CENTERS FOR DISEASE CONTROL AND PREVENTION

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

ADVISORY BOARD ON RADIATION AND WORKER HEALTH

SUBCOMMITTEE FOR PROCEDURE REVIEWS MEETING

THURSDAY, NOVEMBER 16, 2023

The meeting convened at 11:00 a.m. EST,

via teleconference,

Josie Beach, Chair, presiding.

Vet Reporting

Certified Court Reporters

PO Box 72314

Marietta, GA 30007

678-646-5330 ext. 514

reporter@vetreporting.com

Members Present:

Josie Beach, Chair

Bradley Clawson, Member

Loretta Valerio, Member

Paul L. Ziemer, Member

Registered Participants:

Rashaun Roberts, Designated Federal Official

Nancy Adams, NIOSH contractor

Bob Barton, SC&A

Kathy Behling, SC&A

Ron Buchanan, DCAS

Grady Calhoun, DCAS

Doug Faver

Rose Gogliotti, SC&A

David Harrison

Amy Mangel, SC&A

Marion Marion-Moss, SC&A

Michael Rafke, HHS

LaVon Rutherford, DCAS

Mutty Sharfi, ORAUT

Matthew Smith

Tim Taulbee, DCAS

TABLE OF CONTENTS

PROCEEDINGS

(11:00 a.m.)

WELCOME AND ROLL CALL

DR. ROBERTS: Welcome everyone, and good morning. This is the Advisory Board on Radiation and Worker Health, and this is a meeting of the subcommittee on procedures review. I'm Rashaun Roberts. I'm DFO for the Board. There, of course, is an agenda for today. You can find it on the NIOSH website for this program under scheduled meetings for November 2023.

Since the subcommittee will be discussing a number of different documents, some of which may involve specific sites, we do need to address conflict of interest. If a conflict does happen to come up during the meeting, subcommittees and others do need to recuse themselves from the discussion where their conflict applies. So, as we move through the roll call, subcommittees -- members and others, please state where you do have a conflict of interest.

So, we'll start with Beach.

CHAIR BEACH: I am here, and I'm conflicted at Hanford.

DR. ROBERTS: Cassano? Okay, I can see her but not sure she can hear. Okay. Zaida, are -- could you contact Torrie somehow and let her know she needs to be connected via audio through the conference line and not Zoom?

Okay. Let's go on to Valerio. Valerio?

MEMBER VALERIO: I'm here. And I am conflicted out of all sites at

New Mexico, and that would include today's Report 0097.

DR. ROBERTS: Okay, thank you. And is Ziemer here?

CHAIR BEACH: I see him on the computer.

(Whereupon, there was interference with a Member's Zoom audio.)

DR. ROBERTS: Okay. Those of you who are on Zoom, you need to connect through the conference line.

MEMBER CASSANO: Huh?

DR. ROBERTS: You need to connect through the telephone bridge line. It's in the chat.

(Whereupon, Dr. Roberts spoke with a Member off the record.)

MEMBER ZIEMER: So, how do I get rid of the audio on Zoom?

DR. ROBERTS: You could turn down the volume. I'm just going to wait a couple of minutes and see if people connect to the telephone. Okay. So, Torrie and Paul, are you on the telephone line at this point? Okay. I'm going to go ahead with the roll call, and we'll circle back. Let's move on to DCAS. Who's in attendance, please, and state your conflict?

DR. TAULBEE: This is Tim Taulbee. I'm conflicted at Mound.

MS. MARION-MOSS: This is Laurie Marion-Moss, and I'm conflicted at Mound.

DR. ROBERTS: Thank you. Anyone else DCAS/ORAU?

DR. TAULBEE: I believe Grady and LaVon are on the, but they are trying to connect. They were connected through Zoom, and they'll only be on for a little while, and then they'll have to jump off.

MR. CALHOUN: I'm on.

DR. ROBERTS: Okay. Oh, is that you, Grady?

MR. CALHOUN: Yes, that's me.

DR. ROBERTS: Okay. And then state your conflict.

MR. CALHOUN: Fernald is my only -- yeah.

DR. ROBERTS: Okay. And --

MR. RUTHERFORD: Can you hear me? This is LaVon Rutherford.

DR. ROBERTS: LaVon? Okay. I can hear you now. State your conflict.

MR. RUTHERFORD: Fernald.

DR. ROBERTS: Okay, great. Anyone else for DCAS/ORAUT? Okay. If people could, put their phone on mute. Okay. Moving on to SC&A.

MR. BARTON: Good morning, this is Bob Barton, SC&A. No conflicts.

MS. BEHLING: This is Kathy Behling, no conflicts.

DR. ROBERTS: Okay, Kathy. I'm hearing an echo. You may want to go on mute on Zoom or turn the volume down.

MS. BEHLING: Okay. Is it better?

DR. ROBERTS: Yes. Thank you. Anyone else, SC&A?

DR. BUCHANAN: Ron Buchanan, SC&A, conflicted at Los Alamos.

MR. FARVER: Doug Farver, SC&A, conflicted at Savannah River and the Oakridge sites.

MS. GOGLIOTTI: Rose Gogliotti, no conflicts.

MS. MANGEL: Amy Mangel, conflicted at Pacific Northwest National Laboratory.

DR. ROBERTS: Anyone else with SC&A? Moving on to HHS and contractors or the departments.

MR. RAFKE: Michael Rafke, HHS, no conflicts.

DR. ROBERTS: Okay. Thank you. Anyone --

MS. ADAMS: Nancy Adams, --

DR. ROBERTS: -- else?

MS. ADAMS: Nancy Adams, NIOSH contractor, no conflicts.

DR. ROBERTS: Is anyone else with HHS, a contractor or Department of Labor, Department of Energy? Okay. Let's go back to the board members. Cassano, have you now connected to the telephone?

MEMBER CASSANO: I'm here.

DR. ROBERTS: Okay. Conflicts?

MEMBER CASSANO: None.

DR. ROBERTS: Okay. And Ziemer?

MEMBER ZIEMER: Yes, I'm present and -- and conflicted at Oakridge X-10.

DR. ROBERTS: Okay, thank you. So, moving on -- excuse me -- are there any members of the public who would like to register their attendance? Okay. Hearing none, thank you and welcome, again.

I just need to go over a couple of additional items before I give the floor to Josie Beach, who's the chair of the subcommittee. So, in order to keep things running smoothly and so that everyone speaking can be clearly understood, everyone please mute your phone unless you're speaking. If you don't have a mute button, press star six to mute. If you need to take yourself off, press star six again. And because we can't see each other, if speakers would, please identify yourselves by name before you make questions or comments.

The agenda, the presentations, and background documents that are

relevant to today's meeting can be found on the NIOSH/DCAS website, and all the materials were sent to board members and to other staff prior to this meeting. So, with that, I'll go ahead and turn it over to you, Josie.

CHAIR BEACH: Thank you, Rashaun. Good morning, everyone. Is there any changes to the agenda, as in when we do our order? Normally there isn't, but once in a while we do have changes.

MS. BEHLING: No, Josie, we can follow the agenda as it's -- as it's published.

CHAIR BEACH: Okay, perfect.

CARRY-OVER ITEMS FROM JUNE 21, 2023, SPR MEETING

DCAS PER-049

CHAIR BEACH: So, it looks like we are going to start with our carryover items from the last meeting, starting with PER-049, and I think Ron's the lead on that. You're gonna run the computer for the slide presentations, Kathy, I'm assuming?

MS. BEHLING: Yes, I am. Let's see if I can get there.

CHAIR BEACH: Little confidence.

MS. BEHLING: Are you seeing my screen?

CHAIR BEACH: I sure am, thank you.

DR. BUCHANAN: Okay. You want me to start now?

CHAIR BEACH: Yes.

DR. BUCHANAN: This is Ron Buchanan with S -- yeah. This is Ron Buchanan with SC&A. This is PER-049, subtask 4, which was internal dose

issue that -- that was brought up that I'll be covering today.

Next slide.

The -- little background on this. In 2005, NIOSH did a dose reconstruction and assigned -- assigned a total internal dose of 18.3 rem for a case are using OTIB-2, which was a hypothetical model to derive intake for the Paducah Gaseous Diffusion Plant case. Now, in 2016, PER-049 was issued, and NIOSH reworked the DR and derived a total internal dose of 33.2 rem using bioassay data and an overestimating method. And so, this raised an issue that there's concern that the hypothetical model may not provide for an adequate overestimate of the intake in resulting dosage.

And so, in 2023, NIOSH reworked the case using the same bioassay data, but more reasonable, the claimant favorable DR methods. And this resulted in NIOSH deriving a lower internal dose and POC than either of the other two previous DRs. So, that's the issue we'll be discussing today.

Next slide.

So, SC&A reviewed PER-049 in 2012. And because NIOSH had reviewed -- revised section three, four and six of the site profile -- and so, that required in 2016, NIOSH issued PER-049, which addressed the changes in the site profile changes to DR. And so, in March of 2018, SC&A committed this review of one case under subtask 4 for PER-049.

Next slide.

And so, to cover some of the correspondence on this, I'll go through the older correspondence. In 2018, in March, they -- there's a federal efficient -- official sent an email to SC&A inquiring why the hypothetical intake resulted internal doses about half of the internal dose estimated using

the energy -- the employee's bioassay records. So, we reviewed this, and we decided there was conflict between these two DRs and requested and -- said that NIOSH should provide some clarification.

So, the DFO requested NIOSH clarify this difference in internal dose. Now, we were not informed of the outcome or whether NIOSH provided a follow up until much later, but in October, we presented our task 4 review to -- of PER-049 to this committee, and there was no findings and the committee closed review.

So now, this came to light again in 2022 and '23 discussion of the internal dosing issues, in that in August of 2022, NIOSH -- we gave a presentation on the status of PER-049 subtask 4 and mentioned the internal dose issue to the Board. The Board asked SC&A to evaluated in more detail and present it to the SPR. So, in September 2022, we provided a memo to the -- this committee on the status of internal dose. And in February of 2023, SC&A presented the internal dose memo to this committee, and the committee discussed the issue and requested that NIOSH provide SC&A with some details of the DRs.

Okay. Next slide.

Okay. So, I'll cover a little bit, again, of detail of this DR process. And like I say, in 2'05, NIOSH performed the original overestimate using hypothetical intake 18.3 rem with a POC of 39.4 percent. Then in March, they reworked it under PER-049, and they use the bioassay data with a fairly large overestimating efficiency method where they use seven acute intakes and three chronic intakes using the bioassay data. This resulted in an overestimate of intakes and projected organ doses. And so, this rework

resulted in a total large internal dosage of 33.2 rem and a POC of 45.4 percent.

So, in February of 2023, NIOSH had reworked the case using bioassay data, but used more reasonable estimates in that they used the bioassay data and assumed nine acute and one chronic. Now, what this consists of it's looking at the bioassay data and in more detail and say okay, well this person really had small acute intakes and maybe one large intake whereas, before they said oh, we had a very long or mostly a large chronic intake, which gave a larger total dose. And so, this resulted in a more uniform fit of the potential intakes, derived a smaller internal, smaller POC. So, in February 2023, NIOSH provided SC&A with the general results of the dose and POC, but we really couldn't tell the details of it. So, we required the detail information and calculation files. And in May of this year, NIOSH provided SC&A with those details and associated files.

So, we analyzed that data in detail. In August of '23, we performed an analysis of that reworked case and reran the IMBA program, derived the uranium intakes, derived associated radionuclide intakes using the site's ratio values, derived the resulting annual and total dose, which was 14.5 rem, which is less than either the two previous ones. Ran the IREP program and derived a POC of 33.86 percent.

So, the end results was that our total internal dose and POC values matched those derived by NIOSH for the reworked case. So, we found no problems was reworked case. We found that the 2016 DRs performed using bioassay data, but employed quite a large overestimating method as an efficiency for the PER. This resulted in internal dose and POC greater than

the original 2'05 DR using hypothetical intakes in OTIB-5. And NIOSH's 2023 DR used bioassay data and reasonable estimating methods, but they're still claimant favorable, resulting in a smaller intake and internal dose and POC than either the former DRs. So, we didn't have any finding or observation concerning NIOSH's rework of the case for the final POC.

So, in conclusion, until this rather drawn out process with -- it appears that the original case was not a good candidate for using OTIB-05 -- 02, and hypothetical intakes. The 2016 reworked case was an overestimating -- a fairly large overestimating using bioassay data, and SC&A concludes that is unlikely that hypothetical model resulting an underestimate of the dose if more reasonable estimating methods was used to fit the bioassay data. So, we conclude that is probably improbable that this issue would impact other cases and recommend closing the issue. In other words, it appears that the previous cases that were worked were worked using hypothetical intake still overestimated, and that this 2016 was a large overestimate and did not really indicate that using bioassay data would create a dose in probability greater than the hypothetical index model. So, in that case, we did recommend closing the issue.

CHAIR BEACH: Okay. Thank you.

DR. BUCHANAN: Any questions or discussion?

CHAIR BEACH: Yeah, thank you, Ron. We appreciate the -- the thoroughness of your review here. I have no questions. Any other questions from subcommittee members?

MEMBER ZIEMER: This is Ziemer. I have no question. I appreciate the review, and I think it was very -- really thorough. So, I --

CHAIR BEACH: Ron, -- yeah.

MEMBER ZIEMER: -- I'm satisfied with the recommendation.

CHAIR BEACH: Great. Thanks, Paul. Torrie or Loretta?

MEMBER VALERIO: This is Loretta, I have no questions.

MEMBER CASSANO: I have no -- This is Torrie, I have no questions. Very -- very nice review. Thank you.

CHAIR BEACH: Okay. So, as the subcommittee, we accept Ron's recommendation to close. All in agreement? I'm assuming -- I'm hearing everybody's in agreement with that. Is that --

MEMBER CASSANO: Yes.

CHAIR BEACH: -- suitable, Rashaun, for closing this --

DR. ROBERTS: Yes.

CHAIR BEACH: -- PER-049 based on SC&A's review?

DR. ROBERTS: Yes.

CHAIR BEACH: Okay, thank you. So, we are closed. We appreciate the extra work and diligence that went into this report, Ron. Thank you.

And Kathy, whenever you're ready to load Peek Street, and I believe Doug Farver is going to give that presentation.

MS. BEHLING: Yes. Can I ask a question about this review? Because this was prompted by the full Board, they were questioning do we have a concern here with this internal dose and with the use of OTIB-2. Do you feel you need to give any feedback back to the full Board or make any additional presentation or just report back that you looked into this issue, and you've concluded that there's not an issue with OTIB-2?

CHAIR BEACH: I think that because it was -- it came from the Board -

- good point, Kathy, by the way. Thank you. I forgot that we had -- we had presented, and we had this question. So, I think a short presentation would be in order in December. If you can, add that to your list of topics, I -- how do other subcommittee members feel? I don't think it has to be belabored, but.

MEMBER ZIEMER: This is Ziemer. I think definitely we have to go back to the Board on this. So, --

CHAIR BEACH: Yes.

MEMBER ZIEMER: -- closure is really a recommendation to the Board that it be closed, I believe.

CHAIR BEACH: Correct, and like our normal process, we --

MEMBER ZIEMER: Yeah.

