were assigned based on OTIB-0006. Surrogate organs were correctly based on OTIB-0005 and all doses were entered into IREP correctly.

The conclusion for the internal dose, appropriate intake values were used as specified in Appendix R, Rev 1. And again, except for one year -- and in this case NIOSH slightly underestimated the dose. They

used the inhalation intake of 0.25 picocuries per day for both inhalation and ingestion. They should have actually -- the ingestion intake should have been 2.71 picocuries per day. So that resulted in a slight -- slightly lower dose. The input data was entered into IMBA correctly and the assumptions were claimant favorable. And SC&A had no findings with our review of this particular re-work under PER-063. Any questions?

Chair Beach: So that last slightly lower dose, would that be considered a -- it's not a finding. I realize that -- an observation? But we're not tracking these as findings or observations, it looks like.

Ms. Behling: Well, we do. I guess we did not identify this as such. The external, there was one year where the dose was overestimated for one year. It is an incorrect value that was used, but we did not identify it as an observation or a finding. But we do, do that in these -- in these reviewed case. And if you feel that, that should be addressed or should be identified as an observation or finding, we can certainly do that.

Chair Beach: I guess I'm more curious as to why you didn't address it as a -- Was it just because it was such a slight incorrect? I mean it was an incorrect calculation used.

Ms. Behling: I guess. And I guess the response from NIOSH would have been yes, we did -- it was inappropriate. But everything sort of evened out --

(Simultaneous speaking.)

Chair Beach: Right, I understand that.

Ms. Behling: Not that, that -- Not that, that should alleviate or preclude us from making it an observation or a finding. And like I said, perhaps we can still do that if you would like to modify this.

Chair Beach: Was it just an oversight? Do you know why that was missed? And I think --

(Simultaneous speaking.)

Ms. Behling: Yeah. I think it was simply an oversight. They're looking at a table. And for the external dose, they assigned -- rather than assigning the dose that was listed in that table for 1960, they just inadvertently took the dose from 1959. Same type of thing for the inhalation ingestion. They're in two columns next to one another. And they just took the inhalation and put that in for both inhalation and ingestion, rather than pulling it from the other column.

Chair Beach: Easy to do. Any comments, Loretta or Paul?

Member Valerio: I don't have any, Josie.

Member Ziemer: No. It appears that it's not an error in the methodology per se. It's an error in just looking at the wrong column. If those columns had been substantially different, it probably could change the outcome of the case.

Ms. Behling: Correct.

Member Ziemer: I think it's well to note that they selected the wrong column. Was this originally -- this case was between 45 and 55 or something like that?

Ms. Behling: 45 and 50.

Member Ziemer: Was it 45 and 50? In any event, was this originally compensated or uncompensated case?

Ms. Behling: It was an uncompensated -- it was an uncompensated case.

Member Ziemer: Yeah. And had they been in the correct columns on this choice --

Ms. Behling: It would not have made a difference.

(Simultaneous speaking.)

Ms. Behling: No.

Member Ziemer: Yeah.

Ms. Behling: No, we looked at that. Yeah because this was -- This case -- the PoC was very, very close to 50.

Member Ziemer: Okay. And if they had been in the correct column, it wouldn't have changed that. I guess my question is it's not an issue of them using the wrong procedures or not going through the process correctly. It's somebody selecting the wrong column in the right procedure.

Ms. Behling: Correct. That's correct.

Member Ziemer: And had it been substantial numerical differences that could have changed the outcome, then you'd certainly have to go back and --

Ms. Behling: Yeah. Oh, we certainly would have made that a finding. Yes, we would have certainly made that a finding.

Member Ziemer: So Josie, what I think what you're getting at is, is it not a finding simply because it didn't change things? Or should it be a finding anyway just so that it's noted --

(Simultaneous speaking.)

Member Ziemer: Or should it be an observation?

Chair Beach: Yeah, I guess that's -- I don't think I'd write it to the level of a finding, maybe an observation. But yeah, I can see how that would happen with the two different columns.

Member Ziemer: And even if it's an observation, it's not something that has to be --

Chair Beach: Yeah.

Member Ziemer: In other words, they could say

yeah, we'll correct that in our records, but it doesn't change the outcome.

Chair Beach: No. And there was two on this. One was over, one was under. Yeah, I think it's noted. So I don't know if you need to officially write it down. I guess I could ask NIOSH what's your thoughts on it?

Dr. Taulbee: This is Tim. In looking at the underestimate and the overestimate that SC&A was reporting there on Page 9 of their document, I mean, there's are very small resulting doses or changes. And SC&A indicated that, you know, this doesn't change anything with the PoC. I believe their words here are resulting in a slight overestimated of 4E to the minus-six rem. So I mean this is microrem type of range.

Chair Beach: Yeah, understood.

Member Ziemer: Yeah.

Chair Beach: And it's human error, so I'm fine with just leaving it as written. I mean we've --

Member Ziemer: Yeah.

Chair Beach: -- it doesn't change anything either way.

Member Ziemer: I think that's the way to go, yeah.

Chair Beach: Yeah. Okay, I'm fine with that. Loretta, you okay?

Member Valerio: Yeah, I'm okay. I'm fine.

Chair Beach: Okay. So this one is also closed. And now I will ask again, are we ready for a 15-minute comfort break before we move on to the -- I think we have two more and then the newly issued documents. Unless you guys are okay to keep moving -- going forward.

Member Ziemer: Well for me, it's your call, Josie.

What kind of comfort break do you need?

Chair Beach: Well, it's just not me. There's other people in offices. So SC&A, would you -- is this an appropriate time? Would you guys like a break and NIOSH?

Ms. Behling: This is Kathy. I wouldn't mind having a break, if that's okay with you. It doesn't even have to be 15 minutes if you don't want it to be that long, but I could use just a few minute break.

Chair Beach: Well, and I know you wanted to look at the --

Ms. Behling: Correct, yeah.

Chair Beach: Let's go 15 minutes. Rashaun, are you okay with that?

Dr. Roberts: Yes, that should be fine. So that would have us coming back at around 1:20 or so.

Chair Beach: 1:20 or 1:25, yeah. I think.

Dr. Roberts: Let's do 1:25 we'll reconvene.

Chair Beach: Okay, that sounds great.

(Whereupon, the above-entitled matter went off the record at 1:07 p.m. and resumed at 1:25 p.m.)

Dr. Buchanan: Okay. So I guess we can get started. I will be presenting SC&A's evaluations of OTIB-0088, which is concerned with external dose reconstruction. Kathy, do you want to do the next slide?

Chair Beach: Is Kathy back on? So, Ron, is Kathy, is she the one that's got the slides up for you?

Dr. Buchanan: Yes, she's been presenting the slides.

Chair Beach: Okay. I bet she got tied up looking for that year.

Dr. Buchanan: Right.

Ms. Behling: Okay, this is Kathy Behling. I just joined. I'm sorry if I'm a little late here.

Chair Beach: Okay, you're fine. We figured you were looking at Europe.

Ms. Behling: I started looking at all kinds of things here and different thoughts came to mind that I may want to discuss.

Chair Beach: Okay. So Ron's ready for you to move the slide presentation forward one slide.

Ms. Behling: Okay, can I make a comment and ask a question before we move on on things that were just previously discussed? Is that okay with you, Josie?

Chair Beach: Yes.

Ms. Behling: All right. Yes, in answer to Loretta's question, first of all, for Anaconda, the operational years are '56-'59.

And so our selection criteria would have wanted someone who worked within that employment period, would be '56-'59, not '58.

So '59 is the correct year. Okay. So there would be --

Member Valerio: Thank you.

Ms. Behling: Okay. All right. And I don't want to digress too much here. So Paul asked a question that did get me to start thinking about where are the PERs typically reviewed?

And I went back through the Savannah River Site and I know that the Savannah River Work Group is very active and they look at all of the OTIBs and the reports that are out that are very specific to Savannah River.

But as I was going down through that list, I didn't see, and maybe there hasn't been recent PERs for them to have looked at, but I just want to be sure that these Work Groups are getting notified of these PERs and they are being done in those Work Groups, and if not I think that maybe that maybe this group Subcommittee should handle all the PERs.

I'm a little confused by that to be honest. I know Ted used to always say that they belonged to the Work Group, but I wonder if that's really happening, because I'm not involved with a lot of the Work Group work.

Member Ziemer: Kathy, this is Paul. I went back, also looked in earlier files of this Subcommittee and I find that we have actually looked at a lot of PERs from different places, including General Steel when the Work Group was still active.

We looked at the individual PER cases in this Subcommittee. So I just hadn't remembered it, but looking back, I looked back at quite a few previous meetings and I found that we had looked at a lot of PERs in the past.

But it's been a couple years since we did it and I had forgotten, but we have done quite a few in the past.

Ms. Behling: Right.

Member Ziemer: So I'm guessing -- I'm guessing they all do come to us.

Ms. Behling: Okay, and perhaps this is a question for Rashaun. Should, because when, I'm usually the person that sits down and suggests to the Subcommittee what we should, what hasn't been reviewed and what could, what they should consider or what they want to consider for us to review.

Should all of the PERs, would you recommend that we look at those through the Subcommittee,

through the procedures Subcommittee, or should I research it a little bit and see if there's an active Work Group that is handling that? I'm still --

Chair Beach: Well, Kathy, this is Josie. So the reason we're looking at the PERs is to make sure that the PERs are working and functioning the way they're supposed to be.

So it's not so much the individual cases, but just going back, and that's what the procedures group does is make sure those procedures work.

Ms. Behling: Okay.

Chair Beach: So that's what we're doing, is making sure that we didn't miss anything. Is that correct?

I mean, that's what I've always thought a path forward was, kind of a close out review.

Ms. Behling: Right, but I'm talking also about all PERs, no matter what sites they're affiliated with, should they be reviewed under this Subcommittee?

Member Ziemer: I think you can pick them all up. This is Paul. I think you can pick them all up.

If you look at the -- at the agendas for all of the past Subcommittee meetings, you'll see what PERs we have reviewed, and it's quite a few.

Ms. Behling: Yes. I don't think --

Mr. Allen: Can I say something? This is Dave Allen.

Ms. Behling: Yes.

Mr. Allen: From my memory in the past years, yes, this committee has reviewed I think 100 percent of the PERs and did the past four with those, too.

Whenever there is an actual technical issue with the CBD then normally we would make the recommendation that we transfer the finding to an active Work Group, and that's normally what is

done.

Ms. Behling: Okay.