CHAIR BEACH: -- within the subcommittee then the Board closes it for final. So, yeah, Kathy, I think --

MEMBER ZIEMER: Right.

CHAIR BEACH: -- it -- yeah.

MEMBER ZIEMER: We would be reporting it anyway as part of the -- all of these particular --

CHAIR BEACH: Correct.

MEMBER ZIEMER: -- procedure reviews, I think.

CHAIR BEACH: Yeah, that -- you know, Kathy, and we're not doing any of those in December, so maybe it would be better to add it to the -- the next cycle of closures that we bring to the Board. I don't -- how do others feel about that?

MEMBER ZIEMER: I don't see an urgency on it, but. You -- you're not

-- we don't have anything else from the subcommittee for the next -- the December meeting?

CHAIR BEACH: No. Kathy's actually going to do an update of where we are and what we've been doing without any closures this month, is what we decided at the last meeting. So, there is a presentation for us to look at in this -- in this set of document towards the end of the meeting with what Kathy's going to present to the full board, but no we didn't --

MEMBER ZIEMER: But that -- that's a status report, right?

CHAIR BEACH: Yeah, we didn't have any closures for this meeting.

MS. BEHLING: So, yes, I agree --

MEMBER ZIEMER: -- feel comfortable in waiting until the next time.

CHAIR BEACH: Yeah, I agree with that.

MS. BEHLING: I think (indiscernible), thank you. And I think I -- are you seeing (indiscernible) on my screen?

CHAIR BEACH: We sure are, thank you.

DR. ROBERTS: I'm sorry to interrupt, but I'm hearing that crackling on the telephone line. So, if people could --

MEMBER CASSANO: Yeah, I think somebody's typing.

CHAIR BEACH: It sounds like popcorn popping. That's weird --

(Whereupon, multiple members spoke simultaneously.)

DR. ROBERTS: Yeah. Again, if you could press star six to mute, that would -- that would help.

MEMBER ZIEMER: Is there any way to tell what phone that sound is coming from?

DR. ROBERTS: I don't think so. Zaida, is there some way of -- of

muting that?

MS. BURGOS: I will (indiscernible) of that.

DR. ROBERTS: Okay. Thank you. It kind of sounds like it's going away. If people can hear, Josie, did you want to continue or wait to -- a couple minutes to see if we can get this to go away?

CHAIR BEACH: Is that -- how's the court reporter? Can you hear okay?

THE COURT REPORTER: Not if it continues how --

MEMBER ZIEMER: (Indiscernible.)

CHAIR BEACH: Yeah. I guess we can wait a couple minutes and see if we can get it cleared up.

DR. ROBERTS: Okay.

MEMBER ZIEMER: I'm not seeing a mute symbol and everybody's outline visual. Is everybody online muted -- I mean, on the Zoom call muted? There's a number of the Zoom pictures don't show that their sound is muted for their --

CHAIR BEACH: Yeah, there --

MR. BARTON: Dr. Ziemer, this is Bob. It won't show up if we didn't join via the audio via computer. So, there won't --

MEMBER ZIEMER: (Indiscernible) --

MR. BARTON: -- only show us --

MEMBER ZIEMER: I gotcha. I gotcha. I guess mine shows up because I didn't have a way to -- I'm just -- I just turned my sound way down, but I'm still -- yeah. And so --

CHAIR BEACH: Well, I don't care now.

MEMBER ZIEMER: Yeah, I think --

MEMBER CASSANO: Whatever did, --

MEMBER ZIEMER: -- it's gone.

MEMBER CASSANO: -- I think it solved the problem.

CHAIR BEACH: Okay. All right. Let's continue with Doug's presentation on Peek Street.

Peek Street Memo on the Review of Two Additional Cases Provided by NIOSH

MR. FARVER: Okay. This is a -- discussing a -- a case review for two cases at the Peek Street facility in New York.

Next.

A little background, in January of 2019, SC&A did a review and then submitted it of the Peek Street facility dose reconstruction template. We identified eight findings and three observations. In September of 2022, the findings and observations were discussed. The status of five findings and two observations were placed in abeyance awaiting the revision of the DR template. So, SC&A was tasked to review two Peek Street cases for the purpose of addressing the remaining three items and one observation, and we submitted this in October of this year where we identified four findings.

Now, the review was limited to specifically finding one, three, and four, and observation two of the 2019 report.

Finding one has to do with the assumption of 100 percent 30 to 250 keV photon energy. Finding three, SC&A was unable to verify the neutron-to-photon ratio of 1.2 using the references that were cited in the template.

Finding four, the dosimeter limit of detection used in the template is not specified in the template, and the LOD value of 50 millirem assumed for photon missed dose based on NIOSH's calculation is not consistent with the Hanford dosimeter information. And then observation two has to do with the physically significant levels that are used in the DR template, and they're typically placeholders but the one that is specifically in the template is not consistent with the KAPL radiological history report. So, those are the things we looked at.

Case one. Case one was completed in 2011. The employee worked at Peek Street and two other facilities for many years, diagnosed with two cancers, and the employee was monitored for photons and electrons and bioassayed for natural and enriched uranium. The CAT interview indicates the employee worked with uranium. Based on the work history and bioassay data, it appears that the employee primarily worked with uranium material. Table 6-7 of the Hanford TBD recommends a photon energy distribution to 100 percent 30 to 250 keV photons or few -- for fuel fabrication facilities at Hanford.

NIOSH applied an uncertainty value of 1.3 to the photon doses and then references revision 4 of the Handford TBD; however, table 6-25 of the TBD lists the uncertainty for the dosimeter as 1.2. This was brought up in the original 2019 report. While the DR references the old uncertainty value, neither to DR tech nor the tool used to calculate the doses was updated to contain the correct uncertainty value. And like I said, this was finding two have the original review.

To determine the appropriate neutron to photon ratio, NIOSH reviewed

numerous TBDs. I think there's eight of them listed here. And that's listed in the DR report. Based on the information provided in the TBDs, NIOSH determined that N:P value of 1.2 is claimant is favorable for facilities with critical assemblies and small-scale research reactors. The PSF workbook contains a value of 1.2, and it also contains a little note in the cell that contains 1.2. It says, based on the ratios were research reactors --

(Whereupon, there was an interruption.)

DR. ROBERTS: Okay. Someone's off -- excuse me. Someone's off mute. If you could, please mute their phone.

MR. FARVER: Okay. SC&A agrees with the value -- using the value of 1.2, but still believes that the basis should be provided in the DR or some technical document. And this was finding three of the DR template review.

Finding one for case one, NIOSH did not use the actual number of dosimeter cycles to calculate the missed photon dose for one of the cancers for one year. The employee's records indicate that there were 81 dosimeter cycles for both the penetrating and nonpenetrating results were zero, or less than half of the nonpenetrating LOD. NIOSH calculated the missed photon dose based on 52 dosimeter cycles instead of 81 for one of the cancers. Now, the other cancers, they used 81 dosimeter cycles to calculate the missed dose. So, that's how the finding came about, and it's described the detail in the -- the report.

Finding two. NIOSH did not use the correct nonpenetrating LOD -- it was listed in the attachment C of the Hanford TBD -- to calculate the missed doses to one cancer. Table 6-13 of the Hanford TBD lists the LOD of the dosimeter as 40 millirem, it does not specify if it's the penetrating or

nonpenetrating photon. The attachment C of the Hanford TBD for the years '44 to '71 shows 50 millirem for nonpenetrating LOD and 40 millirem for the penetrating LOD. And so, there's a little inconsistency between the attachment C of the TBD and also the table -- table 6-13 of the TBD, the Hanford issue.

On the enriched uranium intake, the employee submitted one urine bioassay that was analyzed for natural uranium and seven bioassays that were analyzed for EU. The employee was not monitored with urine bioassay at PS -- at Peek Street but did submit several urine bioassays while employed at the other capital site that's adjacent to or near Peek Street. So, we're still able to look at the uranium -- enriched uranium intake.

We have one finding, finding three. NIOSH used the enriched uranium PSL instead of the natural uranium PSL for the bioassay. So, for that first one, the first bioassay result that was for natural uranium, they just inserted the enriched uranium PSL when they did their IMBA calculation. So, instead of in inserting, I think it was, the PSL was 5; they used PSL, the (indiscernible) that of 2.5 in IMBA, but they never converted from the mass unit to the dpm per day unit, as they should have done. So, that's the result of the finding three.

Case two, the dose reconstruction was completed in 2013. The employee worked at Peek Street and another facility for many years. He had one cancer after -- after employment there. Was monitored for photons and electrons at Peek Street but was not bioassayed at Peek Street. He was -- the employee with monitor for photons and electrons and bioassays for natural uranium, plutonium, and fission products at the other nearby facility.

Because the employee was monitored for plutonium with urine bioassay, 100 percent of the nonpenetrating doses were assumed to be attributed to less than 30 keV photons in accordance with OTIB-17. In addition, 100 percent of the penetrating doses were assumed to be 30 to 250 keV photon.

Employed with not bioassayed at Peek Street. We didn't find any information on the -- on the employee's work location or whether the employee would have been exposed primarily to uranium or plutonium while at Peek Street. Table 6-7 of the Hanford TBD is the photon energy distribution for full -- fuel fabrication facilities 100 percent 30 to 250 keV photons and for radiochemical processing facilities at 25 percent to 30 to 250 keV and 75 percent greater than 250 keV photon. So, SC&A calculated the recorded photon doses at Peek Street using both photon energy distributions. The 100 percent 30 to 250 keV photon energy distribution produced the most famous favorable probability of causation. As with the previous case, NIOSH applied an uncertainty value of 1.3 instead of the 1.2 that's listed in the TBD.

Neutron dose. NIOSH reviewed the TBDs of the other reactor and critical assembly sites and other facilities, like eight of them. So, this is pretty much the same as the other case. They determined they were using 1.2 neutron to photon energy. There's a note in the workbook that contains -- says, based on the ratios for research reactors, and graphic file at LANL Annex 10. And as with the previous one, we still think this needs to be -- the basis needs to be provided in a dose -- in dose reconstruction or some technical document.

Missed photon and shallow dose. So, the employee was assigned

missed photon dose at Peek Street and missed neutron dose at another facility. Although it's not stated in the dose reconstruction, NIOSH use dosimeter LOD of 40 millirem, which is consistent with the LOD values for Hanford two-element dosimeter shown in table 6-13 of Hanford TBD. NIOSH counted 77 dosimeter cycles per penetrating dose and one dosimeter cycle for nonpenetrating dose. And we had no -- no real issues with the missed doses that were calculated.

Fission product intake. Now we're into the internal dose. So, the employee was not monitored for fission products at Peek Street, but the employee submitted urine bioassays that were analyzed for fission products at the other facility. The DOE's records show that the employee's bioassay results and the PSL for each measurement. All the employee's fission product bioassay results were less than the PSL of 50 pdm per day. That's the same value that's listed in the figure 23 of the excerpts from the KAPL radiological history report, so SC&A concludes that NIOSH used the fission product PSL that's consistent with the historical documentation.

The employee was not monitor for plutonium at PSF, but submitted urine bioassays that were analyzed for plutonium while working at the other facility. The records shows the employees bioassay results and the PSL for each measurement. All of the employees plutonium bioassay results were less than the PSL of .33 dpm per day, which is the same that's listed in the KAPL radiological history report. So, SC&A concludes the NIOSH used the plutonium PSL that's consistent with the historical documentation for PSL.

Enriched uranium intake. The employee was not monitored for uranium at PSF but submitted three uranium urine bioassays that were

analyzed for enriched uranium while at the other facility. The employee's first enriched uranium result and PSL are given as .04 dpm per liter and 5 dpm per liter respectively. Employee's second and third EU results are both .02 dpm per day with a PSL of 5 dpm per day.

Figure 23 of the KAPL radiologic history report shows 5 dpm per 24 hours as the PSL for enriched uranium. This has no impact on the case since NIOSH use the hypothetical sample result on the on EE -- on the employee's last day of employment.

We did have one finding with the EU intake. NIOSH did not enter one half of the enriched uranium PSL into IMBA as stated in the DR. The value NIOSH entered into IMBA is 5 dpm per day, which equals the enriched uranium PSL, not half of the PSL. So. this results in an overestimation of the EU intake.

Conclusion. Since was both cases contained in -- external and internal monitoring data, SC&A was able to review the apple bill -- applicability and basis of assuming a photon energy of 100 percent 30 to 250 keV photons and the basis for using a neutron to photon ratio of 1.2, the photon LOD used in the recorded and missed dose calculations, and how the PSLs are used in the internal dose calculation. Both cases assumed a photon energy distribution of 100 percent 30 to 250 keV photon. Both cases assumed a neutron to photon ratio of 1.2 and contained the same warning as the PSF DR template. And both cases used to penetrating photon-film dosimeter LOD of 40 millirem as listed in table 6-13 of the Hanford TBD.

The concerns we have were, obviously, the four findings. Finding one NIOSH did not use the actual number of dosimeter cycles to calculate the

missed photon dose for one cancer in case one; NIOSH did not use the correct nonpenetrating LOD listed in the attachment C of the Hanford TB -- TBD to calculate the missed photon doses in case two -- or case one; finding three, NIOSH used the enriched uranium PSL instead of the natural uranium PSL for case one bioassay; and finding four, NIOSH did not enter one half of the enriched uranium PSL in IMBA as stated in the DR for case two.

Any questions?

CHAIR BEACH: Hi, Doug, this is Josie. Hey, on slide 13, you talked about SC&A believes the basis should be provided in the DR for the technical document. Is there a reason you didn't make that an observation or just a suggestion here?

MR. FARVER: It was already identified in the original 2019 report. It was a --

CHAIR BEACH: Okay.

MR. FARVER: -- finding.

CHAIR BEACH: Okay. So, it's being tracked there?

MR. FARVER: Yeah.

CHAIR BEACH: Okay. Thank you. I was wondering about that. And then, this is really minor, but I think in slide 14 you -- or 13, you said 77 dosimeter recycles when it's listed 73. So, I might have just heard you wrong.

MR. FARVER: Yeah, 73 is the correct number.

CHAIR BEACH: Okay, thanks, Doug.

Any other questions, subcommittee members, before we turn it over to NIOSH?

MEMBER ZIEMER: This is Ziemer. I was just going to ask, does NIOSH have formal responses yet on this one, or what's the status of that?

DR. TAULBEE: This is --

CHAIR BEACH: -- yeah. Go ahead, Tim.

DR. TAULBEE: Yeah, this is -- okay, thank you. This is Tim Taulbee. We do not have formal responses yet as -- as we just got this -- these four new findings last month. The way I view it is, we have two kind of deliverables back as a result of this review that -- that Doug did. Is -- we'll respond to each of these new findings and we'll be updating the DR template as well, to address the previous findings. And so, those are the two deliverables that I see coming back here to the subcommittee. Would that -- does that sound reasonable?

CHAIR BEACH: Yeah. Is there any --

MEMBER ZIEMER: That's --

CHAIR BEACH: Sorry, Paul. I didn't mean to step on you.

MEMBER ZIEMER: No, no, I -- I said that -- that -- that does sound reasonable. It's pretty much what I expected we -- the direction we would be going. There's really -- except for questions, there's really no action that we need to take today, is there?

CHAIR BEACH: No, I don't believe so.

Tim, is there a time line on that?

DR. TAULBEE: I'm sorry, I don't have a good timeline on that right now. The -- it -- it's kind of in the queue with a lot of other things. I can --

CHAIR BEACH: Yeah.

DR. TAULBEE: -- try and get back on that, but I just -- I just don't

have a time line of whether it's gonna be one month or whether it's gonna be three or four months. I -- I just don't know.

CHAIR BEACH: Okay. No, thank you. Thought I'd ask. Didn't know if I get an answer. Appreciate that. And Kathy, of course -- Kathy'll notes those two deliverables for Peek Street.

Any other comments or questions from Loretta or Torrie?

MEMBER VALERIO: Josie, this is Loretta. The only question I had was the same question that you asked about the dosimeter cycles, the -- the discrepancy in the number, and you already asked that. So, that was the only question I had.

CHAIR BEACH: Okay, great. Thanks.

Torrie, anything? Okay.

Hearing nothing, Kathy, let's move this to our -- or keep this in our carryover items.

MS. BEHLING: Okay.

CHAIR BEACH: And listed the deliverables. And then if there's nothing else, we'll move on to newly issued SC&A reviews, starting with Mallinckrodt, and I believe that you Kathy. And these, of course, going forward, the rest of -- these are all new deliverables, so I'm assuming NIOSH will not have any responses unless they have questions of the presenters; is that correct, Tim?

DR. TAULBEE: That is correct. Although for report 97, I -- I -- I -- I think we can address some of those.

CHAIR BEACH: Right. Okay.

DR. TAULBEE: Put it that way.

CHAIR BEACH: Right. Okay. Perfect. So, we'll go ahead and move on. Thank you.

MEMBER CASSANO: Yeah, sorry. I was trying to hit the (indiscernible).

CHAIR BEACH: Go ahead. Torrie. Did you have anything for that?

MEMBER CASSANO: I had no questions. Sorry.

CHAIR BEACH: Okay. Perfect. No worries. All right. Thank you.

So, Kathy, we are ready, and I see you've already got it teed up.

MS. BEHLING: Okay. Very good. All right.

NEWLY-ISSUED SC&A REVIEWS

DCAS-PER-040 "Mallinckrodt TBD Revisions"

MS. BEHLING: I'm making this presentation, but this review was really a joint effort by Ron Buchanan and me. I want to make mention of that. So, this is the Mallinckrodt Chemical Works, which is TBD-ORAUT-TKBS-0005. And it has been revised four times since it was initially published in October of 2003. And then, PER-015 was issued in 2007 to address changes that were introduced into rev. 02 of the TBD. And PER-015 evaluated all of the previously adjudicated cases that had POCs of less than 50 percent.

So, PER-040 was issued in September of 2013, and it was issued to address changes that were introduced into rev. 03 of the technical basis document. And it again reassessed all of the previously completed claims using either rev. 02 or after rev. 02 and rev. 02, PC one, page change one,

that were less than 50 percent.

Mallinckrodt Chemical Company, also known as the Mallinckrodt Chemical Works, is on Destrehan Street in St. Louis, Missouri, and this is considered the downtown site. And they became -- began research on uranium refining and processing in April 2000 -- or 1942. And by July of 1942, the site was producing nearly one ton of uranium oxide -- dioxide per day.

There were many other activities being performed at the Mallinckrodt site, and they included production of uranium trioxide and tetrafluoride, uranium derby metal and vacuum recasting of ingot metal, recovery of scrapped uranium metal, and reprocessing of pitchblende residues to recover uranium. And that's only some of the activities that were going on there. There's also a second site included under the Mallinckrodt Chemical Works, and this is the St. Louis airport storage site, or SLAPS. And this site received the residues from Mallinckrodt operations from 1946 through 1958 and thereafter, the SLAPS was used for residual storage and disposal up until 1967.

Okay. The period of coverage for the Mallinckrodt site is 1942 through 1962 and then in 1995, and for SLAPS, it is -- the covered period is January of 1947 through 1973 and again, 1984 through 1998. So, there were a variety of, as I mentioned, uranium refining processes, which resulted in changing source terms and exposure potential. And most of the ore that was processed there was from the Belgian Congo -- Congo, and feed materials of these ores contained up to 65 to 70 percent of triuranium oxide and -- by weight.

Now, this pitchblende ore contained high levels of Radium-226 and other radionuclides -- or radiological-daughter products. Most of the external doses are from the Radium-226 in equilibrium with the daughters, and Thorium-234 and protactinium produced most of the extremity doses while radon and radioactive dust resulted in the inhalation for internal dose. Now, due to the numerous refining and related operations the TBD contains, actually, a table in Appendix A table A-4, which I'll mention, which lists all the types and quantities of material produced at these various operations.

For internal monitoring during the years of uranium dioxide production, it included urine analysis for uranium and thorium, and workers who processed uranium were given pre-employment, urinalysis and submitted annual urine samples thereafter. For workers who were potentially exposed to Radium-226, they -- there was radon breath analysis done, and for assessing exposure to radon, they used area radon data for it -- for that assessment.

In addition, there were SECs issued because it was determined that it was not feasible to reconstruct internal doses prior to 1949. And it's not feasible to reconstruct internal doses from nonuranium radionuclides Thorium-230, Protactinium-231, and Actinium-227 through 1958. And internal dose at the SLAPS cannot be reconstructed with a sufficient accuracy -- accuracy from January of 1947 through November of 1971.

For external dose, there was no individual monitoring prior to 1945. And then starting in June of '45, film badges are issued to all workers cleared to have access to the production areas. There were weekly film badge records available with some gaps between 1946 and 1948 and 1950

through 1952 and again in 1954 through 1958. And film badge records for post-operations may not be available.

This resulted in an SEC being issued because it was not feasible to reconstruct external doses to individuals who worked at the -- the Mallinckrodt site prior to 1949. And although there was a potential for neutron exposure, no neutron monitoring was performed, and therefore, the TBD uses neutron -- neutron-to-photon ratios for assessing neutron doses.

And SC&A was tasked to review PER-040 In February of 2023, and our initial review was issued in August, and then we revised that review in September of 2023. PER-040 was issued due to changes introduced in rev. 03 of the TBD, as I mentioned, and those changes included rev. 02 stated that no internal or external doses could be reconstructed from '42 through '48 due to the SEC that was issued; however, in rev. 03, they clarified that external dose could be reconstructed for energy employees who had internal monitoring records. And rev. 02, PC one, added guidance after table A-40 to include isotopic ratios for internal dose between 1959 and 1962, which could increase doses for some organs.

And rev. 03 increased external dose at SLAPS for most years between 1947 and 1973. But between -- and between 1984 and 1998. It also added radon exposure estimates for workers at SLAPS.

Okay. As part of our PER review, we do a subtask one, which is to identify the circumstances that necessitated the issuance of PER-040. To assess subtask one, SC&A reviewed the technical basis documents, rev. 02 -- rev. 02, PC one, rev. 03, and the PER-040. And we confirmed that PER-040 addressed all the changes in rev. 02 that could increase the internal and

external doses. And SC&A also found that other changes in rev. 03 did not result in an increase in assigned dose. Therefore, we had no findings or observations regarding subtask one.

Subtask two, which is to assess NIOSH's methods for corrective action. SC&A reviewed rev. 03 and compared all the data against rev. 02 and rev. 02 and rev. 02, PC one. Since SC&A only had reviewed revision 01 of the technical base document, this review of rev. 03 also evaluated the technical accuracy of all the changes. And SC&A found that the changes were correctly captured in PER-040, and so we had no findings, but we did have two observations.

So, observation one has to do with PER-040 and table A-40 of the Mallinckrodt TBD, which the title of table A-40 is "annual internal exposure during the decontamination and post decontamination period." Table A-40, rev. 03, lists intake values for a period of 1959 through 1962, as well as 1995. However, PER-040 only mentions that the internal dose could increase between 59 and 62, and SC&A believes that PER-040 should have also included the -- the time the year for 1990 -- yeah, 1995.

In addition, the units for inhalation and ingestion in the left-hand column of table A-40 are incorrectly listed as "phi" in rev. 03, and in rev. 02 PC-1, the correct unit of picocuries, pCi, is listed in rev. 02. So, I just wanted point out that correct unit should be pC -- picocuries.

And observation two, for rev. 03 of the TBD states that beta doses should be assigned to workers at SLAPS during the period of January 1947 through November of 1971. And then again, you can -- you they recommend assigning beta doses between January of 1984 through

December of 1998, but the guidance does not recommend assigning beta doses between November of '71 through the end of December of '73. And so, SC&A just questioned what may have occurred at SLAPS during the January nineteen nine -- 1974 through 1983 period that warranted the assignment of dose to the late -- the later period in the mid '80s and '90s.

Okay. Subtask three. Subtask three is evaluation of the PER's stated approach for identifying the number of DRs requiring re-evaluation of dose. And for this, NIOSH stated -- started their search for potential cases by queering the database of completed those reconstructions using the words "Mallinckrodt," dress -- "Destrehan," "Louis Airport," and "SLAP." They -- although SC&A does not have access to that database that was used by NIOSH, we did conclude that the search terms were appropriate and should be all-inclusive. We did note that PER did not provide a total number of cases that met NIOSH's query or the number of cases that were reviewed. That's why you're not going to see that on these slides.

Okay. For eliminating claims, NIOSH removed claims that were completed prior to June 14th of 2007 and that's the date of rev. 02 of the TBD because that would have been covered under PER-15. The -- NIOSH also eliminated claims that were completed after November of 2010 because that's the date of rev. 03 of the TBD. Also removed cases that were pulled by the Department of Labor, and obviously, cases that were greater than 50 percent. And any cases that may have qualified for compensation under an existing SEC, except those that had a potential for a DR for medical benefits.

DR -- okay. DR did not use the Mallinckrodt TBD in calculating dose. Those were -- those were cases -- claims -- I'm sorry -- that were -- the EE

worked at another site and another site TBD was used rather than the Mallinckrodt. So, this resulted in the identification of a total of 91 cases to be reworked.

And NIOSH recalculated doses for all 91 cases using rev. 03 of the TBD. That rework resulted in 86 cases having POCs of that less than 45 percent. Three cases had POCs between 45 and 50 percent, which prompted the -- running IREP 30 times with 10,000 iterations, and all three cases remained under 50 percent. And two cases resulted in a POC of greater than 50 percent.

SC&A's evaluation of subtask three concluded that the screening criteria used to eliminate cases from the total number of identified cases are valid. And so, we had no findings or observations with subtasks three.

And subtask four, that's where we recommend conducting audits of a sample set of reevaluated dose reconstructions performed under PER-40. So, for that selection, SC&A is recommending that we select cases where the employment was between 1942 and 1948 where external dose was assigned and were internal doses assigned at Mallinckrodt between 1959 and 1962 and in 1995 where external penetrating and penetrating dose was assigned at SLAP for the years 1947 through '73 or 1984 through '98. Also, radon exposure assigned for SLAP between '71 and '73, or between 1984 in 1998, an internal dose assigned at SLAP between 1984 and 1998.

Okay. So, in summary SC&A review PER-040 identified one observation associated with PER-040 stating that PER-040 should have included 1995 as a year for internal dose, that internal dose could increase and also the rev. 03, table A-40 contains incorrect units of measure for

inhalation and ingestion. And second observation, in evaluating the TBD we question why beta doses is not assigned between 1971 in 1973, but then assigned again at '84 through '98.

So, that concludes our review of PER-40. Do you have any questions?

CHAIR BEACH: Thanks, Kathy. That is -- you have to really concentrate with those different years quite -- well -- well done. Good presentation based on -- on that, keeping it straight.

MS. BEHLING: Thank you.

CHAIR BEACH: Yeah. It's a lot going back and forth. I almost needed a spreadsheet for that. Comments or questions --

MEMBER CASSANO: I just --

CHAIR BEACH: -- subcommittee members? Torrie?

MEMBER CASSANO: I have a question. And it's -- this is Torrie. I have a question. Sort of apropos of nothing. You're talking about people that were working between '42 and '49. That means they were born an awfully long time ago. If they were working at age 18 or 19 or 20 in '42. Are there actually still claims out there for those individuals? Are these survivor claims for children or what?

MS. BEHLING: They're all --

DR. TAULBEE: This Tim. (Indiscernible) --

MS. BEHLING: -- NIOSH answer that.

DR. TAULBEE: (Indiscernible) --

MEMBER BEACH: That's what I was thinking. Go ahead, Tim.

DR. TAULBEE: I'll take a crack at it. Yeah. So, most of these are, in fact, survivor type of claims because of the age, as you mentioned. But

keep in mind that this program has been going for 20 years. So, at the beginning we did actually do run into some workers that did work during that time period. However, now that this particular cohort is reaching a point where most are deceased, so the claims that we get kind of here going forward generally our survivor-type claims.

MEMBER BEACH: Thanks, Tim. And Torrie, we still do the reviews on the procedures as they are -- as they are written. So, we don't look at the dates, per se. We're looking at the procedure as a whole. So, good question, but we'll -- we still go forward with these reviews.

MEMBER CASSANO: Thanks.

CHAIR BEACH: Any other questions? Comments?

MEMBER CASSANO: I do not have any.

CHAIR BEACH: Loretta or --

MEMBER ZIEMER: One that --

MEMBER VALERIO: Josie, this -- go ahead, --

CHAIR BEACH: Oh, hang on just --

MEMBER VALERIO: -- Paul.

CHAIR BEACH: Loretta, Paul was speaking.

MEMBER ZIEMER: Yeah.

CHAIR BEACH: We'll get right to you. Go ahead, Paul.

MEMBER ZIEMER: -- whether or not that was inadvertent, I -- I know you're asking what -- what caused that. Any -- any immediate response that went from NIOSH? I'm not --

DR. TAULBEE: I'm sorry, I missed --

MEMBER ZIEMER: -- look back to see --

DR. TAULBEE: -- the question.

MEMBER ZIEMER: -- what's the year that was to be missing? I'm backing up on --

MS. BEHLING: 1995. 1995 in the PER-40? Is that what you're referring to, Paul?

MEMBER ZIEMER: No, no, the other gap. Let me -- let me go back --

DR. TAULBEE: 1971 --

MEMBER ZIEMER: -- here. Yeah.

DR. TAULBEE: Are you asking about --

MEMBER ZIEMER: Yeah.

DR. TAULBEE: 1971 through --

MS. BEHLING: Oh, yeah.

MEMBER ZIEMER: Yeah.

DR. TAULBEE: -- 1973?

MEMBER ZIEMER: Yeah, yeah, yeah, yeah, yeah.

DR. TAULBEE: We are -- we are looking at these observations, and we'll be providing responses to you-all on that. I honest -- I don't know the reason for that --

MEMBER ZIEMER: Oh, okay.

DR. TAULBEE: -- at this time. I did give a cursory review of it, and it surprised me, so we will need to get back to you on that. I just --

CHAIR BEACH: Yeah, that was --

MEMBER ZIEMER: -- wondered on that -- I just wondered if it was just an inadvertent thing that occurred. Yeah, okay. We don't -- we don't have the answer right now. So, I just wondered if there was an obvious answer.