Mr. Allen: Assuming there's an active Work Group.

Ms. Behling: Okay. Okay, very good. I just didn't want to miss anything or not alert the Subcommittee of a new PER that is out there, thinking that it's going to be handled under some Work Group.

So, okay, that was more of a clarification for me, so I'm sorry to digress like that, but, okay, thank you.

Chair Beach: No, and no problem with that, Kathy, at all. It's good to make sure we'll on the right page.

Ms. Behling: Okay. All right. So I will let Ron take over.

Chair Beach: Okay, thanks, then.

Dr. Buchanan: Okay. I'll start again. I'll present the SC&A's evaluation OTIB-0088, external dose reconstruction. And we can have the next slide, Kathy.

Okay, OTIB-0088 revision one was just issued in 2019. Revision zero had been issued in 2018, so it's a fairly recent document.

The Advisory Board passed SC&A to review revision one in March 2021. We did that review and issued a report in September 2021.

Now, revision two was issued after we were tasked with this, and that was in June 2021, and SC&A has not yet been tasked to review revision two. Next slide.

Okay, the purpose of OTIB-0088 is to provide external dose reconstruction guidance using IG-001 and approved technical information bulletins and Site Profiles and the Oak Ridge procedures that

have been developed and approved.

Now, this is for exposure for the photons, neutrons, electrons, ambient dose, and x-rays.

Now, the general approach to have an outline of OTIB-0088 was that they cover some information, an external dose symmetry records, occupational medical x-ray doses, incident reports, types of external radiation exposures, conversion of external dose, organ dose, and uncertainties.

Now, the OTIB contains three attachments. A is assigning missed dose, B is onsite ambient dose, and C is the DOE adoption of the ICRP Publication 60 neutron weighting factors by each of the major sites.

Now, we reviewed the approach using OTIB-0088 and we found that it was reasonable and useful and had no findings or observations in determining how the subject would approach in OTIB-0088.

Now, we reviewed the methods used in OTIB-0088, and we concur with NIOSH's methods, equations, and recommendations in the OTIB.

However, we did have several observations in that SC&A previously reviewed OTIB-0088 in 2019 for revision zero that was issued in 2018.

It had an observation screening for lack of information in OTIB-0088 for region zero zero. If it was used to facilitate cancellation of Procedure 60.

And in OTIB-0088, it states that it is being used to facilitate cancellation of Procedure 60, which is occupational onsite ambient dose reconstruction for DOE sites released in 2006.

Now, Observation 1 was to request a path forward for this issue. And it was discussed during the Subcommittee procedure review meeting in February of 2019, and the Subcommittee closed SC&A's Observation 1, with the understanding that

NIOSH would consider SC&A's recommendations further and issue an email with a path forward.

And SC&A is not aware that NIOSH has issued an email concerning our concern over the cancelation of Procedure 60.

And let me give you a little more information on that. Procedure 60 is the summary of ambient dose for all the major DOE sites.

And on page 14, it gives a good summary table of what sites and when to include ambient dose in the dose assignment and when not to.

OTIB-0088 is to replace Procedure 60 or help it phase out, but this information should be included or something similar to it.

So we are not aware of how this issue, NIOSH should address this issue as of today.

Okay, we evaluated documentation in OTIB-0088 and found that the previous calculational error in Attachment C had been corrected in revision one, so we set aside that, and however did note several areas that would benefit from further clarification or explanation, which is listed as four observations, as discussed in the following slides.

Observation two is clarification of covered x-ray exams. The first paragraph on page 8 states that only doses that were received before diagnosis of the primary cancer included in the dose reconstruction, and if a worker received medical x-ray exams for occupational, medical, or health screening as a condition of employment at a covered site, reconstruction includes these doses, which we're all fairly well aware of.

Now, we're fairly well aware of the following fact, but it would be helpful, especially maybe to new dose reconstructors or the public, if you were to include the statement that clarified the fact that the x-rays that were performed for diagnostic or

therapeutic reasons are excluded.

In other words, anything along those lines would not be included in the dose reconstruction.

Observation three concerns unmonitored worker's potential dose. On Page 10 of the OTIB, it states in general, it is expected that reconstruction dose to unmonitored workers, those that didn't have any records, would be less than doses to monitored workers.

This statement didn't appear to be substantiated, because it does not consider the fact that some unmonitored workers also include workers whose records who have been lost, destroyed, or are ineligible.

Now, in other words, just because there is no record of it doesn't necessarily mean that they weren't monitored.

And in addition, some Classes of workers had the radiation exposure controlled by their employer, such as subcontractors who don't necessarily follow the same procedures as the prime contractor in monitoring and record keeping.

On to the next one, Kathy.

Chair Beach: She's there.

Dr. Buchanan: Yes, okay. Okay, now, the Observation 4 is use of monitor badge records.

Okay, page 13 of OTIB states however for cases when the monitor badges were issued for particular monitoring period, only one zero measurement should be assigned per monitoring period.

In general, that applies to most facilities, that the worker worked in the same facility and they were issued several badges or something during the same period.

However, there are instances where workers may have worked at several facilities at the same site, and each facility issued their own badge for that period, and so they would issue different badges, and so that should be accumulated.

And such a place as Idaho National Lab did this at their different facilities on the same site.

In that case, all the badges' results should be analyzed and appropriate zero measurements assigned, because they were individual time periods at different facilities.

Okay, and Observation 5 is clarification of NCRP to the ICRP correction factor.

I'll give a little background on this. These sites use the NCRP neutron weighting factors originally back to about the year 2010.

At that time, the ICRP correct weighting factors were incorporated into many of the DOE sites.

And so when you do dose reconstruction, if you have neutron badges period recorded prior to 2010, you apply the ICRP to NCRP correction factor, which is usually around 1.9 and that is correct up until the site started applying the ICRP correction factor themselves, which started in about 2010.

Now, Appendix C of OTIB-0088 lists the major DOE sites and when they switched to the ICRP 60 neutron weight factor.

And that's very useful. However, it would be useful also if there was a note in that saying that the dose reconstructor is not verified, that the correction factor of NCRP to ICRP, once the ICRP correction factor has been adopted by the DOE sites.

Checked a few of the Site Profiles, and some of them instruct the dose reconstructor on that issue, and but not always the Site Profiles instruct the dose reconstructor did not apply the correction

factor after implementation date.

And so that would be helpful in ensuring consistency in dose reconstruction, in correct dose reconstruction.

So in summary, we had no findings. We had five observations that have to be addressed. And we're up for questions.

Chair Beach: Okay, and I think this is one also that NIOSH said they wouldn't be ready to comment on, but I do have a question.

Would it be appropriate to task SC&A to do a focused review on Rev. 2 that came out in June and verify that these observations are still an issue before we move on to getting answers from NIOSH? What do you think, Paul and Loretta?

Member Ziemer: Well, I would ask if this may be, Kathy, is this already on your list also? I mean, it would be appropriate.

Ms. Behling: No, Paul, it's not, because, again, I thought that these observations should be resolved before we got issued, but I agree with Josie that maybe it's appropriate to do a focus review. I'm not sure, but I do not have that on my list.

Member Ziemer: Oh, okay. Thank you.

Dr. Taulbee: This is Tim, if I may interject here. In going through the individual observations, the only one that's really been kind of incorporated in revision two is the Observation 5, but possibly not fully to the extent that Ron just mentioned about the exclusion, because that's really more in the Site Profiles type of scenario.

But I would like to go through some of these if I can.

Chair Beach: Of course.

Dr. Taulbee: Okay. With regards to Observation 1, if you could go back to that, thank you, we have not issued an email. Actually, that dropped off my radar in order to do so.

But we are cancelling. We have considered SC&A's recommendation, and our response is that PROC-60 we will be cancelling. We are moving all of the information that is site-specific from PROC-60 into the individual Site Profiles.

And the generic type of information and the overall guidance is what we're moving into OTIB-0088. And we're doing this because we're consolidating documents here.

I understand and recognize SC&A's desire and their goal, or the efficiency of looking in one place to know which sites to assign on-site ambient dose and which ones don't.

But when we do dose reconstruction, the dose reconstructors are going to that Site Profile and that's what they're focusing on with that one.

They're not really looking at another guidance document from that standpoint. We're trying to consolidate it all into the Site Profiles because that's what the dose reconstructors are using as the primary source.

So this is why we're doing this. It's actually improving our consistency internally, and so it's much more efficient to do so.

Now, if you want me to write an email discussing this, I can certainly do so, but I'd really just like to go back to the original of closing this out. This is our reasoning for why we do it.

We did consider what SC&A was saying, that this is a handy user cable type of thing, but really, the information that dose reconstructors use is in the individual Site Profile.

Chair Beach: And do you know when that's going to be complete and you'll close out that document?

Dr. Taulbee: It's actually taking us much longer than what we thought, let me put it that way, because there are some sites that when we went to update their particular Site Profile for the onsite ambient doses, we realized that the cutoff dates were earlier, back into the 1990s type of timeframe, or late '80s, and there's a lot of new data over the past 20 plus years out in environmental reports.

And so updating those is what we've been currently doing. That's what's causing the delay in cancelling PROC-60 right now, is updating the few of the sites, the onsite ambient dose information.

So I don't really have a great date for you on when that's going to be accomplished.

Chair Beach: So is there a -- is there a Rev. 3 on the horizon for this also?

Dr. Taulbee: Well --

Chair Beach: Are those changes being incorporated?

Dr. Taulbee: Well, we've incorporated all of the generic type of information that we're going to move into OTIB-0088 already.

So actually, the problem with cancelling PROC-60 is the updating of the individual Site Profiles.

We won't cancel it and can't cancel it until we get all of those Site Profiles updated with the information that's currently in PROC-60.

Chair Beach: Okay. That makes sense. I was just curious if we needed to think about Rev. 3 or not. So, okay. So no date.

And I'm okay with this being an answer to the email in Observation 1. Other Subcommittee Members?

Member Ziemer: This is Paul. You're saying you're

comfortable not having an official email distributed and have this information that we have today would suffice for now?

Chair Beach: Yes, and --

Member Ziemer: That's what you're saying?

Chair Beach: Yes, that's what I'm saying that this, we can cancel. I think that was two meetings ago.

SC&A, I don't know what your thought is on that. Do you want something more formal, which that email would have been, or are you comfortable with Tim's explanation?

Dr. Buchanan: This is Ron Buchanan. And I'm okay with it. Kathy's head of the procedure part, so I'll let her make a final decision.

Ms. Behling: Yes, I'm okay with that also. And we will note this into the BRS when we have access for that.

Chair Beach: Right. Okay. All right, so that officially, then, if everybody's in agreement, closes Observation 1 with Kathy updating the BRS with what Tim told us today.

Member Ziemer: Yes.

Chair Beach: And that will be emailed. Okay. Loretta, you okay with that?

Member Valerio: I'm fine with that, Josie.

Chair Beach: Okay. Tim, did you have some other things you wanted to cover?

Dr. Taulbee: Yes. Observation two, and this is one where we can modify the language in the sections but frankly I really don't think it's necessary.

I understand clarifying that we don't include the x-rays from diagnostic or therapeutic reasons, but that's been the case since the beginning of this

whole program.

So specifically putting it in here, yes, we can do that, but I just don't see the real need for that -- for that exclusion. That's been the case for all of the sites for, well, since the beginning.

So I guess I, if the worker or the Subcommittee here feels that we should definitely include it in there, we can do that in a Rev. 3. What are your thoughts on that?

Member Ziemer: This is Paul. I agree with that. I never thought it was an issue that was in dose reconstructors. I thought it was, it's always been pretty clear, but medical, diagnostic and therapeutic exams are not to be included. And, in fact, we go so far as to say that, and diagnostic and therapeutic exams would almost never occur on site, would they?

And we already don't include reaching required occupational screening that's done outside.

Mr. Siebert: And this is Scott Siebert from the ORAU team. I just want to back up, Tim, yes, it's been done that way, and it is also documented in OTIB-0006, dose reconstruction from occupational, medical x-ray procedures. That is specified and called out specifically in OTIB-0006 as well.

Chair Beach: Okay. And I guess I was going to ask that question, too, is I hadn't seen it where it called out therapeutic.

Ron, are you okay with that explanation?

Dr. Buchanan: Yes, I'm okay with it.

Chair Beach: You think that covers it, then?

Dr. Buchanan: As far as I'm concerned. Like, I say, Kathy has final say for SC&A.

Ms. Behling: Yes, that's fine. I agree.

Chair Beach: Okay. Then we can close one and now two. Loretta, any comments?

Member Valerio: No, I agree with that. I'm good with that.

Chair Beach: Okay. Thank you. Tim, any others?

Dr. Taulbee: Yes. Observation three, and this one, it kind of falls into the same, a similar scenario as the previous one. But on Page 10, it's stated here on the slide, it says, in general, it is expected that dose reconstruction. And either we're talking in generalities here. We're not being specific to basically what in general means.

We recognize that there are going to be exceptions and oddities to the rule or to the -- to the general statement here. And we kind of feel like SC&A's gone on and specifically talked about, there are some unmonitored workers that have lost or destroyed records or they're ineligible. We recognize that. But all we're doing is talking about in general here.

Now, we can go through and add additional language and go through basically what Ron's got here on the slide for Rev. 3 if that's what the worker wants. We can certainly do so.

But the statement here that is being brought up is we're just talking in generalities, and in generalities, people who are unmonitored are generally, their exposure is less, they have less dose than the monitored workers.

I guess the question to the Subcommittee is do you want us to incorporate more information here with regards to this in a -- in a Rev. 3 of this OTIB?

Member Ziemer: Well, talk about the practicality. A general statement doesn't give any guidance on what they're supposed to do in making a decision as to the dose reconstruction.

I didn't go back and look at Page 10, but whether it's saying, sort of following that?

Dr. Taulbee: Give me just a second to pull that up.

Chair Beach: Yes, when you pull it, and my question was going to be, does it change anything if you reword that.

Is it going to add to that or is it going to change the way the dose reconstructor looks at it?

Dr. Taulbee: I don't think it's going to change anything at all. Okay, let's see. Oh, shoot, I've got the wrong version up. We're on Page 2. I'm sorry.

Chair Beach: Okay.

Dr. Taulbee: I'm going to have to get back to you I guess on that point as to what the rest of the paragraphs are saying, that point. But we have two we have modified.

Chair Beach: Okay. We'll leave that one open for now. And did you have, did you want to go on with four or --

Dr. Taulbee: Well, four is one that I just want to mention that we would -- go ahead, Paul, sorry.

Member Ziemer: No, I was going to say, I don't want to leave it open in the sense that we are expecting the wording to be changed.

I do want to, I'm, this issue is hanging by itself and it doesn't have any particular application unless we know the context of it, because in general, we know that what is done, what records are missing, versus cases where the person is not monitored because they're working in office or waiting for operational stuff.

So I don't think the dose reconstructors depend on this statement for determining how to proceed.

Chair Beach: No, I agree with that. But I was going

to ask Ron if he had any comments on that?

Dr. Buchanan: Well, mainly, this was noted because there are several paragraphs in that section 2.1.1.2, says workers were not monitored and it gives about five paragraphs there. And this is the end of the third paragraph. I just felt that, it's kind of blames the idea of I didn't really see that it was necessary.

The statement itself could be left out and the second would be practical for the dose reconstructor. I just felt that it kind of maybe make a dose reconstructor think, well, he wasn't monitored, he probably wasn't exposed much, and that isn't necessarily the case.

And the rest of the paragraphs kind of bore that out. And so I thought the statement itself really didn't lend anything and it might bias the dose reconstructor. That was my point.

Chair Beach: That was on Page 10, right?

Dr. Buchanan: Page 10, the first paragraph, last sentence.

Member Ziemer: First or third?

Chair Beach: The first, often --

Member Ziemer: Is it the first or the third paragraph?

Dr. Buchanan: It's the first paragraph on Page 10. It's the last sentence.

Chair Beach: So, in general, yes.

Member Ziemer: So, Ron, you're saying just leave it out if you want, right? It doesn't add anything.

Dr. Buchanan: Right. That's what, and it could introduce a bias and that's the reason I pointed it out. It's no big deal.

It probably wouldn't change any of the dose

reconstruction, other than it might make the dose reconstructor, well, it's probably less than monitored workers. And it might be true, but not in all cases, and so I just thought that this statement didn't need to be there.

Chair Beach: Yes, so if you left it with the workers with no significant exposure potential, external radiation dose reconstruction is based on ambient dose. See Attachment B, and then period, strike that.

Member Ziemer: Right. Right.

Chair Beach: I don't see a problem with that. Tim?

Member Ziemer: But even if it's there, is it going to change what it does?

Dr. Taulbee: Yes, I mean, we can do that. We can strike that sentence but then, I mean, we're revving the document due to that, so --

Chair Beach: Yes, I got you.

Member Ziemer: And it's probably not important enough to do a revision for. Like, if you --

Dr. Taulbee: Again, I don't -- I don't see that it would change how the dose reconstructor would actually go through the process.

You're saying it might bias them, but it still has to, it's not going to change its procedure is it?

Chair Beach: No.

Mr. Barton: Well, this is Bob, if I could just make a quick comment here. I think a lot of the intents beyond these observations, and I think we say that, is that, is that it's to improve the clarity of the document.

I agree that from pure practicality standpoint, we know how the dose reconstructions are performed.

I guess part of our thought was that just for fully documenting the program and maybe even from an outside viewpoint for members of the public who might be interested in this document, things like this may not accurately reflect what's actually done in dose reconstruction. And that's why there are observations and are findings. They were just suggestions for improvement. So --

Chair Beach: Good point.

Mr. Barton: Just take that comment for what it's worth.

Member Ziemer: Well, the other side is the fact that it is a fact, or it is an in general statement. It is a statement that says reconstructed doses to unmonitored workers will be less. It says in general. That's very different than saying that it's always the case, but, I mean --

Chair Beach: I could go either way here. Leave it or take it out.

Member Ziemer: I'm saying I don't want to revise a whole document to remove that one sentence.

Chair Beach: No, no, I agree with that. And typically, those get put on the side and when a document is reviewed, they may incorporate that, but that wouldn't be the reason to redo the document. So --

Member Ziemer: That's correct.

Member Valerio: Loretta, comments. Well, I don't think that it's imperative that it's changed right away, but if there's a revision, I think it needs to be clarified. I mean, it's --

Dr. Taulbee: This is not as --

Chair Beach: Go ahead and finish, Loretta.

Member Valerio: I just, I think that statement

where it says the people who are not monitored, in general, and I agree, in general, but there are those situations where people were not monitored for whatever reason and still had exposures.

So it's, you know, I agree with you, Josie, it can go either way.

Chair Beach: Yes, and it could create a bias, which is what Bob pointed out. Tim, what were you going to say?

Dr. Taulbee: I was going to say that I can be in agreement with that. If we end up revving this document for another reason, then we'll strike that sentence.

Chair Beach: Okay.

Dr. Taulbee: It's not a problem from that standpoint.

Chair Beach: Okay.

Dr. Taulbee: If we don't have another reason to rev. that document, I'd prefer not to. Put it that way.

Chair Beach: Okay. So we can add that as, I think Lori tracks those, I believe, on your side. And then we would not, we would go ahead and close this with the understanding that if you rev. the document, you would just strike that statement. And I would be comfortable with that. Paul? Loretta?

Member Ziemer: I'm good with that, yes.

Chair Beach: Okay.

Member Valerio: I'm good with that, too, Josie.

Chair Beach: Okay. And Kathy, would you just make a note of that? I guess that would be in our BRS of the explanation of why we closed these, right?

Ms. Behling: Yes. Yes.

Chair Beach: Okay. Tim, did you have something for four or was that your last?

Dr. Taulbee: This is my last one, Observation 4, but I actually don't have anything. In general, we're in agreement that all badges should be considered, although I need to do some follow up on this one, so we will be having to keep this one open and get back to you on.

We recognize there's unique scenarios at certain sites and what I'm looking at here now is we're going to follow up on this to ensure we're being consistent across all the sites in the complex, and we'll get back to the Subcommittee on this particular observation.

Chair Beach: Okay, thank you. And then five, the same? That's going to remain open?

Dr. Taulbee: Yes, and five is the one that we've actually updated in revision two, to where revision two of this OTIB is done.

We recognize what Ron talked about, is that not all the OTIBs have that language in there, but we are revising those OTIBs, and as we do, we add that language to it.

So it's a minor language adjustment. It's not really something that would go into OTIB-0088 here, but it's really more of the Site Profiles of after this particular date, you don't make that correction from NCRP to ICRP anymore.

Chair Beach: Okay. Thank you. Can we circle back to the focus review of Rev. 2? Subcommittee, are you in agreement to have Ron do a focus review of that new document?