Okay. Thank you.

CHAIR BEACH: Thanks, Paul. Loretta, go ahead.

MEMBER VALERIO: Can you hear me?

CHAIR BEACH: Yes.

MEMBER VALERIO: Okay. So, on page 10, the third bullet down, I'm seeing that revision 03 increased external dose at the St. Louis airport storage for most years between '47 and '73. So, and I don't even know if this is a procedures question, but when I'm looking at the time frames, -- and I gotta go back and look at it, so give me just a second -- on slide four, it -- it states that the storage site started receiving the residues during 1946, but it wasn't actually covered until 1947. So, my question is, are those people who worked before 1947 at this storage area, are they covered under this procedure? Are they covered at all?

CHAIR BEACH: Good question, Loretta. I think that might be a NIOSH an -- quest -- answer.

DR. TAULBEE: Yeah. This is Tim. I did not catch that before that. That --

CHAIR BEACH: I didn't either.

DR. TAULBEE: I don't know if it's a discrepancy or not. I need to go back and -- we'll have to get back to you on that. Because I need to go back and look at what DOE has determined the covered facilities, because I believe it is -- I mean, that's what we ended up having to go by, but if we've got information that it should be extended, and we get back with DOE about that. I'm sorry, I shouldn't be guessing here. We'll have to get back to you on that, Loretta.

CHAIR BEACH: Kathy, will you make a note of that just so we don't lose track of it?

MS. BEHLING: Yes, I will do that.

CHAIR BEACH: Loretta, any other observations or questions?

MEMBER VALERIO: Josie, I'm sorry. I was actually putting my phone back on mute. What were you saying?

CHAIR BEACH: I asked if you had any other observations or questions.

MEMBER VALERIO: No, I think that was the only one that I had.

CHAIR BEACH: Good catch. Thank you very much. All right. NIOSH, any -- anything -- questions or comments moving forward?

DR. TAULBEE: No. None for -- none for us. We will get back to you about these two observations, though, and this third one about the covered period there. Thank you.

CHAIR BEACH: That sounds great. And I guess, we're finished with that and it will be in the carry overs for next time. It looks like Ron is going to present for the next -- PER-051. Thank you.

Newly-Issued SC&A Review: DCAS-PER-051 Weldon Spring Plant

DR. BUCHANAN: Okay. This is Ron Buchanan with SC&A again. And I will continue presenting two the PER evaluations, PER-051 and PER-083, and these are both for the Weldon Spring Plant in Weldon Spring, Missouri. And just for you that aren't familiar with Weldon Springs (sic), it's a small plant area, and it's located west of the Mississippi River from St. Louis. So, Mallinckrodt was a big plant downtown that Kathy just gave a report on PER,

and this is a uranium processing plant on the other side of the river that operated in the '50s.

And so, they had TBDs written for it, and these were revised. And so, this triggered PER-051. And you had your standard TBD-3, 4, 5, and 6, and revision 01 was issued in 2013, which revised some of the dose reconstruction procedures from the revision zero that was issued earlier. So, that created the PER-051, which was issued in 2015. And that's what we'll be discussing today.

Now, a little background. The Weldon Spring facilities consisted of the main Weldon Spring Plant that processed uranium and thorium had a Weldon Spring quarry. Now, this was not a mining quarry. This was a storage disposal quarry, and the pits, the raffinate pit. And this was the drawing pits from the discharge from the plant that evaporated the liquids. And so, this is generally referred to as "the Weldon Spring Plant," and it was operated by the AEC as a feed material processing plant for uranium and thorium by the Mallinckrodt Chemical Works.

Next slide.

Now, this facility had four main periods of operation. It was acquired and developed in '54 to '57. It operated from '57 to '66, so a relatively short time compared to Mallinckrodt. It had post-operational period. It had a remediation period from '85 to '02. Now, during -- in the post-operation period, it gets a little complicated in that they DOD took over possession of the facilities from 1967 to 1985. They controlled the plant. However, they controlled the pits in the query only from '67 to '74, and then '75 to '84, the pits in the quarry was under DOE's control, and so that complicates the issue

a little, but not too much.

Go to the next slide.

Now, the coverage, of course, corresponds to the DOE period of control, so the plant, of course, was covered by the operational period from '57 to '66, and then the remediation period from '85 to '02. Whereas, the quarry and the pits were covered, of course, during the operational period, '57 to '66, post-operational period from '75 to '84, and the remedial period from '85 to '02.

Next slide.

Now, the radionuclides of significance, of course, is natural uranium, which was processed and '57 to '62. And after '62, all the uranium was assumed to be enriched to 1 percent processed natural thorium. And, of course, recycled uranium was introduced into the system, and we county that as about 1961 for Weldon Springs (sic). And the Radon-222 and Radium-228 were considered to be potentially significant for dose reconstruction at this facility.

Now briefly, the internal monitoring during the operational period, they did uranium urine bioassays. There was no record of thorium monitoring during this period. In the post-operational period from '65 to '85, there was no DOE contract personnel and did not appear to be any monitoring during this period. In the remediation period, '85 to '02, there's extensive bioassay programs conducted. Especially during the main part of the cleanup from '91 to '01.

External monitoring is, of course, during the operational period, employees in the radiological areas were monitored. But there was no

ambient exposure rates recorded during operational periods, such as fence posts dose, that sort of thing. The post-operational period, there was no record of external monitoring for DOE personnel, no site surveys were conducted until '82 getting ready for the cleanup and then except for 1975 aerial radiological survey. Besides external ambient exposure monitoring began in 1982, and during the remedial period, personnel external monitoring was provided throughout the -- this remediation period.

So, we PER-051 came about because of the change in TBD 3, 4, 5, and 6. There were several changes that covered all operational periods and job types, therefore, no claims were excluded from further evaluation based on jobs or periods. And some of these changes included the assumed isotope ratios for uranium ore concentrates, the addition of a neutron-to-photon ratio, addition of geometry correction factors external dose, and addition of a thoron exposure dose. Changes in RU contaminant fraction -- fractions, and an increase in radon exposure estimates.

And so, our review of 51 started in February of 2023 when the committee tasked us with a review of it, and in August of 2023 we provided our review. And then in September of 2023, we issued revision one. And we did this because, as Kathy said on PER-040, and I will say on PER-43, we decided to make them all consistent with other PER reviews, so we had a little more information in subtask two. So, that -- the main changes -- there was no difference in our observation or finding or evaluation. We just add some information in subtask two to make it consistent with our other PER reviews.

So, we'll look at the subtasks now. Subtask one was to identify

circumstances that necessitated PER-051, and we had -- we reviewed revision 01 of the TBDs and revision 02 of TBD-5. TBD-5, it had underwent two revisions. And for PER-051, we found that the -- this PER addressed the changes in the revisions that could potentially result in an increase in internal and external assignments.

Now, while we're doing this, we'd also like to note that we looked at anything that would decrease doses to see if it was justified too. The main emphasis of increased doses if the need be reworked. We look to see if there's a justification for decreasing dose, if there is any and -- in the revisions. And additional changes for other purposes didn't increase or decrease the assigned dose. And we had no findings but did have one observation for TBD-6 pertaining to subtask one, and that was use of neutron-to-gamma ratios.

Section 2 of PER-041 states at the reading -- revisions to TBD include the addition of neutron-to-photon ratio. However, it appears that revision 00 of TBD-6 contain the same neutron-to-proton ratio recommendations as revision 01, and it stated there. And you see, it recommends using a neutron -- dose assignment using the neutron-to-gamma ratio. And so, there's no problem with dose reconstruction. It wasn't really affecting the cases, but we just wanted to note that that we found it in revision 00 also.

So, NIOSH's revision of claims under PER-051. They issued revision 00 in 2'05 and revision 01 in 2013. And then in -- for TBD-5, they also issued revision 02 in 2013. So, under PER-051, NIOSH reevaluated all noncompensated claims under the current revision of the TBDs. Therefore, NIOSH did not address specific changes in the revisions that could lead to

increase in dose because it evaluated all noncompensated claims. But we did go down, and we will list them a little bit in the future here.

Okay. So, subtask two, we determined NIOSH's specific methods for corrective action, including reviewing all these TBDs. We agreed -- reviewed 00 in the past in 2'09, so we needed to review their latest revisions. And so, we did that. And we reviewed the TBDs to determine if it had scientific basis and sources of information to assure that it's credible of the correct -- corrective actions and it was consistent with the current science.

So, it's (indiscernible) methodology and the information provided was correct, evaluated appropriate references as needed, analyzed changes that could decrease or increase assigned dose. Did not identify any signings -- findings or observations concerning TBDs 3 through 6 of the 2013 Weldon Spring TBD. So, summarize the changes that have the potential to increase assigned dose in Section 3.2 of our report, which already had received a copy of that. So, that gave you an idea of what we found as far as with increased dose.

Okay. Next slide. So, our comments on subtask two, we confirmed that the 2013 revisions incorporated in the TBDs were scientifically sound. We find that the NIOSH corrective actions would be appropriate since they evaluated all the noncompensated claims and reworked them using the current TBD, and we had no findings associated with subtask two.

Now, subtask three is to evaluate the stated approach for identifying the number of DRs requiring reevaluation of dose. And NIOSH had created a database to search all the claims using the appropriate terms that might appear in that to go off a list of the claims that were employed at Weldon

Spring site, and the search resulted in 286 potentially affected claims.

Now, some of these claims are removed because they don't require re-evaluation, and we see NIOSH removed 174 claims for the following reasons: four claims had been completed under the current TBD; five claims pulled by the DOL; 112 claims had POCs greater than 50 percent, so they did need re-evaluated; 46 claims was part of the Mallinckrodt SEC. A lot of the workers went back and forth between the two facilities and worked part time at one and then would come to another; there's two claims no verified Weldon Spring employees' employment, that it came up with a key word, but they weren't employed there; two claims was only during the construction period and not during the radiological operation; and three claims were removed because of following situation -- one claim met the Mallinckrodt SEC; one claim employment was outside the covered period; and one claim was returned for other reasons and would be revised using the current TBD.

So, now we've removed the claims that didn't need -- need to be reevaluated, so the dose for the remaining 112 claims are recalculated using the current versions of the TBDs and other applicable documents. And it was found that 101 claims, the resulting POC was below 45 percent, and eight claims resulted in POCs greater than 50 percent and DO -- NIOSH will request that DOL return these eight claims for reevaluation. And so, this was the bottom line. This is what the whole work was done for with the PER and everything, was to identify these eight claims.

And we found that three claims had POCs between 45 and 50 percent, and that the IREP program was ran 30 times at 10,000 iterations per

procedure, and the resulting POC is still less than 50 percent for each claim.

So, our evaluation selection process, we found that the selection criteria was -- used by NIOSH was reasonable in identifying the claims that need re-evaluated and had no findings but did have one observation associated with a subtask three. Now, this observation is -- it might be obvious to NIOSH, but it was not clear to us and probably isn't clear to some of the committee members and stuff. And so, we asked the question as the PER-051 indicates that 46 of the claims were remove from re-evaluations list because the energy employee also had an employment Mallinckrodt and was part of that facility's SEC. However, a claim may also have a non-SEC cancer that would need to be evaluated using the revised Weldon Spring documents for medical coverage. Now, what is the process NIOSH used to assure that a claim does not have additional non-SEC cancers before removing it in consideration under a PER, such as this.

Now, that brings us to the final task four, and that is conducting an audit of the reworked DRs, a sample of them. And we suggest that two or three claims to be selected for review from the Weldon Spring site during the operating period of '57 to '66. Since the TBD has undergone major revision, we recommend a complete DR review as opposed to generally we do a focused review on just the changes that's applicable, but in this case, there were so many, we would suggest a complete dose reconstruction review and suggest that the selection process should attempt to the following criteria, if possible.

Now, you have to understand some of the smaller sites might not have all this information. NIOSH writes a procedure for in case they do, but we'd

like to see -- one would be occupational medical X-ray with skin cancer; environmental intakes consisting of exposure to uranium, thorium, and RU contaminants; environmental external ambient exposure; internal intakes consisting of exposure to uranium ore concentrates, thorium, RU contaminants, thorium, and radon; an external photon dose for an operator or material handler or trade worker. These would encompass the changes that were made in the TBDs that we could check to see that, you know, the DRs are being done correctly if these doses are assigned.

So, a summary of our evaluation of site profiles, we reviewed the -- all the TBDs and had no findings or observations and -- in either -- in any of the TBDs.

And so, and then we evaluated PER-051, and we identified no findings but had two observations. One was the use of neutron-to-photon ratio and the observation two was eliminating claims that can be re-evaluated under an SEC. And we requested NIOSH select appropriate claims under review for task four and that the committee task SC&A with evaluation of these selected claims.

That concludes my presentations. Any questions?

Thank you, Ron. Appreciate it. Can you go back to slide four and maybe just explain a little bit? I don't know if Torrie has any questions on this or not. The significance of the ownership, where DOE -- the 1957 to '66 and then '85 to 2002, that -- that's covered under our program, and then the years '67 to '85 are not. I don't know if Torrie, --

DR. BUCHANAN: Yes.

CHAIR BEACH: -- did you have any questions on that?

MEMBER CASSANO: Here I am. Okay. I'm here. I've got my button straight now.

CHAIR BEACH: Good.

MEMBER CASSANO: I think that if people were covered, were working for -- if civilians were working for DOD during that period of time and they were not military personnel, then the only recourse they would have would be the Defense Base Act, which is basically -- which comes under the Longshoremen and Dockworkers Act, and it's basically for civilians who have worked on military bases, whether they're, you know, in the United States or overseas, and they can claim under workers' comp under the Defense Base Act, and that's a litigious claim.

I mean, they can put it into DOD. The agency will then -- the agency will then adjudicate the claim as best they can, probably not deny it. But on -- and I don't know if these people -- these people would be covered under the quote/unquote atomic vets program at -- at -- well, no, they wouldn't; they're civilians, so they wouldn't be. So, it -- so, the only recourse they have is Defense Base Act because I don't think DOE would -- would manage that. I -- I -- I -- if anybody else has any ideas, I don't know.

CHAIR BEACH: No, no, that's okay. I just wanted to make sure you were clear on the significance between the DOE and DOD. It sounds like you are, so --

MEMBER CASSANO: Yeah.

CHAIR BEACH: Probably don't need an explanation --

MEMBER CASSANO: I -- I do have a question though about eliminating cases that were covered under an SEC. You had said previously

that if it -- you were going to not eliminate those cases if they had a non-SEC cancer; is that correct, or am I thinking through that different -- wrong -- wrongly?

CHAIR BEACH: Tim, are you going to take that, or?

DR. TAULBEE: I'm not sure I --

UNIDENTIFIED SPEAKER: This is DOE --

DR. TAULBEE: -- following the question there. Is -- is --

MEMBER CASSANO: Okay. I thought you said to -- you were do -- doing to two kind of conflict -- you said two kind of conflicting things. That number one, you wanted to look at cases that were covered by the -- non-SEC cancers. How does NIOSH assure that a claim does not have an additional non-SEC cancer before removing it from consideration under a PER, but then you talked about eliminating those cases that were covered under an SEC. But are you excluding -- going to exclude the -- is NIOSH going to exclude these when they remove those cases covered by an SEC? Do you follow what I'm saying? No.