Member Valerio: I am.

Member Ziemer: Yes, I am fine with doing that.

Chair Beach: Okay. So you can mark that as a

tasked item, Kathy.

Ms. Behling: Okay.

Chair Beach: Okay, that brings us to --

Member Valerio: So, Josie?

Chair Beach: Yes? Go ahead, Loretta.

Member Valerio: Just to clarify, observations three, four, and five will remain open, correct?

Chair Beach: No, one, two, and three are closed. Three is noted as that will change if they rev. that document again.

Member Valerio: Okay. Okay.

Chair Beach: Four and five are still open. And then Ron will check the new rev. against those, also. And we'll carry that over --

Member Valerio: Okay, just wanted to make sure my notes were correct. All right, thank you.

Chair Beach: Mm-hmm, and I think we might have saved the toughest one for last. Well, not totally last today, but the last OTIB. So 45?

Ms. Behling: Oh, I'm sorry. Rose?

Ms. Gogliotti: That's okay. I will request control from you, Kathy.

Ms. Behling: Okay.

Chair Beach: Oh, Rose, we're going to hear from you finally.

Ms. Gogliotti: Yes.

Chair Beach: I knew you were waiting. Until I get them up, I'm not sure who's reporting on them, so mine's --

Ms. Behling: Okay, I'm going to give you control.

Ms. Gogliotti: Okay.

Dr. Roberts: Josie, did you say OTIB-0045?

Chair Beach: If I did, I meant 0049.

Ms. Gogliotti: 0049.

Chair Beach: Yes, it is 0049. Rev two.

Ms. Gogliotti: Getting it pulled up here.

Chair Beach: I think while Rose is getting that pulled up, Kathy and Rashaun and even Tim, not even Tim, but I think what I'm going to do, I was going to talk about some of the carryover items from the previous meetings that have kind of slipped through the cracks.

Instead of talking about it at the end of this meeting, I think this document and then the newly issued documents are probably going to take us to our end time.

I think I'll just go ahead and generate an email and send it out for things that we need to keep track of that we've said we would do and just so we can carry over with those moving forward. Would that be appropriate, Rashaun?

Dr. Roberts: Yes, if you could send that to me, that would be great.

Chair Beach: Yes, well, I'll send it to both Kathy and Tim, too, to add, make additions, and clarify anything that I might have missed. Because we've got stuff from the last two meetings, for sure, that we kind of haven't, we've dropped through this process. So --

Dr. Roberts: Okay.

Dr. Taulbee: Josie, if you could ensure that Lori is cc'd on that.

Chair Beach: Yes, I will also copy Lori on that.

Absolutely. And I'll do that relatively quickly after today's meeting, just so we have something to move forward with.

Ms. Gogliotti: Okay, can everyone see my slide on the screen?

Chair Beach: No.

Ms. Gogliotti: Just one slide that you're seeing. No?

Chair Beach: I can't.

Ms. Behling: Maybe it's my fault. Should I do the stop presenting?

Ms. Gogliotti: Yes, hit stop presenting, Kathy. Maybe that's what I need.

Ms. Behling: Okay, I did.

Ms. Gogliotti: It was doing something strange, which I'm not used to seeing, so --

Ms. Behling: Okay, there we go. Do you have it now?

Ms. Gogliotti: Let's see.

Ms. Behling: I thought I gave you control but that didn't seem to work.

Ms. Gogliotti: Okay, so, let's try this again.

Chair Beach: There you go. It's up now.

Ms. Gogliotti: Okay. And you see just a single slide?

Chair Beach: Yes.

Ms. Gogliotti: Perfect. Okay, I'm presenting our review of OTIB-0049 revision two, which is estimating doses for plutonium strongly retained in the lung.

And while my name is on this, this is actually a collaborative effort. Joyce Lipsztein is the main

author and also Ron Buchanan and Bob Barton helped with this, and Kathy added lots of input in terms of being a reviewer.

My mouse disappeared here. There we go. So we use OTIB-0049 quite a bit, and the previous revision was revision one PC-2. I'll just call it revision one for shorthand, and that was issued in November 2010.

And that was used for about a decade until revision two was issued in September of last year. And this is a complete rewrite of the document. And it really changed the way that plutonium, or type Super S plutonium, is being addressed. We were tasked to review revision two in February of this year, and we issued our review in October of this year.

So the purpose of OTIB-0049 is really to establish an updated biokinetic model for dose reconstructors to use to establish deposition, retention, and removal of highly insoluble plutonium using newer guidance documents than were used previously.

And when I say very insoluble plutonium, I'm talking about type Super S or SS plutonium.

And I know we talk about solubility types all the time. However, just a quick refresher of what a solubility type is and why it's important to a dose reconstruction.

Your solubility types are going to be the solubility of particulate matter deposited into the respiratory tract.

And so more specifically, it has to do with lung clearance type rates of absorption into the blood. And when we talk about these, we typically talk about them in terms of solubility types F, M, and S. F would be standing for fast, M for moderate, and S for slow. So that has to do with the speed of which material is clearing the lungs into the blood.

But where does type Super S fall into all of this? Historical studies over the last four decades or so in

both animals and some inadvertent human exposures have shown that in some cases, the rate of removal of plutonium from the lung is slower than what is predicted by type S. That means that the material is staying in the lungs longer and if it's there longer, it's giving a higher dose.

So using the typical type S model, you would be underpredicting the dose. And in this program, obviously, we are looking for a best estimate, or at least a bounding dose, which is why we have this type S or Super S, or SS model.

So NIOSH's new approach is combining guidance from ICRP 130, which is a fairly new document that was issued in 2015, I believe, with ICRP 67 and ICRP 30, which are older documents. And we've really come up with a hybrid model that introduces modified dissolution parameters that lower the predicted urinary excretion.

And they do this by creating three parameters: Fr, which is the fraction of inhaled materials absorbed by the blood relatively rapidly, and that value that they came up with is 0.001029; Sr, which is the rate at which material is absorbed, and that value is 100.1; and the remaining fraction of material absorbed at a slower rate, which is Ss, and that's 1 times 10 to the negative 6.

And that takes us to our first observation. And here NIOSH is using ICRP documents to come up with a model that they built. But there's actually been a new ICRP document that was issued in 2019 that was approved in 2018, ICRP 141, that has solubility information and biotitic models appropriate for type Super S plutonium.

So here we recommend that they should be using the latest guidance for modeling dose. And that is our Observation 1. And here, just to kind of compare the parameters that are in the current guidance document, Rev. 2 of OTIB-0049 and ICRP 141, and you will see that there are fairly different

values.

Okay, and Observation 2, this is more of just a typo, we believe. Section 4.1 of Rev. 2 of OTIB-0049 lists incorrect Fr value.

In the document, it should be 0.001029 and erroneously, they flipped the 0 and the 2, so they used, they stated 0.001209. And we believe that's just a typo that should be corrected, especially because that's one of the main sections of the report.

Observation 3, OTIB-0049 Rev. 2 does not consider long-term binding of plutonium. In some cases, the dissolved materials appear to be attached to the lung, the lung structural components, and removed only by the absorption of blood.

To represent this type of time dependent uptake, it's assumed that the fraction SB of the dissolved material is retained in a bound state, from which it goes into the blood at a rate of sb. And ICRP 141 recommends a value of 0.2 percent for the bound fractions, the sb a value of 0 for the sr, sb.

And Observation 4, Rev. 2 also doesn't use the updated systematic model that is included in ICRP 141. I want to point out that 141, I think I forgot to mention earlier, was issued in 2019. It was approved in 2018.

So this was available at the time that this document was published. But it may have just been missed in the processing, based on the timing because this document is quite involved.

Observation 5 also has to do with ICRP 141. We just suggested that NIOSH should consider using the OIR Data Viewer, and that stands for Occupational Intakes of Radionuclides.

It's really a software package that accompanies ICRP 134, 137, and 141. And it's just something to consider using. But this is really a big change, and I

think we were not expecting the level of change that we saw incorporated into this, and so I do want to take a moment to just address exactly what was changed.

In the original version NIOSH should not actually model type Ss doses. Instead, what they did is they applied a correction factor to the model type S to account for additional dose that would be expected to be retained from the Super S model.

So you might think of, when you think of OTIB-0049, you probably think of the factor of four adjustment that gets used a lot in dose reconstruction or was used a lot. And that's just when a factor of four was multiplied by the doses for urinary secretion.

But the new model is completely different in that it is actually building on the model for type Super S. So there's no more adjustment factors. The parameters that they built are using ICRP guidance, not the 141 but earlier guidance, as well as historical intake information to develop these new intake parameters.

But we did note that there's really not a lot of guidance in the actual document that tell dose reconstructors how to use it. We were a little surprised. This is actually takes us to OTIB, our Observation 6, that there isn't a lot of guidance in the document to tell those reconstructors how to actually apply it.

And I know the Board has been focusing, especially lately, on making sure that guidance is unambiguous enough that things are processed consistently.

And actually, while we were talking about this, we went back and forth. We had no idea how this was being implemented. We thought perhaps they were changing parameter in IMBA, but those numbers

weren't working out right.

And come to find out, we asked the eval if there was maybe a tool that they were using that we hadn't been provided, and that was part of the reason for the delay of this report.

There was, in fact, a tool that we were unaware of, the IDOT user interface. Looks like this. IDOT stands for Internal Dosimetry Tool. Our understanding of it, and this hasn't been conveyed to us, but we believe that it's going to replace old IMBA and OTIB-0049 tool combination.

This picture that you see here is the opening main page when you pull it up. It looks very similar to what you would see if you pulled up IMBA.

You can see that there is ten places to input intakes, with a start and end date. You can use this for both acute and chronic models.

You can change the units, you can change the radionuclide inputs. There's also a bio tab that is very similar to the bioassay calculation function in IMBA, where the user can input bioassay data from urine, fecal, lung, and whole body counts.

And then there's an annual dose tab, which is also very similar to annual dose tab in IMBA, and that allows the user to input cancer information, exposure start dates, and then there's also a committed dose tab, which is very similar to IMBA, also, where you press a single button and the page allows the user to calculate the committed dose to various orders and its committed effectiveness.

Okay. And in addition to this, NIOSH provided us with a little bit more documentation. There is a user guide for the tool.

There's RPRT-7, which is a technical document kind of supporting the tool, and there's an IDOT benchmarking tool for bioassay in doses.