DR. TAULBEE: I'm sorry. No.

CHAIR BEACH: Hey, Tim --

MEMBER ZIEMER: This is Ziemer. Let -- let -- let me come in on the same issue. And it has to do with what was covered in slide 21. In fact, I wondered about this at the time, and I think for all these years, I guess, this never occurred to me. If a person is covered in an SEC and -- don't they already have medical care for their cancers?

DR. TAULBEE: That is correct. Yes.

MEMBER CASSANO: So, they have medical care for all --

MEMBER ZIEMER: (Indiscernible) --

MEMBER CASSANO: -- of their cancers?

MEMBER ZIEMER: -- does that -- that --

DR. TAULBEE: No, wait, wait, --

MEMBER ZIEMER: -- wind this down (indiscernible) arises?

DR. TAULBEE: Wait. Let me -- let me clarify that. They are covered for the SEC cancers, and if they have an additional cancer, then they come to us for dose reconstruction?

MEMBER ZIEMER: Which is --

MEMBER CASSANO: Okay. So, the only thing --

MEMBER ZIEMER: (Indiscernible) --

MEMBER CASSANO: The only thing (indiscernible) the dose. Okay. Got it. MR. SIEBERT: This is Scott Siebert. Tim, if you want me to jump in on that, I'd be happy to do it since --

DR. TAULBEE: Please do.

MR. SIEBERT: -- I've done a lot of these. Yes, this is always a fun complicated part of the culling process. You are correct. We don't pull out all the claims that qualified under an SEC. We only pull out two versions of that. Number one, if they only had cancers that would be compensated under the SEC. In other words, they don't have any non-SEC cancers, --

MEMBER CASSANO: Okay.

MR. SIEBERT: -- that's number one. Or number two, if they have non-SEC cancers, but the EE passed away before the -- the claim was submitted to DOL, because there are no medical expenses. And in that case, so that --that type of claim doesn't have to be reworked based on the

fact that there are no medical expenses for non-SEC cases at that point. So, those -- we do take that into account. If we have an individual that was compensated under an SEC and has a non-SEC cancer and it's the EE who put in the -- put in the claim, yes, we will rework it under the PER for that reason.

MEMBER CASSANO: Okay. That leads -- I'm sorry, that leads me to another question. So, in other words, if -- if it was the EE's plan -- claim, and there is a survivor of that EE after they die, they can't substitute themselves to re -- get reimbursed medical expenses for everything they paid -- everything that was paid ahead of time?

MR. SIEBERT: There's -- there may be a better person to answer this question than I, but my understanding is the Act covers from the time that the claim is submitted to DOL forward for medical expenses, not prior to that point.

DR. TAULBEE: And that's --

MEMBER CASSANO: Is that so?

DR. TAULBEE: -- absolutely correct there. So, if they filed during -- when the person was alive, then those medical expenses until the point of death would be covered. But if --

MEMBER CASSANO: Okay.

DR. TAULBEE: It's a survivor that filed after the person deceased; they are not covered.

MEMBER CASSANO: I gotcha. Okay. That makes sense.

DR. TAULBEE: Thank you, Scott.

MR. SIEBERT: Happy to --

MEMBER CASSANO: Thank you.

MR. SIEBERT: -- help. Yeah, for the court reporter, this is Scott Siebert, from the ORAU Team.

CHAIR BEACH: Okay. Any other questions? Loretta, Paul, Torrie?

MEMBER VALERIO: Josie, this is Loretta. I do have a question, and it's more of a clarification, I guess. You can hear me all right?

CHAIR BEACH: Yes. Go ahead.

MEMBER VALERIO: Okay. So, my question is on page eight, on the second bullet, it says that from '67 to '85, the facility was operated by Department of Defense, if I'm correct. And there was no DOE contract personnel on site. But the last sentence reads that site external ambient exposure monitoring began in 1982. So, I guess I -- I need clarification. Is external ambient dose assigned to, maybe, the people who worked in the quarry or in the pits since they were still operational during the '82 to '85 time period?

DR. BUCHANAN: Well, they weren't operational during the '82 to '85 time period. This is Ron Buchanan with SC&A. They weren't operational. They didn't start any work on them until '85. And so, the surveys did not include any work on the -- the pits or the quarry or the plant, either one. They were just ambient exposure measurements, and so there wasn't any remediation started until later years.

MEMBER VALERIO: So, anyone who worked there from '85 and after would not get the external ambient dose; is that correct?

DR. BUCHANAN: Yes, that --

MEMBER VALERIO: For eighty -- for '82 through '85?

DR. BUCHANAN: Oh, for '82 through '85? No, I don't think there's anything in the TBD that assigns external ambient dose before '85.

MEMBER VALERIO: Okay. I didn't see anything, but I just wanted to clarify in case I had missed that.

DR. BUCHANAN: Uh-huh.

MEMBER VALERIO: All right. Thank you.

CHAIR BEACH: Well, I have an issue -- Ron, this is Josie. I have an issue with the cleanup that might have not been done or done between that '66 to '85 time period where the workers are still at the plant but not covered. I don't know if there's an answer to that, but.

DR. TAULBEE: Do you want me to take --

CHAIR BEACH: (Indiscernible) interesting --

DR. TAULBEE: -- question there, --

CHAIR BEACH: Yeah, go for it.

DR. TAULBEE: -- Josie, what your concern is?

CHAIR BEACH: Pardon me?

DR. TAULBEE: Josie, can you restate what your concern is there?

CHAIR BEACH: Yeah. So, DOE, the covered period ends in '66 and doesn't pick up again until '85. The work that was done, was -- was there cleanup done prior to the '66 cut off? Do we know if -- if the residual was there, and the workers were still exposed to it? I probably should have read a little more before I asked that, but.

DR. TAULBEE: Well, the people who were working there -- I mean, from the '67 to '85 time period were not DOE contract personnel. Okay. And to be covered under this program, you've got to be working for a DOE,

the Department of Energy. So, --

CHAIR BEACH: Right, right. No, I understand that, Tim. Yeah.

CHAIR BEACH: Okay. Just -- yeah. Never mind. It's a little complicated, but I do understand the differences between the DOE and DOD time frame. So, can you remind me, Kathy, we do not select the cases until the observations are answered, correct, or can we go ahead and select cases now?

MS. BEHLING: Yeah, we can select cases. That's what we've been doing in the past. And in fact, all of these newly issued PERS, I have on the list of -- at the end of our presentation -- or at the end of our presentations today, I have them on the list of unreviewed documents, and I have identified as subtask four reviews.

CHAIR BEACH: Okay. So, we'll take that at the end -- at the end then.

MS. BEHLING: All right, if that's --

CHAIR BEACH: Thank you. Yeah, okay that sounds good. I just couldn't --

DR. TAULBEE: Josie, --

CHAIR BEACH: -- we needed to -- go ahead.

DR. TAULBEE: Josie, this is Tim. I was wondering, can we look at closing these two observations, though, you know, verbally, you know, basically documenting through the transcripts here. I mean, to me, it looks like observation one is we inadvertently added in there that the neutron-to-photon ratio change between the two documents when it did not, and it's just an observation. It doesn't have any impact. So, can we just close

observation one, that we acknowledge that we shouldn't have stated that in that table?

CHAIR BEACH: Let me ask Ron. Thoughts on that?

DR. BUCHANAN: I don't have any problem with it. It wasn't a big issue. If it's according to procedure, I -- you know, and then Scott explained the other one, so I have no problems with closing both issues, but I don't know if that's according to meeting procedure.

CHAIR BEACH: Yeah, I don't have a problem either as long as we've got it recorded correctly, and we can move forward with that. And Kathy, that's in your realm.

MS. BEHLING: Yes. Interestingly, I was --

MR. SIEBERT: Josie, --

MS. BEHLING: -- I was about to ask the same question. But with regard to observation two, Scott did provide us with an understanding of what goes on. So, I just wanted to clarify. So, ORAUT or NIOSH does have something in place to ensure that any non-SC -- SEC cancer will get captured and we will -- it will be re-evaluated if there is --

MR. SIEBERT: Yeah. This is -- yeah, that's correct. It -- it -- it's part of the process.

MS. BEHLING: Okay. So, you have a mechanism in place to do that, and we can feel assured that those are all captured?

MR. SIEBERT: Correct.

MS. BEHLING: Okay.

MEMBER ZIEMER: This is Ziemer. I have a question on observation, one.

CHAIR BEACH: Go ahead.

MEMBER ZIEMER: I believe that will require an actual wording change in the document.

DR. TAULBEE: Well, do we typically go back --

MEMBER ZIEMER: Well, let me ask in a different way. Will it require a wording change in the doc -- I understand it's inadvertent, and you're both in agreement it doesn't need to state that because it incorrectly states that it's new. But does the document need to be changed, because if -- if there's a wording change, normally we -- rather than closing it, we put it in abeyance till -- till the actual change is made.

CHAIR BEACH: Correct.

DR. BUCHANAN: It doesn't say that in the TBD. It says that in the PER.

MEMBER ZIEMER: Oh.

DR. TAULBEE: Right. I think --

DR. BUCHANAN: (Indiscernible) --

DR. TAULBEE: -- typically (indiscernible) PERs, do we?

MS. MARION-MOSS: No, we do not. This is Lori Marion-Moss. We do not revise PERs. If there is a -- a significant technical issue, we would have to issue another PER to address it.

MEMBER ZIEMER: Okay. In this case, then it can be closed, certainly.

CHAIR BEACH: Right. Kathy, as long as you're comfortable with the documentation and can note that in our temporary BRS notes, then I am all for closing observation one and two after this discussion.

MS. BEHLING: Okay. And I'm comfortable with that also. Yes, I will

do that. If I need any additional clarification, I will reach out to Lori.

CHAIR BEACH: Okay. That makes sense. Thank you. And thanks, Tim, for pointing that out. Nice to close it instead of carrying it. Any other observations or questions from subcommittee members? We'll consider those to closed, and we will be moving on to the TBD for Weldon -- Weldon Spring, TB -- or TBD revision 08 (indiscernible), and Ron, it looks like you're up.

DR. BUCHANAN: Yeah.

CHAIR BEACH: How are we doing before -- yeah. How's everybody's comfort level? Are we okay to keep going forward? Let me know when we need a break. Maybe we'll check in again after this presentation.

MEMBER CASSANO: That's good (indiscernible).

CHAIR BEACH: Okay. Thanks. Go ahead, Ron.

DCAS-PER-083 "Weldon Spring Plant TBD Revision"

DR. BUCHANAN: Okay, thank you. Okay, it's Ron again. And I'll be presenting a review of SEC's review of PER-83 for Weldon Springs (sic) now. So, we're getting a dose of Weldon Springs today. And this is same facility we just discussed. We see that the site profile, as I just discussed, was revised in 2013, all sections of it, two revisions, one or two. And so, this prompted PER-051 in 2015 we just covered.

So, we'll go to the next slide. You'll see that then in 2017 TBD 4 and 5 were revised, and they're revised twice, in the spring and in the fall, or summer. And so, what we're going to do is look at PER-083, which will address the changes in DR procedures using three (indiscernible) two TBDs,

just 4 and 5 in this case.

Okay. I'm going to skip these slides because we just discussed all them. Go to the next one. It's the same slides as we just discussed. Next slide, please. Next slide. We can just skip all the way through the -- next slide. And go -- internal, we can skip that and go to the next one. Just put those in for completion in case this was presented someplace else at a different time, but we just discussed them. So, now we'll go through this slide, which it's the meat of the material.

That's PER-083 to cover TBD 4 and 5. We see that, as we've said, that NIOSH issued revision 02 two and 03 of 4 and 03 and 04 of 5 and 2017. And these contain changes that could increase the dose from environmental or internal intakes. We're concentrating on those two in this presentation. Some of those changes include wanted to use consistent use of RU intake. It should have stated in all these documents it started in 1961, not after 1961. There was some inconsider -- inconsistency in that statement in these two documents. So, wanted that straightened out.

The contribution of RU contaminants to the internal dose and the specific activity of 1 percent in uranium increase, so that would increase the internal dose. So, that was considered.

So, in February of 2023 this committee tasked SC&A where the review of PER-083. In August of this year, we issued our review report, revision zero, and then in September we issued revision 01, which for the reasons I discussed earlier, added a little bit of information to pass -- subtask two to make it consistent.

Okay. So, we'll look at the details for some of these subtasks. And

so, let's start with subtask one. We evaluate the changes that brought about PER-083. We had reviewed TBD 4, 2, and 3 and 5, revision 03 and 04, and we reviewed PER-083. We found that 83 addressed the changes in these TBDs that could increase dose and -- externally or internally, and additional changes in the TBD was for other purposes other than increasing or decreasing dose also but didn't affect do reconstruction. And we had no findings or observations in our review TBD 4 and 5 pertaining to subtask one.

Now, NIOSH reviewed claims under PER-083. Now, there's -- we're going to address this in two parts. One was that when was RU actually introduced at Weldon Springs (sic). Well, it was introduced in 1961. And so, that was one of the changes, the consistent use of that date. And so, NIOSH went back and looked at the dose reconstructions that had been done that would be impacted by this and start date, and there was only one claim employed in '61. And they reviewed that and found that, indeed, RU had been assigned for 1961. Therefore, no consideration for this issue was necessary in the future.

So, the other two issues was the RU constituents and the enrichment uranium activity. And so, we evaluated all Weldon Spring claims and reworked the appropriate claims using the revised TBD to cover these two issues. So, under subtask two, we assessed their specific method for corrective action, and we had previously reviewed revision zero of TBD 4 and 5 in 2009. And we reviewed the latest editions -- later editions of the TBD 4 and 5 for PER-051, which we just discussed. And so, we needed to review the latest relations -- revisions of TBD 4 and 5, which we hadn't done yet.

So, we did that, and we determine whether it was done, you know, scientifically, check the references, and see that it was consistent with other documents and current science.

So, our review these TBDs, we found whether they was technically accurate and contained the right information, evaluated the references, analyzed the change that could either decrease or increase in assigned dose, summarized these changes that had the potential to increase assigned dose in TBD-4 in section 3.2.1 of our current -- recent reports and in section 3.2.2 of -- for TBD-5 of our current report, which all of you have been sent a copy of that report.

Next slide.

In our comments on subtask two, we confirmed that these revisions incorporate in the TBD-4 and 5 are scientifically based. We found that -- NIOSH's corrective action to be appropriate, since they re-evaluated all the claims and reworked them under the TBD that were appropriate. And there was no findings associated with subtask two.

Now, for subtask three, we evaluated the stated approach for identifying the number of the DRs requiring rework of the dose. For this, NIOSH had conducted a search for employment as they had done before at the Weldon Spring facilities in their tracking system. And they use the key words, and a search to identify 330 unique claims.