At SC&A, we have confirmed that the tool is functioning, but we have not looked behind the curtain. Actually, the tool is locked, so we can't really look behind the curtain. We did request the password from David Allen and NIOSH told us that they didn't feel that it was within our purview of taxing.

So at this point in time, we've looked at them, but we haven't done an in-depth review of the software that's of the tool. So any of the calculations that the tool is using were really done in an independent benchmarking validation calculations.

If that's something bad that the Subcommittee wanted us to do, we could absolutely do that. It will be a lot of work. I'm not going to sugar coat it. It's a really complicated tool, and it would require a lot of work to really dig into. If that's something that you're interested in, we can certainly talk about that, but at this point in time, we have only looked at a cursory overview of the tool to see that it's doing what we think it should be doing, but we haven't gone further than that.

And just to kind of look at the tool or the use of this new revision in comparison to the old. We did a couple cursory runs here. This is not a direct comparison by any means.

As I mentioned before, the old one was applying a correction factor and the new one is actually developing their own dose, but just a chronic intake of the same amount of Pu-239 and just to see the impacts that it had on dose overtime.

Now, normally, you use bioassay data, so this is not a great comparison, but just to get an idea, we see that in general, revision one had higher doses, except for the extrathoracic lymph nodes here. And these were just several runs that we did.

So looking more into that, we were interested in what impacts this would have on more of a typical

case that we see in dose reconstruction.

So we ran two separate models, a case A, which is a short exposure period and a long latent period, and case B, which has a long exposure period and a short latent period.

Now, these are not real cases. We wanted to get a feel for using typical information that we see in a dose reconstruction, what would really the implications of that be?

So we compared organ doses derived from these two different methods. For the first method, we looked at a chronic intake of Pu-239, and we ran it on both the old and the new.

And here you see we have graphed the ratios of the two. And what's interesting were kind of what we expected, was that the majority of the organs have a ratio less than one, which means the new dose is less than the old dose.

But here, you do see that LN(ET), which is the extrathoracic lymph nodes, and ET2, which is the posterior nasal passage, do have higher doses than were previously assigned.

Similarly, with an acute dose of Pu-239, in case A which, remember, is a short exposure period and a long latency, you see a very similar effect.

The TBBAS and BBBAS, which stand for the tissue in the thoracic region through which the basal cells are distributed, and the same for the bronchial region, has a ratio much closer to one. But otherwise, we see a very similar trend here.

Switching to case B, which is a long exposure and a short latency period, here we have a chronic intake of Pu-239, and again, you see a very similar distribution, slightly higher ratios for some of these, but still very similar.

And then we have one more example for the chronic

intake of americium, and that should be 241, sorry, but again, you see very similar trends.

So the takeaway from this was doses in the thoracic and extrathoracic regions can be greater using the new method compared to the old method.

And similarly, doses of the systematic organs are generally less using the new method compared to the old method.

So based on that, we believe that a PER is likely necessary. Based on our preliminary runs, it appears that in certain instances, the doses are going to increase, even though the original doses were believed to be bounding at the time.

So we just believe that should be addressed at some point.

We did have one finding. When we were using the IDOT too, we found that it did not provide annual doses for one particular organ, the urinary bladder.

When you did a run for that, it came up with N/A for all of your annual doses. David Allen reached out to us about two weeks ago and said that they were aware of the problem, it had been fixed, and he provided us with a new tool where this had been corrected.

I don't know if that was the only problem that was corrected in that, and so someone will have to verify that for us.

And I did verify that as of last week, that tool was updated into the NIOSH edge computing platform.

So we'll just need to confirm that that was the only change that was made, and I assume there's some sort of documentation supports that change.

And then we also had one more comparison, and that was using the new OTIB-0049 guidance, or parameters, and then also the ICRP 141 parameters

with the HAN-1 case, which is a case of an incident human exposure.

We see that while the OTIB-0049 data does appear to fit better, that's kind of to be expected when you only use one case.

That's what you would expect. It somewhat indicates, could be an indication of overfitting because you're only using a single example and you don't have more data to introduce more variance into the population.

Sorry, my mouse is not clicking here. And our final observation, observation eight. And this is the ICRP 141 parameters appear to be more climate favorable.

We did a lot of runs using the HAN-1 case as an example, and in general, the doses that we calculated using the 141 parameters or higher for all organs, so we believe that that should be something that should be explored in the future. And that's all I have.

Chair Beach: Thanks, Rose. I have a question back on Observation 6, the tool. Is that something that you, I know it's in depth and you don't have access to it.

It would be a big task, but is that something that is necessary to finish your review of this document?

Ms. Gogliotti: It's hard to say.

Chair Beach: Or make it more complete?

Ms. Gogliotti: It would -- it would definitely make the review more complete but it would be a lot of work.

I'm not going to sugar coat it. We certainly have the capabilities to look at this in more depth if we were given the passwords, but we really don't know what we would find.

If they did benchmarking, things should be as they expect, as they say, but until we really look under the hood, we can't confirm that.

Chair Beach: Okay. I understand.

Ms. Gogliotti: We've never done that level of review previously on a tool, but this is also one of the most complicated tools we've ever seen.

Chair Beach: Thank you. And Paul, Loretta, any questions?

Member Ziemer: This is Paul. I assume that NIOSH only received this in the last few weeks, right? To look at?

Ms. Gogliotti: We published this on October 7, I believe.

Mr. Allen: Yes, Paul, this is -- this is Dave Allen. We're ready to discuss all these. I'd like an opportunity to discuss all these observations and findings. Just waiting for my opportunity here.

Member Ziemer: Yes, that's Josie's call. I just wasn't sure where we stood on this, and I don't think even if you're ready, we don't have anything written yet, do we? I don't --

Mr. Allen: No, there wasn't really enough time for our system to do a review cycle.

Member Ziemer: Right. Got you.

Chair Beach: Okay. And, yes, I was going to go, move to NIOSH, but I was checking to see if the Subcommittee had any other comments or questions, clarifications.

Member Ziemer: And I just, I kind of assume that on the -- on the issue of the tool itself, that maybe NIOSH would have some recommendation one way or the other on how the tool is evaluated, that would lead to whether or not it would be necessary

or important for SC&A to go behind the curtain, quote unquote.

So that was, my question is mainly, where is NIOSH on this? So thanks, David.

Chair Beach: And Loretta, anything, any questions?

Member Valerio: No, I'm just waiting to see what NIOSH has to say.

Chair Beach: Okay. I guess we'll turn it over to David, then. Thank you.

Mr. Allen: Okay. Would you like me to just go through all the observations and findings one at a time or --

Chair Beach: Sure, and then if --

Mr. Allen: Okay, I think that's the way I'd like to do it.

Chair Beach: Okay.

Mr. Allen: Okay. Let's see. Starting with Observation 1, looks like, Rose, you've got that on the screen. Thank you.

We do realize there is an ICRP 141 out with a new plutonium model. However, what's not realized is the amount of work that goes into actually trying to change over into a new model.

We started this effort with OTIB-0049 back in 2016. It took quite a while to, it wasn't as hard as far as developing this document and then developing a tool that would run this new model, but then we had to go back and change all these coworker internal models, or TBDs.

It seems like there are a few other. We had to document OTIB-0049, of course, but we also had to document a user guide and technical documentation for the tool.

We had to change all these coworker models. And there was any number of other things we had to go through to figure out how we're going to implement this.

So overall, it took us three, four years to do this, and then right before the end of that, they came out with a new model.

ICRP came out with it. We knew it was supposed to be coming, but they frequently say there's a draft and then they never publish it.

So they did actually publish this one and we have looked at this. And in the end, eventually, we would like to go through all the ICRP 130 family of models, which is for all the isotopes.

It's ICRP 130, 134, 137, and 141, and there's a lot of isotopes covered by that. They also cover some changes to specific effective energies based on new voxel phantom models, et cetera.

There's a whole -- a whole host cell change in the way ICRP is doing the internal monitoring there.

And, yes, we would like to update to that, but it's going to take years, going to take some time. And we wanted to get this model into place now and then work towards updating that.

And ideally, we would update that at the same time we update external cryotherapy 116, but I suspect 116's going to come out first, going to be ready for that first, and then we'll just have to see where we stand and decide at that point whether we do this piece meal or wring it all out at one time.

But it is a Herculean effort, and I don't want to say that. To say that we've proofed this document recently, even though ICRP 141 is out that is actually true.

However, that document was drafted and ready to go for years while we were changing everything

else.

I know that's kind of rambling, but that's where we stand right now, is that we know that exists.

We would like to go to that at some point, but it's going to take a long time for us to get there. But we're using this OTIB-0049 in the meantime.

And I think that answers that. Can we go on to observation --

Chair Beach: Okay, let me ask, do you have any comments or questions on this? And I'm assuming it's not ready to be --

Mr. Barton: Well, this is Bobby. Certainly --

Dr. Taulbee: I think that question was directed to us, David.

Mr. Allen: Okay.

Mr. Barton: Now, we agree that you'll eventually want to be using all the latest and greatest methods in science to do dose reconstruction.

We really can't comment on the resource allocation and where this would rank as far as importance to get it updated.

And we do sort of, we definitely understand that this was long in the making. We didn't know exactly how long, but we do, that comment about when ICRP 141 came out versus when this report was officially accepted, we completely understand that just based on the timing of it, and we assume that it was at least a few years in development to be able to develop this tool.

So while we can't comment on the resources to update to it, that's really not our purview.

Chair Beach: Right.

Mr. Barton: We certainly agree that it's appropriate

to eventually get there, however that fits in with other important aspects of the program.

Chair Beach: Right. Thanks, Bob. And, Paul, I think you had a comment.

Member Ziemer: Well, the only thing is that I guess we would anticipate that dose reconstruction is done under the ORAU 49 might eventually have to be redone years down the road under ICRP 41.

Chair Beach: Right.

Ms. Gogliotti: I'm sorry, this is Rose. I'm back. I lost audio there for a moment. I don't know what happened.

Chair Beach: Okay. Yes, you're not -- you're not showing anything on the screen. Are you able to put that back up?

Ms. Gogliotti: Yes, I'm working on it right now.

Chair Beach: Okay, thank you for, so I guess we can't really close these. And I'll let Dave just skim through.

Member Ziemer: Yes, I don't think we close them.

Chair Beach: Yes, and --

Mr. Allen: Well, I'm not sure what you're going to do with those, though. It's going to be years before we get this implemented. So it's just going to be hanging out there.

Chair Beach: Yes.