So, they removed the claims, obviously, that didn't read -- need re-evaluated. There was 190. Three was completed with current TBD; 126 had a POCs greater than 50 percent; and 51 was pulled due to inclusion in the Mallinckrodt SEC; seven claims were active at the time and would be

completed using the current TBD; two claims had no real employment at Weldon Springs (sic). They popped up but they weren't verified employment at that facility; and one claim met the SEC -- Mallinckrodt SEC and the DR was done prior to that -- issuance of that SEC, therefore, is removed from re-evaluation because it didn't need to be re-evaluated under PER-083.

So, evaluation of the remaining 140 claims found that two claims be returned for a new DR for other reasons, and so, they'll be completed by the new TBDs; and 138 claims re-evaluated using the current TBDs and other procedures.

And a little detail of that, we see the 138 claims, 129 had POCs that remain below 45 percent, four resulted in a POC between 45 percent and 52 percent, and of course, those ran with the IREP program 30 times, 10,000 iterations, and they still remained less than 50 percent for those four claims. And the bottom line we did all this for was five claims resulted in a POC greater than 50 percent, and those will be returned for the DOL for re-evaluation. So, our evaluation selection process, we found that the criteria used for NIOSH was reasonable and no issues or findings or observations associated with subtask three.

So, it brings us to the final subtask four, and that was to conduct audits so the sample of the reward cases, and we suggested in this instance that two to three DR cases from the Weldon Spring site during the covered period be selected for a focused review. Since there was limited changes, we could do a focused review on this, and we suggest the claims should attempt to include the environmental intake consisting of exposure to EU from '63 to '66 and RU from '61 to '01. And internal intakes consisting of

exposure to EU from '63 to '66 and RU contaminants from '61 to '02. This should cover the changes that we noted, if there is cases available again. This is a small -- very small site and -- but it'd be good to find cases that include these if possible.

For our evaluation of site profile, we reviewed the TBD 4 and 5 recent revisions and had no findings or observations in that review. And our review of PER-083, we had no findings or observations. And we request that NIOSH select the appropriate claims to review under subtasks four and that the procedures committee task us with the evaluation of selected claims.

So, that -- that concludes my presentation. Any questions?

CHAIR BEACH: This is Josie. Thanks, Ron. Great presentation. With no findings or observations, I know NIOSH is pleased. Any questions or comments, subcommittee members?

MEMBER CASSANO: Nope. This is Torrie. I do not have any.

CHAIR BEACH: Thank you.

MEMBER ZIEMER: This is Ziemer. I --

MEMBER VALERIO: This is Loretta. I don't have any.

MEMBER ZIEMER: -- (indiscernible). Yeah.

CHAIR BEACH: Okay. With --

MEMBER ZIEMER: There's nothing to close here, but we do need to have the record that we have completed the review.

CHAIR BEACH: Correct. That is correct. And that will be added to our -- our list for subtasks four case reviews and that that was completed and closed out, which Kathy's very thorough on.

Okay. Any need for a break, or shall we move on to 067? Hearing no

request for break, Kathy, I think you can go ahead and tee up -- you already have. Thank you.

And Amy, we're going to hear from you on this one.

NEWLY-ISSUED SC&A REVIEWS:

ALLEGHENY LUDLUM APPENDIX Q2 REVISIONS

MS. MANGEL: All right. Thank you. Can everyone hear me okay?

CHAIR BEACH: Yes.

MS. MANGEL: Okay, great. So, this is Amy Mangel. I'll be presenting SC&A's review of PER-067 for Allegheny Ludlum Appendix Q revision. I'd like to acknowledge that this review was a joint effort between Rose Gogliotti and myself.

So, the purpose for PER-067 was to address the impact of Rev. 01 of Appendix Q of TBD 6000 for Allegheny Ludlum Steel Plant on previously completed cases. A brief background of the site. Allegheny Ludlum rolled uranium rods in 1951 and '52 and also performed other metalworking activities, such as straightening, laid work, cutting with shears, and stamping. Uranium rolling occurred at the site and 16 discrete rolling campaigns. Beginning on December 1, 1951, a salt bath furnace was introduced into the process and the salt bath furnace reduced the oxidation of the uranium, which in turn reduced the amount of uranium that was in the air.

Next slide.

The covered period for the site is from 1951 to 1952, and there's no residual period after 1952.

Next slide.

So, this leads us to observation one is that there is an incorrect date for the end of the AWE operational period in section Q.6. The text states that there's no residual period designated after 1951, but the end of operations was 1952.

Next slide, please.

Subtask one in rev. 01 eliminated the job categories so -- such that the assigned dose is no longer dependent on EE's job title. All employees receive the same dose estimate. Additional details about the rolling campaigns was included. For many of the former job categories, the inhalation intakes increased and for all former job categories, the ingestion intake and external doses also increased.

Next slide, please.

Subtask two. SC&A reviewed the changes in rev. 01 of Appendix Q. Also, SC&A reviewed Appendix Q for its overall dose reconstruction guidance as neither revision had previously been evaluated by SC&A.

Next slide, please.

Rev. 01 of Appendix Q included additional information and dates for when uranium rolling occurred at the site, which was summarized in table Q.1 in revision 01.

Next slide, please.

SC&A reviewed the information in table Q.1. And in the table, it stated that the first rolling campaign was on January 20, 1951, and that 25 ingots were rolled. SC&A also reviewed an SRDB document that contained information about the rolling campaigns. And SC&A's interpretation of the information in that document relevant to the first rolling campaign is that

the number of ingots rolled may have been 40. However, whether it's actually 40 or 25 does not affect the dose estimates as the dose estimates are based on air concentration data and not the number of ingots rolled on a given day. So, this potential discrepancy has no effect on the dose estimates. Now, and this is basically what is summarized in observation two, just addressing the potential discrepancy in the number of ingots rolled during the first campaign. And again, we don't think it affects the dose estimates.

NIOSH uses uranium air concentration data in the dose estimates for Allegheny Ludlum and divides the data into two categories; data from before the salt bath was implemented and data from after the salt bath was implemented. Data for the presalt bath time period is from before December 1, 1951, and it includes data from two rolling campaigns, one in January of 1951 and one in July of 1951. This resulted in the geometric mean concentration of 291 dpm per meter cubed. Then for the post salt bath time period after December 1, 1951, came from just one rolling campaign, which took place in February of 1952, and this resulted in a geometric mean of just 20.5 dpm per meter cubed.

As mentioned before, the inhalation intakes are no longer dependent on an EE's job category. NIOSH assumed that employees work an 8.8 hour workday for the nonrolling days. NIOSH used the higher air concentration of 291 dpm per meter cubed and assumed a deposition for 30 days, and then this was resuspended into the air using resuspension factor of one-eighth negative five.

Next slide, please.

And our review, we confirmed that the inhalation dose estimates are no longer job dependent. All employees must be the same doses -- dose estimates. It was difficult to determine how inhalation intakes would have been assigned under rev. 00, so it was also difficult to determine if the inhalation intake using rev. 01 are, in fact, higher for most of the former job categories. SC&A also reviewed the air concentration measurements and was able to match the calculated geometric means for the pre and post salt bath time periods. Lastly, SC&A also confirmed that NIOSH followed the TBD-6000 guidance when calculating the deposit -- the deposited surface contamination.

In order to determine if air monitoring data is used in a consistent manner, SC&A search for other AWE sites with similar operational histories to see how air monitoring data was used for those dose estimates. And we settled on the site Bliss and Laughlin to use for this comparison. The Bliss and Laughlin site profile is Appendix D to TBD-6000. So, Bliss and Laughlin conducted similar works, uranium rod machining and straightening, in a similar time period, also in 1951 through 1952. The air monitoring data evaluated, and that appendix included 13 breathing zone samples and seven general area samples and resulted in a geometric mean concentration of 2602 dpm per meter cubed. Appendix D noted that this value was much lower than a value from TBD-6000 of 5480 dpm per meter cubed. This value is the highest value from TBD-6000's table 7.5. And Appendix D also goes on to state that because of the limited number of air samples, the air concentration value from TBD-6000 was determined to be more claimant favorable and was utilized to determine inhalation and ingestion quantities

during years of AEC operations at Bliss and Laughlin.

Next slide.

Going back to Allegheny Ludlum, a smaller proportion of the site's air monitoring samples were breeding zones compared to Bliss and Laughlin. Five out of the 43 samples in 1951, and none of the samples in 1952 were breathing zone. Therefore, it's unclear to SC&A if the samples really represents a range of uranium air concentrations that could have been encountered by Allegheny Ludlum workers. Further, the calculated geometric mean concentrations for Allegheny and Ludlum of 291 and 20.5 dpm per meter cubed are significantly lower than the values in the tables in Section 7 of TBD-6000 and the value that was ultimately used for Bliss and Laughlin.

So, this brings up the observation three. There may be an inconsistency in the approach to calculating uranium intakes when using the air sampling data. And basically, which -- as we said before, there were two different approaches used between two relatively similar sites. And we're just requesting some clarification on -- on that issue.

Next slide, please.

Moving on to ingestion intake. The PER stated that ingestion intakes increase for all former job categories. NIOSH used TIB-009 for these calculations and said that this approach likely overestimates the actual ingestion intake, and TIB-009 assumes that operations occurred often enough for the airborne concentrations to reach a mass -- maximum. The calculated uranium ingestion intake is 39.9 dpm per calendar day. And this was calculated using the higher of the two-year metric mean air

concentrations and a factor of 0.2, which comes from TIB-009, and was converted to a per calendar day basis.

Next slide, please.

SC&A did confirm that the investment intakes were higher in rev. 01. SC&A found that the derivation of the adjustment factor of 0.2 from TIB-009 assumes an eight-hour workday. And as stated earlier, an 8.8 hour workday was assumed for the inhalation intakes. And SC&A feels that the assumed workday length should be consistent between the ingestion and inhalation calculations. Assuming an 8.8 hour workday for the ingestion calculations would result in just a very small increase of 1.7 dpm per calendar day. So, this is observation four. SC&A feels the assumed workday length should be consistent between the inhalation and ingestion intake calculations; however, we do acknowledge the fact that this is very small difference. The difference in the calculated intake is likely offset by the other conservative assumptions used in the ingestion model.

Excuse me. Moving on to the external dose estimate. The PER states external doses also increased in revision 01. Sorry. No external dosimetry records have been found for Allegheny Ludlum; therefore, TBD-6000 was used to estimate external dose. And the external dose estimate was two-part. Oh, I'm so sorry. One being the dose from the uranium metal and one from the deposited uranium contamination. For a dose from uranium metal, NIOSH assumed operators were exposed to the one-foot uranium metal dose rates from TBD-6000 for 50 percent of the time.

CHAIR BEACH: Hey, Amy? Why don't we pause while we -- do you want to pause and grab a glass of water or something?

MS. MANGEL: I have some right here. Just a moment, please.

CHAIR BEACH: Okay. Yeah, take a -- take a minute.

MS. MANGEL: Okay. So sorry about that.

NIOSH assumed operators were exposed to the one-foot uranium metal dose rate in TBD-6000 for 50 percent of the time and that the hands and forearms are exposed through the contact uranium metal contact dose rates from TBD-6000 50 percent of the time. For the external dose from deposited contamination, NIOSH use the surface contamination level that was previously calculated for the ingestion intake, along with conversion factors from TBD-6000 and assumed workers were exposed 100 percent of the workday.

SC&A confirmed that the external dose estimates did increase in rev. 01 and confirmed the dose rates used by NIOSH came from TBD-6000 and that the assumed fractions of time for the various exposures followed TBD-6000 guidance. SC&A also confirmed the conversion factor used for the deposited contamination exposure were from table 3.10 of TBD-6000 and that NIOSH assumed an 8.8 hour workday. And we didn't have any observations or findings related to external dose calculations.

For occupational medical dose, basically the information didn't change from rev. 00 to rev. 01. There isn't any site-specific information, so the appendix refers to OTIB-0006 for assigning occupational medical dose, which SC&A agrees with.

Subtest -- subtask three. First NIOSH started with all completed claims with verified employment at Allegheny Ludlum that had POC under 50 percent, which was 26 claims. One of those claims had already used rev. 01

of Appendix Q and was removed, so that left just 25 claims. And NIOSH re-evaluated those 25 claims using rev. 01. Twenty-three of the claims had a POC below 45 percent, and two claims had a POC greater than 52 percent and NIOSH requested return of those two claims to DOL.

Subtask four. SC&A recommend selecting two cases, if possible one case involving a worker with employment that spans both time periods before and after implementation of the salt bath. And a second is possible involving a worker whose previous job category led to a lower intake.

And that's it, and I'm happy to take any questions.

CHAIR BEACH: Amy, this is Josie. Thank you for soldiering on through an irritated throat. I --

MS. MANGEL: Sorry about --

CHAIR BEACH: -- question.

MS. MANGEL: -- that.

CHAIR BEACH: No, it's understandable this time of year. Other subcommittee members, questions, comments?

MEMBER CASSANO: I have none.

MEMBER ZIEMER: This is Ziemer. No questions.

CHAIR BEACH: Thank you, and --

MEMBER CASSANO: Torrie has no --

CHAIR BEACH: -- Loretta?

MEMBER VALERIO: This is Loretta. No questions.

CHAIR BEACH: Okay, thank you. NIOSH, any comments here?

DR. TAULBEE: No. I mean, we'll come back and respond to these observations. I guess, I do have a little bit of a question with regard to

observation two, and in that it's more of -- it doesn't impact the dose estimate as to whether it's 25 or 40, so I'm questioning -- I mean, I get that it's an observation, but -- okay. You know, to me, we should be just focusing on what might impact the doses here. But, I -- I -- I guess, my question to the subcommittee is, you know, even if there is a change here, and it should be 40, it doesn't impact anything. So, what -- is there any reason to keep it open as an observation, other than curiosity?

CHAIR BEACH: Well, if it doesn't impact the dose, then I would say no, but I think just for clarification, is -- is why it's here. So, I am all for closing it. Other subcommittee members?

MEMBER CASSANO: I agree --

MEMBER ZIEMER: I agree.

MEMBER CASSANO: -- with that.

MEMBER ZIEMER: Yeah. The dose -- the calculations are not based on that factor at all. So, --

CHAIR BEACH: Yeah, this is more --

MR. BARTON: Tim, this is Bob Barton. Just -- just to clarify, I mean, a lot of times these dose calculations are based on the throughput, if you will, but you're saying it doesn't factor in. I mean, I don't have the specifics right now in front of me, but you're saying that, in this case, the throughput doesn't have anything to do with the dose estimate, because that wasn't my impression?

CHAIR BEACH: Well, it's on your slide. And I guess, I was just gonna ask the same question, Bob is, however, SC&A understands that it does not affect the intake estimate. So, is that a correct statement or not?

MR. BARTON: Okay. Yeah, no, no. Okay. Okay.

(Whereupon, multiple members speak simultaneously.)

DR. TAULBEE: Bob, if --

CHAIR BEACH: Go ahead.

DR. TAULBEE: -- we were using that as a -- that as a basis for the dose estimate, then absolutely, you know. But in this case, --

MR. BARTON: Okay.

DR. TAULBEE: -- it doesn't appear that we are, so that -- that's why I raised the issue.

CHAIR BEACH: Okay, thanks --

MR. BARTON: Okay. I understand.

CHAIR BEACH: -- Amy, I --

MR. BARTON: Thank you, Tim.