Mr. Allen: I mean, it's a recommendation for us to use the new models and that is our intent, but it's going to be a while

Chair Beach: Right. But it's a tracking for us also, I guess. Moving forward, if you want to just stop and see if SC&A needs clarification or comments? We can just move through these.

Mr. Allen: Okay, was that --

Member Ziemer: Yes, so actually, NIOSH needs to know whether, Dave, as I understand it, whether we're comfortable proceeding with the present model, right?

Mr. Allen: Not sure I understood that question, Paul

Member Ziemer: We have -- we have a recommendation from SC&A that ICRP 141 be used. But as a practical matter, you're saying, even if you say, yes, let's do that, we'd be several years off from implementing it, correct?

Mr. Allen: Correct.

Member Ziemer: Yes, so in the meantime, the issue is what do we do? And my question sort of would be SC&A, if they're not able to implement 141, it's the present use of 00-49 and the way they are presenting it. Is there anything wrong with it otherwise?

Mr. Allen: Other than the fact that it's not 141, is there anything inherently wrong with it as it stands?

Ms. Gogliotti: Our perspective was they did the best that they could with the data that they had available to them. I think we understood a lot went into developing this tool.

When you look at the benchmarking document, you completely understand why it took so long to build, but as your contractor, we did think it was important that we point it out that there is other guidance available.

Member Ziemer: Yes, and I'm sort of saying, maybe, Josie, you can help me on this, but in the meantime, does the Work Group, or not the Work Group, the Subcommittee need to say we are -- we are okay with proceeding in the meantime with 0049 until the time when it's feasible to implement 141, or something to that effect.

Chair Beach: That makes sense, Paul, to make some kind of a note. And I suspect that might be the case on a lot of these.

Dr. Taulbee: This is Tim, if I can interject here. And just the sense that if SC&A has identified these as observations, with the one finding, I think it really speaks to that, in that I think they correctly and thankfully recognize that this is going to take us a long time in order to implement.

So this is kind of, in a sense, an interim tool until we get there with 141, and as Dave mentioned, the other ICRP documents 134, 137, that this tool is a better model than what we had before, and a better methodology.

And so we're moving towards a final model.

Chair Beach: Okay.

Mr. Barton: Yeah, Tim, this is Bob. I was going to say something very similar to that. I think we at SC&A certainly agree that this newer model, or interim model, as you referred to it earlier, it's very elegant compared to what was done previously, and we think it's certainly an improvement over the older factor four method. So I guess that's just our two cents on that.

Member Ziemer: I'm not sure how this would show up in the -- in the matrix. Would it be an abeyance type of thing?

Chair Beach: Yes, I would say it would probably need to be an abeyance. It's not really an open item at this point.

Ms. Gogliotti: I agree. It will still show up on your tracking.

Chair Beach: Yes.

Ms. Gogliotti: But maybe that's a good thing so it doesn't get lost.

Chair Beach: Yes, I think -- yes. Okay. So SC&A, is someone taking notes on this for entry into the BRS at some later date?

Ms. Behling: Yes. Kathy. Yes.

Chair Beach: Okay, thanks, Kathy.

Ms. Behling: Yes, and I definitely agree with putting it in abeyance. We have to continue to follow this.

Chair Beach: Okay. Dave, if you're ready, we can move on to two.

Mr. Allen: Okay, I'm ready. Rose, were you going to put that back on the screen or --

Ms. Gogliotti: You can't see my screen, no?

Chair Beach: No.

Ms. Behling: No.

Mr. Allen: Or me. I'm just not seeing it.

Ms. Gogliotti: Oh, I'm sorry. It's showing up on my screen. Let me try going out of this and going back in.

Mr. Allen: Well, I'm going to move on. While you're doing that, I'm going to move on. Observation two was simply that there was a transcription error where we had a 10, I can't remember the number now.

Member Ziemer: It was 1029 and 1209.

Mr. Allen: Yes, we transposed the two and the zero in one section of the document, and yes, we, that is what happened. We're sorry. And we'll have to revise that the next time we revise the document. I'm debating right now whether we need to revise for that, because as Rose pointed it out, it is an important number in there. But it's derived --

Ms. Gogliotti: And it's in the main section of the

report.

Mr. Allen: Right, and in the Appendix where it's described is correct, and you can tell when you go look at the derivation as clearly 10.

But we'll have to eventually put that one in abeyance, I guess, basically say that, yes, we agree that it needs to be revised, and we'll see if we can do something to that quickly.

I'd like to get most of these others closed first before we do a document.

Member Ziemer: And the tool -- the tool that's used has the correct digits, is that correct?

Mr. Allen: That's correct. It's got default digits and then user can enter their own values, and the default digits are correct.

Member Ziemer: Yes, thank you.

Chair Beach: Okay, so that one's in abeyance. And then you're ready for three?

Mr. Allen: Yes.

Chair Beach: Okay.

Mr. Allen: Okay, number three was essentially mentioned that we did not consider long term binding for OTIB-0049. And my answer on that one is we did not feel like we had enough data to really say we could defend any value we came up with.

It's kind of like having five unknowns and three equations. We chose not to use the bindings. We didn't think there was enough information there.

Basically, the bottom line comes down to if I were to try to justify the values we came up with for binding, I don't think I could justify them. So along with almost all the other isotopes ICRP has come out with since, we left it all at zero, no binding.

In ICRP 141, they did use some binding for plutonium. That's one of the few isotopes they ever did it with, but it's 0.2 percent that is binding. It is not much, and actually solving those models with running numbers, it didn't make much of a difference.

And honestly, I wouldn't want to be one of the ones who justified that 0.2 that they used. But when it comes down to it, we've got three different parameters we could use.

We have the fast absorption, or the rapid absorption fraction, the rapid absorption rate, and the low absorption rate. And with the data we had, we could do whatever we wanted with those three parameters. There was no reason to use a bounding one. And I don't think SC&A has actually put anything in there saying that we should, they just pointed out that we did.

Chair Beach: Which one is typically used? The slow? Or do you know?

Mr. Allen: Both. You use the slow and the fast and then the F bar is a fraction of the material that absorbs rapidly, fast. So between the three of them, you essentially end up with two, everything you inhale is two groups. It's either absorbing very fast or it's absorbing very slow.

Chair Beach: Okay.

Mr. Allen: So anyway, I don't know how else to respond to this particular one. We considered it. We didn't write down anything in the document about it because we didn't write down anything about a lot of different things if we didn't use it.

Ms. Gogliotti: Is this something you'd consider using when you update in the future?

Mr. Allen: When we go to ICRP 141, they actually used it, so, yes, we will have to use it for that, for plutonium, but we will be updating for all of them

and none of the other isotopes.

Well, maybe one or two, but most of the other isotopes do not use this. But we will for plutonium, since that's what ICRP is doing.

Chair Beach: Okay. So that would be an abeyance item also?

Mr. Allen: I wouldn't think, well, I, it's up to you guys.

Chair Beach: It falls into that category.

Mr. Allen: Well, I mean, regardless of what --

Member Ziemer: It would automatically be covered by 141, if they go to that. I think what David is saying is they're just observing that it's not used, that they haven't recommended the value be used.

Chair Beach: And so it wouldn't be used unless they went to, until they go to 141?

Member Ziemer: Well, it automatically gets you, right, David?

Mr. Allen: Yes, so it would be, I mean, it would be used when we go to 141, so it's really covered with observation number one.

Observation number three is really close, because it says we didn't consider using it. And that would be considering it for our interim model now.

Member Ziemer: No, you did consider using it and decided not to.

Mr. Allen: Right.

Chair Beach: Okay, so can we --

Member Ziemer: I think we can close it because, number one, it's going to get covered eventually anyway.

Chair Beach: Can we make note, can we close it and make note that it's covered in Observation 1 and --

Ms. Gogliotti: It will be included in the updated model?

Chair Beach: Yes, would everybody be okay with that?

Ms. Gogliotti: I think that's feasible.

Chair Beach: Okay. Loretta?

Member Valerio: Yes. Yes, I was just making a note.

Chair Beach: Okay.

Member Valerio: So it will be coming in Observation 1, right?

Chair Beach: Correct, so it's, we're closing it for today.

Member Valerio: Okay.

Chair Beach: On to four.

Member Ziemer: Okay.

Chair Beach: Thank you, Paul, for your interjections there.

Mr. Allen: Okay. Number four essentially says we did not use the updated 141 model, which we have already discussed several times, and I think I'd like to see that one closed because it's covered under Observation 1.

Chair Beach: Okay, same thing. I would agree with that. Any other comments, Paul or --

Member Ziemer: No, I'm fine.

Member Valerio: I'm fine.

Chair Beach: All right, so same thing as one. So four is closed. Okay. Thank you.

Mr. Allen: Okay, Observation 5 is talking about the OIR, which is the occupational intakes of radionuclides.

It is a little computer program put out by ICRP with these new models. It's not just for plutonium. It's for a variety of isotopes.

And SC&A's recommendation is that we use that, or asked why we didn't use that. My response to that one is that this tool that they have, it does not provide annual doses, is probably the primary drawback to this.

It makes it worthless to our program. But it also does not provide dose for chronic intake.

It does not provide bioassay for chronic intake. It does not provide organ doses for all the organs that we use in our program.

It does not calculate intakes from bioassays. It does not provide doses for multiple intakes. It does not provide bioassays for multiple intakes. Other than that, it ain't bad.

So, essentially, it's not usable by our program, is what it comes down to. Okay, do you want to move on to six?

Chair Beach: Sorry.

Member Ziemer: Well, it sounds like we should close it. SC&A, any comeback on that?

Ms. Gogliotti: I think this had to do with more of a reference document. I do not have intimate knowledge of using this data viewer, so I don't feel that I could comment on that with much intelligence. I believe this is Joyce's planning, and she's not on the line.

Member Ziemer: We asked them to consider it, and Dave said they've considered it and it won't do. Can't use it. Sounds like we should --

Mr. Allen: Not only can you not use it in the future, but we can't use it with the hybrid model we've got now anyway, because it doesn't use that. It uses a different biokinetic model.

Ms. Gogliotti: That is true.

Chair Beach: Okay. I'm okay with closing it.

Member Valerio: I'm good with closing it.

Chair Beach: Okay. Five is closed.

Mr. Allen: Okay, Observation 6. Observation six is an OTIB-0049 lacks information about the application.

That's not really the place for OTIB-0049. OTIB-0049 was to develop the model for a particular solubility class, and that's what it did much like, well, essentially with other documents, TBDs and OTIB-0060, we have documentation on how to use various solubility types.

By and far, you're using the most favorable or credible solubility type for that claim.

Type Super S is just one more solubility type. And it is mentioned as type Super S in OTIB-0060.

Essentially, you would also use that one, and if it's the most favorable you would apply. So I don't think OTIB-0049 is the proper place to put all the guidance that they're essentially talking about in there.

Ms. Gogliotti: Well, I know the previous version of OTIB-0049 definitely gave those reconstructors input on how to apply the adjustment factor and so --

Mr. Allen: OTIB-0049 previously had a very complicated model, or a very complicated system, where it described how to use that system to come up with a number, whereas the new version of

OTIB-0049 now, we have a tool that just spits out the number.

We have a model that if you solve it, whether you use a tool or some other means, gives you a number.

Not a lot of guidance necessary for that. The guidance comes in sitting bioassay and what you do with the different solubility classes, and that's in other documents.

Ms. Gogliotti: I'm not sure I fully agree with that, but if NIOSH believes that their dose reconstructors have enough information to use this tool efficiently, the same way --

Mr. Allen: Well, we can make it easy. What kind of -- what kind of guidance would you expect to see?

Ms. Gogliotti: I'm used to seeing, this is a tool that's available for this, to use this user's guide or something that directs, because from this, from your document, I did not get to the tool. And if I'm not getting there, I question who else is not getting there.

Mr. Allen: Well, there's not a lot of documentation on TBDs, et cetera, where you're going to see where we tell people to use IMBA.

(Simultaneous speaking.)

Mr. Allen: It comes up in reports and maybe some OTIBs, not a lot of TBDs. For the most part, the TBDs tell somebody you have three or two or however many credible solubility types, and barring anything else, you use the most favorable.

Ms. Behling: This is Kathy Behling. However, shouldn't you at least identify the tool in this new OTIB-0049? Identify that the tool is this? Because there's no mention of it at this point.

Mr. Allen: It would be probably an improvement to

say that there is a tool to span this model, yes.

I don't know if I would call that guidance, but, yes, it would probably be a good addition to the -- to the document.

Mr. Barton: Yes, this is Bob. I don't think this is, I mean, these are observations. I don't think this is a really huge deal, but if you're going back in to revise that typo in the value in the main body of the report, why not just add in a sentence indicating that there is a tool available, and here's the user guide for it and this is what implements this method. Seems like a pretty simple fix.

Ms. Brackett: This is Liz Brackett from the ORAU Team. I would propose that this actually belongs in OTIB-0060, not OTIB-0049.

That's where DRs are directed to use IMBA and I am in the process of revising OTIB-0060 right now, so I think it would be appropriate to add it there, to make a statement that IMBA is used for these particular types and then you would use IDOT for Super S plutonium.

Mr. Allen: Are you sure it's not already in there, Liz?

Ms. Brackett: Yes, I just did a search because I thought it might be, but I don't see, I did not get a hit on IDOT when I did a quick -- a quick search. So it just, because the last time --

Mr. Allen: Well, in the reports, the DCAS-RPT-005, which is the IDOT technical manual.

Ms. Brackett: The last time this was updated was 2018, so I --

Mr. Allen: Oh, I'm sorry. Report five is type J.

Ms. Gogliotti: Yes, the --

Chair Beach: All right. So back to Observation 6, would that satisfy SC&A's observation here if it was

updated in, is it OTIB-0060?

Ms. Brackett: Yes.

Chair Beach: Okay.

Ms. Gogliotti: Personally, I would like to see it in both places, but that's up to the Subcommittee.

Ms. Behling: Yes, that was going to be my comment also, that I think it should be in both places. This is Kathy.

Chair Beach: I don't see why it would be a problem to have it in both places other than you'd have to update 0049, which sounds like it's going to happen anyway at some point. Other Subcommittee Members?

Member Ziemer: If it helps get the dose reconstructors to the right tool, then why not put it in? It's not a -- it's not a big detail.

You're not -- you're not giving guidance on how to use it. You're just saying, look, here's where the tool is, I guess, right?

Chair Beach: Right.

Mr. Allen: Yes, I don't disagree with that Paul or Josie. We can -- we can get that put in there and probably point to the user guide, the tool.

Member Ziemer: Yes. Yes. All right. I think that, if I remember, that was the initial concern of SC&A, making sure there's some map to say where the tool is or what tool to use.

Chair Beach: Agreed. So that one is in abeyance also.

Mr. Allen: I mean, I've always been a little antsy about locking ourselves into something, and right now, with the way our computer systems are going, I'm kind of really antsy about locking ourselves into something that somebody else might come off.

Member Ziemer: Yes.

Mr. Allen: We can put it in there and just shut down and pull it back out if we get this turned off.

Member Ziemer: I didn't follow tat.

Chair Beach: I was going to say, you have some issues that we don't know about. Yes.

Mr. Allen: The whole thing about the Board Review System, NOCTS, all that getting shut down, it's not just NOCTS.

It's not just SRDB and it's not just the BRS, it's every computer thing we have now is under scrutiny and --

Chair Beach: Yes.

Mr. Allen: I haven't seen a lot of logic to it, so I can't guarantee what's going to fly and what's not.

Chair Beach: Yes, well, we'll have to continue as we have until we get further notice on how things are changing. So, I mean, we all agree that it should probably be in both places, so let's leave it at that and move on to seven, if everybody agrees.

Member Ziemer: Yes.

Mr. Allen: Okay. Moving on to number seven, essentially, it's just a statement that PER may be required.

Mostly, it was SC&A looked at some hypothetical cases at the old OTIB-0049 and what the new model in OTIB-0049 would give us, and the new model is lower for most organs, but some lung organs, some respiratory tract organs it is not.

My response to that one is, as I said with Observation 1, we intend to go to the newer ICRP models in the future, and again, that's not a small change and evaluating that change in a PER is not a small deal, either.

What I had planned all along, when we started working towards going to write 5115 for external is we were offered the ICRP 130 stage for internal, and at that point, we will have to change OTIB-005 because the target organs in both of those are a little different than what the target organs are now. And this will end up being the PER from hell is what it amounts to.

Chair Beach: Ah, got you.

Mr. Allen: So I don't really want to do an interim one right now, and when I look at the models, I can -- I can, I've got enough I can put together the OTIB, I'm sorry, the ICRP 141 plutonium model.

And I can see even though our new model has the lung doses, some of the lung doses being a little higher, ICRP 141 does not.

It will be lower when we implement that. So there's really no need to do a PER on this at this point.

And the proof in the pudding will be when we do the mother of all PERs when we go to these new ICRPs in the future.

Chair Beach: Okay. Thanks, Dave. How's the best way to handle this one, then? Closed with a note? Included in one? Or what do you think?

Mr. Allen: I personally think we can close it saying it will be covered after we get the new models, which is discussed in observation number one.

Chair Beach: Okay. I would agree with that. Paul? Loretta?

Member Ziemer: Yes, an observation that a Program Evaluation Report may be required, you could say that about a lot of things.

If it's required, we do it. If it isn't, we don't. So I don't -- I don't see any action that you'd take on this particularly one way or the other. So I would

close it.

Ms. Gogliotti: My concern, if I could just --

Chair Beach: Yes, please, I was going to ask you to comment, Rose.

Ms. Gogliotti: Yes, I understand that it's a big undertaking, but if there's a case that is close that would benefit from the case being revised to the new model, I think asking it to wait another five years or ten years or whenever this gets implemented is really asking a lot of the claimant.

Mr. Allen: But, no, that's not true, Rose, because, like I said, I can solve that plutonium 141 model, and the numbers are lower. They are not higher, like they are now.

Ms. Gogliotti: Okay, so it will reduce every organ?

Mr. Allen: Well, it will reduce, yes, from the original OTIB-0049, yes.

Ms. Gogliotti: Do you have documentation of that?

Mr. Allen: No, I have my own little spreadsheets where I can solve the ICRP 141 models and I can -- I can say it's going to be lower.

I don't usually put the other documentation saying that I'm not doing a PER or I'm waiting on a PER or anything like that.

Ms. Gogliotti: I think we would have to run some internal numbers to confirm that, then.

Mr. Allen: Okay, we've got to solve the 141. Actually, you can do some of that with the OIR tool.

Actually, you probably can't because the ones you saw, like ET2 and LN(ET) are not in that tool. You'd have to find somebody that would solve the tool for you, the models for you.

Dr. Taulbee: Again, this is Tim. The point here is

that we're going to end up doing a Program Evaluation Report when you switch and go to the new ICRP models for the 130 series, 141, as well as ICRP 116.

So I don't see any reason to keep this open. I understand your concern associated with either this newer method here, but we're in the process of implementing and we felt this was a better model at this time.

And we will go back and review them all when we get there.

Ms. Gogliotti: If it impacts dose or if it impacts PLC.

Chair Beach: Do you have a way to run some numbers, Rose, to make yourself comfortable or --

Ms. Gogliotti: I think we're going to have to talk internally about that.

Chair Beach: Okay.

Ms. Gogliotti: Is there a way we can leave this in progress?

Chair Beach: Committee, would you, is that okay if we leave it in progress for now?

Member Valerio: Josie, this is Loretta. I think it needs to stay in progress right now.

Chair Beach: Okay, with the action for SC&A. Paul, are you okay with that?

Member Ziemer: Well, a Program Evaluation Report is required whenever as IS changes the way they do dose reconstruction. So I don't understand the point of the observation.

Chair Beach: I think the point is that Rose is concerned that it's years down the road, and so she wants to be comfortable with the dose reconstruction values. Is that correct, Rose?

Ms. Gogliotti: I want to be comfortable that there are no instances where you would expect the doses to be higher with this, even with the new model, with the current model or with the future model, because that, if the claimant is close and that could push them over the edge, it's not fair to ask them to wait for another decade.

Member Ziemer: I don't think you can do a PER unless you've changed the methodology.

Ms. Gogliotti: It would be the current methodology that changed.

Member Ziemer: Well, yes, but if the current methodology is changed, then they have to do a PER if it changes the doses.

Ms. Gogliotti: They're indicating that they will be delaying that until more changes are implemented.

Member Ziemer: Wait, what?

Mr. Allen: Yes, that's --

Ms. Gogliotti: That's what they say in the PER. I don't think that's in question.

Mr. Allen: We're essentially delaying the idea that we're going to do a PER until after we implement the new ICRP models.

There's additional changes coming, and I already know those additional changes are going to make the doses lower than what the original OTIB-0049 was.