CHAIR BEACH: Amy, were you trying to speak also?

MS. MANGEL: No, no, I'm -- I'm good with the discussion.

CHAIR BEACH: Okay. All right. So, if we're clear --

MS. GOGLIOTTI: Is there harm in --

CHAIR BEACH: -- that it doesn't --

MS. GOGLIOTTI: -- leaving it open and finding the answer, though? I'm sorry, this is Rose Gogliotti.

CHAIR BEACH: So, you're --

DR. TAULBEE: We can, and we can write -- we can write a response, but again, this takes time and it takes time away from doing other things. So, I mean, it's all a resource thing here. If we can close it, I would prefer that, but.

CHAIR BEACH: Rose, is there a reason you want the answer to that? If it was a -- it was probably an error just in, I don't --

MS. GOGLIOTTI: Well, the reason it was pointed out was because in the original document, it also said 40, I believe, and then it changed.

CHAIR BEACH: So, you're looking for why --

MS. GOGLIOTTI: I think that was what stood out to us. So, we were -- we were curious to why. It doesn't impact things. If the subcommittee wants to close it out, that's fine. That was the reason it was pointed out.

CHAIR BEACH: Okay. Subcommittee members, open or closed? Are you comfortable with closing it?

MEMBER CASSANO: Yes.

MEMBER ZIEMER: This is Ziemer. I'm comfortable with closing it actually. One point of clarification, did -- did the rolling campaign of -- the date -- January 20th is the date, '51, did the quote/unquote campaign occur in the course of a single day as opposed to that being a starting date? (Indiscernible) --

MS. MANGEL: (Indiscernible) --

MEMBER ZIEMER: -- how many ingots can be --

MS. MANGEL: This is Amy. My recollection is that it was a single day, but I can certainly look into that.

MEMBER ZIEMER: Well, the reason I asked that, so is there -- they're all monitored for that day. It sort of doesn't matter how many ingots were rolled, as long as you're -- you had the monitoring data for the day.

CHAIR BEACH: And if you look at -- if you look at slide eight, it talks about Appendix Q. They're based on air concentration data, not dependent

on the number of ingots rolled on a given --

MEMBER ZIEMER: Well, that -- that's --

CHAIR BEACH: -- work day.

MEMBER ZIEMER: That's exactly the point. And if you were rolled more, that might affect the air concentration. But that's the value that's being used.

CHAIR BEACH: Correct.

MEMBER ZIEMER: If they had if they had done 20 -- only 25, then the total air concentration might have ended up lower or something, but whatever the number ends up being is what you're using, so you don't need to know the number of ingots, I presume?

MEMBER CASSANO: This is Torrie. Did they monitor every day, and they have a number from -- they have air monitoring sampling from every day?

MEMBER ZIEMER: It sounds like it was a single day.

CHAIR BEACH: Yeah, January 20, 1951.

MEMBER CASSANO: Okay. So, if they only monitored for one day, and there weren't the maximum number of ingots rolled that day, then whoever -- the -- then they could be underestimating dose.

MEMBER ZIEMER: Wait, why would you say that?

MEMBER CASSANO: Why would I say that? Unless I'm -- so -- so --

MEMBER ZIEMER: Whatever number --

MEMBER CASSANO: -- if they --

MEMBER ZIEMER: -- they rolled. Yeah, I'm saying whatever -- if they rolled one ingot, they certainly would have ended up with a lower air

concentration --

MEMBER CASSANO: Yeah, yeah, that's what I --

MEMBER ZIEMER: -- than rolling.

(Whereupon Members Ziemer and Cassano speak simultaneously.)

MEMBER ZIEMER: -- reflects whatever was rolled.

CHAIR BEACH: Wait a minute.

MEMBER CASSANO: Yeah.

CHAIR BEACH: Hang on, Torrie. One at a time. Go ahead, Paul.

MEMBER ZIEMER: My though is, and maybe someone can correct me, but assume the air concentrations have some relationship to the number of ingots rolled, then if they rolled 50, then they would have gotten a higher concentration than if they rolled two or some -- figure out whatever number you want to come up with. Whatever it is, the air concentration reflects what was done --

CHAIR BEACH: Correct.

MEMBER ZIEMER: -- as I understand it.

CHAIR BEACH: Yeah.

DR. TAULBEE: That is correct. Yes.

MEMBER CASSANO: So, then my follow-on question is, if they only monitored one day, how do we know that -- that one day had more or -- more or fewer ingots rolled? We don't, do we?

CHAIR BEACH: No, any --

MEMBER CASSANO: -- know any other (indiscernible).

CHAIR BEACH: -- you would still have total air sample data for that day, whether it was 25 or 40, which was the point. And we don't know the

basis for that, if there was only one day, it was only --

(Whereupon, an attendee's background noise creates a disturbance.)

CHAIR BEACH: -- one year campaign, '51 to '52. So, I think that goes beyond what we were doing here.

MEMBER CASSANO: Okay. I'm -- now, so -- so they're saying that a total of 40 ingots were rolled on this total campaign. So, there were only 15 more ingots rolled on some other day than what was rolled on January 20, 1951.

MEMBER ZIEMER: I -- I be -- this is Ziemer. I believe they're saying that that was the only day they rolled them.

MEMBER CASSANO: Okay. I see what you're saying.

MEMBER ZIEMER: Yeah. If --

MEMBER CASSANO: Okay. They only rolled them on the one day. Okay, got it.

CHAIR BEACH: Yeah. And so rose wants to know why it changed from 25 to 40. However, I think in this case, it would be nice to know why that was changed, but it doesn't change the outcome. So, I think we --

MEMBER CASSANO: Now, (indiscernible) -- okay.

CHAIR BEACH: -- agree to close it.

MEMBER CASSANO: Now I understand. Thank you.

CHAIR BEACH: You bet. So, unless there's some disagreement, we're going to close observation two. Okay. Hearing none, we have report 97, the breathing zone to general area concentrations. Do we need a comfort break, or are we good to go on?

MEMBER ZIEMER: I wouldn't mind a 10 minute.

CHAIR BEACH: I'm fine with that. Let's take 15 minutes, actually. So, 10:31 to 10:40 -- let's go 45. That work for everybody, --

MEMBER CASSANO: Okay.

CHAIR BEACH: -- Loretta -- Loretta, of course, you get a longer one. And we'll --

MEMBER VALERIO: Yeah.

CHAIR BEACH: -- I can text you when we're back on after 097. Will that work for you?

MEMBER VALERIO: Yes. We're coming --

UNIDENTIFIED SPEAKER: Just two.

MEMBER VALERIO: -- back at 10:45?

CHAIR BEACH: 10:45.

UNIDENTIFIED SPEAKER: Just two.

DR. ROBERTS: I'm sorry, I don't mean to interrupt, but actually, Loretta can be on the one line, she just --

CHAIR BEACH: Oh. Okay.

DR. ROBERTS: -- shouldn't weigh into the discussion.

CHAIR BEACH: Okay, perfect. So, 10:45 we'll be back.

DR. ROBERTS: Or 1:45 Eastern, yeah.

(Whereupon, a break was taken from 1:31 p.m. EST until 1:45 p.m. EST.)

DR. ROBERTS: All right. And then we're going to go through a quick attendance for the subcommittee members (indiscernible). Okay. Starting with the chair, Beach?

CHAIR BEACH: I'm here.

DR. ROBERTS: Cassano?

MEMBER CASSANO: I'm here.

DR. ROBERTS: Cassano, okay. Is Valerio back? Okay. Ziemer?

MEMBER ZIEMER: Yes, I'm back.

DR. ROBERTS: Okay. Over to you, Josie.

CHAIR BEACH: Okay. Thanks, Rashaun and everybody for that quick break. We are ready for ORAUT's Report 0097.

ORAUT-RPRT-0097 "Breathing Zone to General Area Air Concentration Ratios in Small Workrooms"

MS. BEHLING: Okay. Josie, this is Kathy. And I -- I will preface my presentation with saying also I have one of these sort of new sinkholes. It just doesn't want to let go here. So, I -- hopefully I'm going to make it through the remainder of the meeting still being able to talk.

And this report 97 was actually -- it was reviewed by Syed Naeem, and he is -- was unable to get the presentation, so I'm going to try to step in, in his behalf.

And Report 97 is breathing zone to general air concentration ratios and in small rooms. This thing is not -- there we go. There we go.

CHAIR BEACH: No, that was me. I apologize. I had to switch phones. Mine was dying. So, go ahead, Kathy.

MS. BEHLING: No, I --

CHAIR BEACH: Sorry.

MS. BEHLING: No, I was having problems even switching my -- my slides here. Okay. Report 97 is a new document that was published --

relatively new -- in March of 2021. And the purpose of Report 97 was to evaluate the relationship between breathing zone and general air -- area air concentration ratios in small rooms. This relationship is necessary for determining inhalation intakes for workers that have no bioassay data. And the BZ to GA ratios are used to determine if any adjustments are necessary to GA air concentrations in order to make them equivalent to BZ concentrations.

So, the report overview, the BZ air concentrations represent air breathed by the worker while the general area air concentrations are measured in -- measured air in the radiological workspace. And in an ideal situation, the -- if there was thorough mixing in that room, the BZ to GA ratios would be one. However, that scenario is very rare, and which results in the BZ -- in the BZ and GA rate -- ratios to be typically greater than one. So, the report cautions that the ratios need to be justified on a case-by-case basis. It's a large number of parameters and scenarios that may impact these concentration ratios in a work room.

Okay. So, Report 97 sites parameters that affect the level of mixing of the aerosol as the room size, the aerosol particle distribution, the room ventilation ratio, and room complexity. And parameters affecting the BZ to GA ratio distribution is sampler location and radioactive aerosol release-point location. Now, when a workspace has a low number of radioactive particles that have a high -- relatively high specific activity, this is referred to in the document as dominant particles. This condition becomes very problematic, and it results in the inability to cut really collect meaningful and reproducible air samples. So therefore, NIOSH does not recommend using air sampling

data from such a workroom have known to have these -- these dominant particles are developing a BZ to G -- GA ratio.

So, the methodology for developing -- developing the BZ to GA ratios in Report 97 included evaluating air sampling data from five different studies for workrooms, with areas that range from 190 to 1130 square feet. The aerosol particle size was up to 10.5 micrometers for assessed and the rest -- the respirable particle size is less than 20 microns -- micrometers that's contributed to -- contribute to worker inhalation intake.

Two worker location scenarios were assumed, and the BZ and GA ratios were determined by hitting the BZ and GA ratio distribution datasets with lognormal models using regression on order statistics to generate a geometric mean and the geometric standard deviation value for each model. So, scenario one, the worker and the aerosol release point are always located at the same location, same XY coordinate, and this generally represents an acute or worst-case scenario and yield the highest BZ to GA ratio. In scenario two, the worker and the aerosol release points are not the same locations, and the BZ locations have the same probability of being anywhere in the room. And this scenario generally is representative of a -- most radiological processing areas that have multiple workstations and people moving around in that room. And this scenario would be more appropriate for assessing chronic exposure situation.

So, NIOSH use Monte Carlo sim -- simulations to combine the dataset from each of the studies to create a single database for BZ location scenarios one and two. Then scenario one, or the acute-exposure scenario, was subdivided into an open workspace and work spaces with obstructions in

the middle of the room. Okay. And this slide shows the combined BZ and GA ratios, geometric means and geometric standard deviation values for the various scenarios. And although scenario one -- we predicted for scenario one would have -- is the obstructive workspace resulted in the highest ratio of 12, but the combined open and obstructive workspace scenario from scenario one studies resulted in a ratio of a geometric mean of 2.95 with a geometric standard deviation of 5.03.

Okay. If the use of the BZ to GA ratio can be justifile -- justified, Report 97 provides guidance on selecting the most -- most appropriate ratio. The GA air sampler's then multiplied by that ratio to make the measured air concentrations equivalent to the BZ air concentration. Okay. So, Report 97 conclusions about scenario one, there was not a significant difference between the BZ to GA ratios when the workspace is open in the middle, but when the workspace had many obstructions in the middle of the room -- of the room, the ratios are significantly higher. So, since it was determined that there are significant differences between the open and obstructive work spaces, it may be more appropriate to use obstructive ratios for scenario one.

And conclusions about scenario two, there was not a significant difference between the BZ to GA ratios when the room was open or obstructed and therefore, there were no special considerations cited in this report for scenario two.

Okay. Report 97 also evaluated ratio distributions for both scenarios using six different ventilation rates and determined that there was no significant effect on the ratio distribution. So, SC&A's review of 97, we

found that the approach used by Report 97 to develop the sampling plan was reasonable and technically correct. We agreed with the two worker location scenarios. We found that the statistical methods used in the sampling plan were acceptable, and we did not identify any documentation issues that would affect the readability or application of the sampling -- sampling plan.

So, SC&A believes that the selection of the five studies is adequate and represents the population of available data. And so, we had no issues with the approach used to determine the BZ to GA ratio in a small room. And SC&A evaluated the statistical methods used to determine the BZ to GA ratios, which are generated, as I said, by fitting the BZ to GA ratio distributions for each evaluated exposure scenario dataset with lognormal mod -- models using the regression on order statistics. And SC&A concluded that the statistical methods for generating these distribution values are appropriate.

We did have an observation on these, more on the implementation side of this report, and that observation states that the report needs guidance on when data are insufficient to select a scenario. And if the -- if sufficient data are not available, perhaps NIOSH should instruct the user to select the most claimant favorable values. And SC&A really questions whether that dose reconstruction -- reconstructor will have access to the data required to make a reasonable -- reasonable decision about the appropriate scenario to use on a case-by-case basis.

And observation two, the report needs guidance regarding documenting professional judgments. It seems to me there will be definitely

some professional judgments necessary in implementing Report 97. And although NIOSH specifies that the dose reconstructor is responsible for justifying their decisions, we feel Report 97 should explicitly state that these professional judgment -- judgments be included in the dose reconstruction documentation and hopefully the dose reconstruction report.

So, in summary, SC&A found the technical approach and statistical analysis, application, and documentation used to develop Report 97 to be -- be valid, but we did have the two observations that I just mentioned more regarding the implementation of Report 97. And we feel that the dose recon -- we're wondering if the dose reconstructor will have adequate information for making these decisions, and we want to ensure that that document -- that the dose reconstructor does document the decision-making process.

And that our review of Report 97.

CHAIR BEACH: Thank you, Kathy, and your voice held out, so that's great. Gives us hope for the rest of the meeting. Any comments or questions for Kathy?

MEMBER CASSANO: I have none.

CHAIR BEACH: Thank you, Torrie. Anything, Paul?

MEMBER ZIEMER: Yes, I had one. I don't know if this is a comment or question, but on the issue of professional decisions, I'm -- I'm trying to recall, don't leave pretty much now require that the professional decisions be specifically identified and justified in any dose reconstruction?

CHAIR BEACH: I think we track it in the dose reconstructions, but I don't believe we have in this aspect; is that correct, Kathy?

MS. BEHLING: Well, actually, SC&A -- and it is interesting because

we're going to get on this topic on my next presentation also. SC&A has added to our blind dose reconstruction reviews a section on professional judgment. On our typical 30 case sets, we really do not pull out or discuss separately the professional judgment aspect. But I know that we are -- that NIOSH, I think, states that the professional judgment issues will be discussed and sometimes that's the case and sometimes it's not obvious to us.