Member Ziemer: Okay, but I'm, what I'm asking is, under the legal process by which you do PERs, do you do PERs before you make the changes and promulgate the changes?

Mr. Allen: No, she's telling me to do a PER for revision two of OTIB-0049.

Member Ziemer: Well, yes, right.

Mr. Allen: If we were to do that, and if we move the mouse to show there's a few cases that would go up, so they would get a higher dose, my point was I didn't intend to do that because that could be a big PER.

There's a lot of people educated out there. And my point was, we weren't planning on doing that until after we finished all the changes we know are coming, which includes the ICRP 132.

And once that's done, I am confident that the doses will be lower again, so the Rev. 2 OTIB-0049 PER would have been a waste, essentially.

Ms. Gogliotti: Except if you're a person that benefitted from it.

Mr. Allen: Benefitted because they fell into the gap where it was higher for a short period of time.

Ms. Gogliotti: Yes.

Mr. Allen: Or for a period of time. If we did a case -- if we did a case that got paid with the PER now, it did not get paid with Rev. 1 but does get paid with Rev. 2, it will not get paid in five or six years from now, so you don't need to do a PER now just so a handful of cases get paid now that won't be getting paid later.

Ms. Gogliotti: But you don't take away their payment. I don't know. But that's something for the Subcommittee to decide. But I'm just pointing out --

Mr. Allen: That's a resource thing because that took us two years to get through a PER for the last time we did the Super S. It was really a resource issue, so I'm not even sure if that's an issue for the Subcommittee.

Chair Beach: Right. So I guess my understanding was that SC&A wanted to look at some numbers, cases, not necessarily ask NIOSH to do the PER at this point so that, is that correct Rose?

You just wanted to be comfortable with what Dave was saying. You wanted to look at those numbers?

Ms. Gogliotti: I want to look at the numbers and I want to talk internally with the team to confirm we're all in the same place.

Chair Beach: All right. Not necessarily, we're not tasking NIOSH to do anything at this point.

And I am okay with just holding off for SC&A to have an internal discussion. Others? Paul and Loretta, are you okay with that, just keeping this in progress?

Preparation for December 2021 Full ABRWH Meeting

Member Valerio: I am. My question is, if we, and I imagine we would have to suggest this at the next meeting of this committee?

Chair Beach: Correct.

Member Valerio: So that should be hopefully within the next few months.

Chair Beach: Yes. Paul, you okay with that? Did we lose you, Paul? Can you hear me, anyone?

Ms. Gogliotti: I can hear you.

Chair Beach: Okay. Maybe the same thing happened to him. I think we'll just leave it in progress and then move on to, I think finding one is next.

Mr. Allen: Observation eight.

Chair Beach: You want to go to that next? Okay. That's okay.

Mr. Allen: Oh, I'm sorry. Yes, it doesn't matter which order we go in.

Chair Beach: No, go ahead and do eight, that's fine.

Member Ziemer: This is Paul. My phone -- my

phone died while I was talking so I had to go get tech and I can't hear.

Chair Beach: We moved to observation eight. We decided to go ahead and leave the other one in progress.

Member Ziemer: I'm fine -- I'm fine with that.

Chair Beach: Okay. Thank you. All right. Go ahead, Dave.

Mr. Allen: Okay. As far as observation eight, SC&A did an analysis but it's not a scientifically valid analysis.

What they did was took the ICRP 141 absorption parameters and put them into IDOT to compare, but IDOT is using a different biokinetic model.

So the amount of -- amount of plutonium you're going to get in urine is going to depend not only on the lung model but also on the biokinetic model.

So that's really comparing apples and oranges. It doesn't make any more sense than taking, say, the uranium absorption parameters and putting those into your plutonium model.

It's no more valid than that. But I think eight should just be closed as a -- as a mistake.

Chair Beach: Okay. Rose? Comments?

Ms. Gogliotti: I'm not sure it's the same thing as plugging in uranium into the model.

Mr. Allen: It's exactly the same thing. You're plugging in parameters for one model and putting them in a different model. It's exactly the same thing.

Ms. Gogliotti: Well, in any event, because we are moving, in the future you'll be moving to the 141, this is kind of a moot point.

Chair Beach: Okay. Same, closed with included in Observation 1. Is that agreeable to everybody? Or closed with no comments?

Member Ziemer: Well, yes, I would close it. I'm not sure. I guess those comments are, you asked where they should be included in the explanation, thought, right? It's not -- it's not just that we're going to 141.

Chair Beach: Yes, correct.

Member Ziemer: You're saying NIOSH had an agreement to comment to start with, right?

Mr. Allen: Right, I'm good with that. The analysis. And it came across completely the opposite of what you came up with if you do something right. It's an invalid analysis

Chair Beach: Because the two don't compare is what you're saying.

Mr. Allen: Right. It's a different model. You can't plug in parameters from one model into a separate model and expect any kind of worthwhile analysis.

Chair Beach: Yes. So we're doing things that normally we have NIOSH's written comments and we go through them and so when we go to put these in the BRS, it's not going to be as complete.

Member Ziemer: And what we don't have here is we're not sure that SC&A now says, yes, we agree that that's the case.

Chair Beach: Yes.

Mr. Barton: This is Bob. I see Dave's point here. Frankly, the way this discussion has gone and with the plan to update the entire model, I'm fine with withdrawing that observation entirely.

Member Ziemer: Yes, I think I'd be more comfortable if SC&A agreed to that and not close it

like we did with the others.

Because, on the others, now I should read, but it would eventually switch to the ICRP model.

This is -- this is not an issue that the problem is going to be covered by the new model. This is -- this is a little different. So if it's withdrawn, I'd be more comfortable.

Chair Beach: Okay. I agree with that. Loretta, are you okay with the withdrawal?

Member Valerio: I agree with that. Yes, I agree with that.

Chair Beach: Okay. All right. So moving on to finding one, slide 24.

Ms. Gogliotti: Yes. I know that you wanted to end by now, so --

Chair Beach: I know. That's okay.

Ms. Gogliotti: Okay. Sorry.

Chair Beach: I messaged my husband I would be a little bit late, but Kathy, you should be thinking if we can do that last item via email or --

Ms. Behling: Yes, I just wanted to make one comment before we end. But that's --

Chair Beach: I'll give time to do that.

Ms. Behling: Okay.

Chair Beach: We've got a few, a couple minutes. Go ahead, Dave.

Mr. Allen: Okay, finding one is pretty simple. There was a glitch in the program that presented the urinary bladder doses from showing up on the annual dose.

In the -- in the version that I sent SC&A, and that

has been fixed and they got a new version and I think they indicated that it now works.

Ms. Gogliotti: Yes. And we did confirm that it is the new version as of last week was updated into the new NIOSH edge computing platform.

Is that the only change that was made between versions?

Mr. Allen: Yes. Yes, there was -- there was actually, I take it back, there was a couple of format changes made earlier that we did not distribute because they were insignificant, and I was waiting for several more changes before, didn't want to distribute a new version every week or so.

And so when you guys asked for it, I went ahead and gave you the newest thing I had by mistake, and somehow I managed to get a glitch.

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Ms. Gogliotti: Yes.

Chair Beach: Okay. Subcommittee agree?

Member Ziemer: Yes.

Chair Beach: Okay.

Member Valerio: Yes.

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Member Ziemer: Yes.

Chair Beach: Okay.

Member Valerio: Yes.

Chair Beach: This should be interesting going back to the BRS to make sure we have all these comments when that's available.

Okay, Kathy, I'm going to go ahead and send it over to you. I know we aren't going to have time to do the newly issued documents, but you had a comment?

Ms. Behling: No, I just had a few questions. At the last full Board meeting teleconference, I asked that I provide you with a list of the documents that I would like to present to the full Board that have already been approved by the Subcommittee, and I included six documents on there.

Two of them were the ones that I previously included in examples when we talked about this matrix approach. The other ones were the email that I just gave you, the first four on that handout.

Lori and I have talked and she pointed out to me that this OTIB-0014 is very much embedded and incorporates a lot of things from OTIB-0052.

And OTIB-0052 and PER 14 and OTIB-0020 is just very complex. It's going to have to be a completely different discussion. And OTIB-0014 falls into that discussion also.

So I want to take that off the list. That's the only question.

Chair Beach: Okay, withdraw 14? Did you want to add anything or just go with the five?

Ms. Behling: I was thinking that I would just go with the five, unless you want me to add something.

Chair Beach: I think I'm okay with the five. The PROC-0022 was not on your list, the newly revised list. I looked. Was there a reason?

Ms. Behling: Yes. No, I don't know why I did that. Just because I had included that on, when we talked previously so I don't think I included that here. But might need to update that list just so we have a good turning point.

Chair Beach: Subcommittee Members, anybody have any problems with that? Or do you want to add any?

Member Ziemer: I would go with that. 0014 is off and 0022 is on?

Chair Beach: Okay, so we're doing OTIB-0033?

Member Ziemer: Same as on the new list. Just same as on the new list.

Chair Beach: Okay.

Member Ziemer: There will be six items.

Chair Beach: It's going to be five now, because it's going to be PROC-0022, which I discussed as an example during the matrix, and PER-081 along with OTIB-0025, OTIB-0032, and OTIB-0033.

Member Ziemer: Okay. I'm good.

Chair Beach: Okay, for tasking, so far we've tasked one item, the newly -- the newly issued documents that we've not tasked. Can we just do that over email, Rashaun? I know we've done that in the past.

Dr. Roberts: Yes, that's perfectly fine.

Chair Beach: Okay. So I will send out an email in the next few days and then we'll also maybe send out an email with that newly issued document talking about the tasking of those items.

Is there anything else for the good of the Subcommittee? I don't think -- I don't think -- go ahead.

Dr. Roberts: So I think we've tentatively scheduled the next meeting, but we could handle that via email, too, if you prefer.

Chair Beach: Yes, I think let's do that. Let's get a good handle on what's carryover and different things and then -- and then do that via email. It probably won't be until the first of next year anyway.

Dr. Roberts: Right. I was thinking it would be early February, but we can -- we can go back and forth about that.

Chair Beach: We can do that relatively soon. Thank you for all the hard work. It's been a long meeting. Any last comments before we adjourn?

Member Ziemer: No. Thanks, Josie. Thanks, Rashaun and all the staff.

Chair Beach: All right. Thanks, everybody. We'll talk soon via email.

(Whereupon, the above-entitled matter was concluded at 3:27 p.m.)