CHAIR BEACH: Which is a reason for observation --

MS. BEHLING: Right.

CHAIR BEACH: Yeah, go ahead.

DR. TAULBEE: Yeah, this is --

MS. BEHLING: And I don't know --

DR. TAULBEE: -- Tim.

MS. BEHLING: Go ahead, Tim.

DR. TAULBEE: Go ahead, Kathy.

MS. BEHLING: No, I was about to say I think Tim probably has some comments on this. It sounded like they had looked into this issue before the meeting. So, I'm going to encourage you to talk.

DR. TAULBEE: Okay, thank you. And, yes, when -- first thing I want to try and bring up here is that this is a report that, you know, explain the different methodology and provide some information, but three different places throughout this report, we mentioned, as you pointed out on your slide three and other places in your presentation there, that the application of this BZ:GA ratio within the report should be justified on a case-by-case basis as discussed in sections, one, two and 11. So, you know, those are

the three different places where we're constantly emphasizing the people using this information need to justify and document. We don't say the word "document," but when you say -- but when we say justified, we mean document how this is applicable, why this is applicable, and before it is used. In general, the guidance of when to apply something like this and not is in TBDs by profiles or OTIBs, the technical information bulletin, and they will reference this, and they will provide those justifications in there. And that's where the professional judgment really comes into play.

This can be used by individual dos reconstructors, but I would venture to say it will be rarely used by individual dose reconstructors. This will be most -- most likely used inside profiles and TBDs where we synthesize and combine a lot of data, and then we apply these BZ to GA ratios, we justify, we go through and explain why this is important in the TBDs or in the OTIBs, and then the dose reconstructor takes those -- that data and applies it. The documentation is there in that site profile or that OTIB. So, in both of these observations, it's mentioning the first observation is do -- you know, that when data are insufficient to use the most claimant favorable. Again, that would be something that would be in the site profile or the -- the OTIB in applying the dose reconstruction. That's where that guidance is typically given, not necessarily inside a report like this one.

So, I guess my request to the subcommittee is to look at these observations under that context, and I -- I would like to propose that you close them out, because the only way to -- to change this would then be for us to rev. this particular report, and I don't think this is really necessary. As I mentioned, we've got three different places within this current report

where we specifically say to use this information, you've got to justify, it's used on a case-by-case basis, whether it's in a site profile, whether it's an OTIB, or whether it's an individual dose reconstruction. That's where it would be justified that this is applicable and here's why.

CHAIR BEACH: Okay, thank you, Tim. SC&A, any comments on Tim's remarks?

MR. BARTON: Well, yeah. This is Bob Barton with SC&A. I guess, again, clarification was what Tim just said. If we're talking about the, I guess, logic tree, this is sort of the starting point, and then we would have to evaluate it on a case-by-case basis on -- on when it's applied to a specific site, which would be documented in technical basis argument. And then even further down the tree, if it's -- something else is used in an individual dose reconstruction. Is that what you're saying, Tim?

DR. TAULBEE: That is correct. Yes.

MR. BARTON: Okay. I mean, like, I understand where you're coming from. I think when we look at these documents, we -- we just want to make sure that the pathway is clear on -- on how these different things are going to be used. And I understand that it's going to be unique for each site. I think it's important just to keep track of how it's applied and used at these sites. So, you know, I'm -- I -- I'm fine with closing these observations on that basis. It's in the transcript that, basically, this is so -- sort of being kicked out to each individual situation, and I just hope we don't lose sight of that down the road, how this is being used.

CHAIR BEACH: Yeah, I agree with that, Bob. Is there a way to look at a couple examples, Tim? Do you know offhand where we could just close

these but maybe review a case or two where you know that this --

DR. TAULBEE: Well, let me provide a -- I do have a response for that. When we wrote this, this was originally going to be part of -- of one of the TBDs, and -- and we ended up pulling it out of a TBD because we recognized that it was really going to be generic across all the sites. So, we pulled this piece out to be generic, so that we could get the methodology down and get the science down and have you-all review that, and then we'd start putting it into TBDs. And so, we currently are working on one for Argonne West right now in using this. So, when that comes out, that would be one for -- it's really more for that work group to look at, but, you know, if this subcommittee wants to look at it too, us then that's, you know, appropriate, obviously. But it -- that's where we're first using it, okay, is in a particular OTIB looking at a particular application of this. So, does that answer your question there, Josie? There will be examples coming out. We don't have one right now. Let me put it that way.

CHAIR BEACH: That's perfect. And I -- you know, I think it would be appropriate for this subcommittee to review Argonne West in light of these two observations. So, I would be comfortable with closing these. I don't think, Bob, we're going to lose track of it because we're -- we're -- we're tracking professional judgment in a couple of areas. And I believe we're going to talk about that in the next segment here for how we can continue to document and track professional judgment. Others, comments, agree, or disagree?

MEMBER ZIEMER: This is Ziemer --

MR. BARTON: This is Bob. I'm perfectly comfortable with that.

MEMBER ZIEMER: This is --

CHAIR BEACH: Okay, thanks, Bob. And Paul?

MEMBER ZIEMER: Yeah. Yeah, this is Ziemer. I -- I'm comfortable moving ahead and that way. And I think, Tim, what you're saying, once you incorporated it, you -- the -- the -- say in the Argonne West, the dose reconstructor still has to make justification for using it, right?

DR. TAULBEE: It --

MEMBER ZIEMER: It's not gonna be used -- yeah. Right.

DR. TAULBEE: Right, (indiscernible) --

MEMBER ZIEMER: -- because this document by its very nature has to be justified when it's used.

DR. TAULBEE: That is correct, yes. However, I will say that dust -- dose reconstructor may just reference the Argonne West TBD in its application, and the details of why we chose an obstructed room versus a nonobstructed and the other parameters would be there in that TBD. Does that make sense?

MEMBER ZIEMER: Thank you. Yeah. Thank you.

MS. BEHLING: And Josie, this is Kathy. I -- I also was going to ask what application this report has had thus far. I don't think we have seen it actually referenced in a dost construction report, but I should maybe refer to Rose about that. And if we are going to close these, which I'm okay with that, but could I ask Tim to perhaps -- he said a lot of things there and perhaps he could summarize a response so that we have very clear -- very clear response and description in the BRS?

CHAIR BEACH: Yeah. Is that something you could do over email,

Tim?

DR. TAULBEE: Yes, I could.

CHAIR BEACH: Okay.

DR. TAULBEE: It'll be easier when I get the transcript, I will tell you that. Thank you.

MS. BEHLING: You liked your words.

CHAIR BEACH: Okay. So, Kathy, when the transcript comes out. And Tim, if you guys would coordinate and maybe just send it on to the -- the whole subcommittee so we know that it was done, otherwise we'll carry it on to the next meeting and just check in to see where we're at with it. But I --

MS. BEHLING: Okay.

CHAIR BEACH: -- but I think if -- yeah, you if everybody follows through, I think we're good to close and then just do the documentation.

MS. BEHLING: Okay.

CHAIR BEACH: And then keep track of Argonne West, if Tim would make note, and Kathy, I'm sure you'll remember that as well to -- to view -- review that just for this application, if that's approved, a tasking.

MS. BEHLING: Okay.

CHAIR BEACH: Any other comments, questions?

MR. BARTON: I guess -- this is Bob Barton again. Just to put a cap on it, I think our only issue is we haven't seen it in action yet. So, we'll have to take that on a case-by-case basis. I think that was the point of those observations.

CHAIR BEACH: Yeah, yeah. And I think that's the only way moving forward we can do it. We could leave these open in abeyance, but I don't

know that it would get us -- gain us any --

MR. BARTON: Oh, no --

CHAIR BEACH: -- measurable --

MR. BARTON: I'm perfectly comfortable closing them.

CHAIR BEACH: Okay.

MR. BARTON: I won't forget.

CHAIR BEACH: No, I know, I know. We do get bogged down though. So, yes. Thanks, Bob. Any other comments? Hearing none, we are agreeing to close observation one and two, and we will track it through Argonne West to start with.

And Kathy, you're on for accomplishments. Now, this is what is going to be presented at the December Board meeting. So, if we have any additional information that we'd like Kathy to put in a slide, this is the time to let her know to adjust this -- these slides; is that correct, Kathy?

MS. BEHLING: Yes. That's very correct. That's how I was going to start my conversation on this presentation. Yes. Josie asked me to prepare this for the December Board meeting and to talk about the accomplishments -- accomplishments that have been, you know, done for -- by the subcommittee. And as I present this, I -- I do tend -- certainly want your feedback, because this is what I'm going to be presenting to the full Board. So, I'm going to start out by saying that, first of all, there's going to be a lot of numbers in here, and these sort -- some -- can get a little boring. I didn't know of a pretty way of presenting this data other than to present it. But if anyone has any suggestions along those lines, please let me know.

So, I just want to start out by pointing out to the Board that this

subcommittee is responsible for reviewing a variety of technical documents. They include technical information bulletins, and I list there how many -- that there are currently 13 DCAS currently active TIBs. And when I say, "currently active," it's meaning that these documents are currently being used to either perform dose reconstruction or administer the program. And I hope I have classified these correctly. I decided to go into the virtual volume and look at -- in the control documents section to come up with a lot of these num -- these numbers and not to ask Lori again to help me with this. So, if there are any changes or if something needs to be tweaked a little bit, please let me know. But again, the subcommittee looks at TIBs and OTIBs. The TIBs are from DCAS and the -- there are 13. There was one Battelle currently active TIB, and 54 ORAUT, what we call, OTIBs, that are currently active. The subcommittee also looked at implementation guides. There are six. They look at PERs, and I think the subcommittee -- even when it's associated with a specific site, I think most of the PERs have been done under the subcommittee. We look at reports. And there again, there are DCAS reports and ORAUT reports, and I've identified them there.

Now, when I went into the virtual volume -- and the reason I reported 61 ORAUT currently active reports is because that's what exists there, but there are 12 of them, like the first 12 that are numbered, that were actually -- they were PowerPoint presentations that were given at various meetings and whatever, so they really don't count in this currently active report. They were just PowerPoints. And you also look at procedures, but both DCAS and ORAUT procedures.

This slide presents specifics about SDRs or the -- the subcommittee's

review of the TIBs. And now, please note that the number that you see here may not, and typically will not, match the currently active TIB listed in the previous slide. And that's because we've also reviewed TIBs that have since been cancelled. And I want to give you credit for -- for all of that work, even though they are no longer being used. So, there are, if I'm correct here, I think about 15 DCAS and Battelle TIB -- TIBs. Five were not reviewed, 10 were reviewed, and I'm getting -- that's 67 percent of the current total. Four of those reviews have been approved by the subcommittee, one of those TIBs was cancelled, and we have not presented any of these -- these TIBs to the review -- the approved TIBs to the full Board.

Okay. And some of the reviewed and approved were revisions that have been updated and therefore, the documents are not on the SP -- or the subcommittee's approved list. And perhaps I'm going to have to review that again and redefine our subcommittee approved list and -- to do maybe a more focused review of what needs to be maybe added to that particular list. So, there are 64 ORAUT TIBs, four have not been reviewed, 60 have been reviewed, 10 were reviewed under site-specific work groups, and 32 of the 60 have been reviewed -- have been -- the subcommittee on procedures reviews has approved those. Twenty have been canceled, and 14 have been presented to the full Board.

Implementation guides, there are only six. Three have not been reviewed, three have been reviewed. Two of the three have been approved by the subcommittee, and one has been presented to the Board.

Okay. PERs, there are a total of 90. Fourteen, this was back a long

time ago under Rhonda -- indicated that 14 of those 90 -- she determined that it was not necessary to review them for various reasons. Now, we can go back and look at those again, but I'm just working off of what was previously determined. So, that leaves us with 76 PERS. Twenty-eight have not been reviewed, 48 have been reviewed, which represents 63 percent of the total requiring review, and 33 of the 48 have been approved by the subcommittee, and we have already presented 23 of these subcommittee-approved PERs to the Board.

Okay. Reports, there are 11 DCAS reports. Seven have not been reviewed. These are mostly administrative in nature. Four have been removed, that's 36 percent, and all four have been approved by the subcommittee, and three of those have been cancelled, and the one remaining has been presented to the Board.

For the ORAUT reports, there were actually 22 that are the responsibility of the subcommittee. Twenty-nine of these reports were reviewed under site-specific work groups, mostly Savannah River specific report. Nine were not reviewed, 13 or fifty -- 59 percent have been reviewed. Two of three have been -- of the 13, I'm sorry, have been approved, and one report was cancelled, and we've presented one report to the full Board.

And then we move on to procedures. We have DCAS PROCs, there's 11. The subcommittee has reviewed four, or 36 percent of the total. Four of the four have been approved by the subcommittee, and three root -- three of those reviews have since been cancelled, and we have presented the one remaining to the full Board. There are 38 total ORAUT PROCs, again

66 percent have been reviewed, or 25 have been reviewed by the subcommittee, 21 of the 25 have been approved, and 12 of those have been cancelled, and we've -- we've shown or -- or presented seven of the PROCs to the full board.

Okay. Now, the other thing that we -- Josie asked me to do is not only say what accomplishments we've had with -- with the TIBs and these technical documents, but also to discuss this new review system that we have just started on these, what we called -- it got termed the DR templates. It's actually DR methodology and DR template document. And some of the wording in the DR methodology and DR template come -- I have to give Tim credit here -- come from Tim's presentation when he was discussing the Peek Street facility, and so he was gracious enough to allow me to use some of his words in these slides, and I appreciate that.

Initially, the TBDs were developed for large DOE sites with many claims, and I want to explain this to the full Board and to balance the claim processing, Battelle developed TBDs for smaller AWE sites. These TBDs have generally been reviewed by site-specific or a AWE work group. For the smaller DOE and AWE sites, NIOSH developed the DR guidance instead of a TBD that's not been reviewed by the Board. And this guidance has taken on the form of two-site specific documents, which are the DR methodology document and the DR templates, and the subcommittee has begun reviewing these documents using a similar review process, but a little less intense than for the larger DOE sites.

So, DR methodology guidance documents. We'll talk about that one first. If this is -- this has not been formally published, and it's not posted on

the NIOSH public website. And it was initially used to process a small number of claims from a particular site. The contents of this document is similar to the TBD, and it includes typically facility description, the external dose assessments, occupation -- occupational medical dose assessment, environmental dose assessment, and internal dose assessment.

Now, the template, again, this is not something that is formally post -- published or posted on the website. And the template is actually a dose reconstruction report that is color coded to indicate to the dose reconstructor what type of information should be included, or it provides direction for the dose reconstructor. And generally, it's specific to the claim being evaluated. And it uses as much site-specific information as could be compiled, and it explains how the dose reconstruction dose was reconstructed. You use a dose -- yeah, radiation dose reconstructed.

Okay. There are currently 25 sites where the CR guidance document, slash, templates are being used. Thirteen are AWE sites, and there are 12 small DOE sites. There are nice -- nine sites that are not included on this list because NIOSH indicated they have no current data. And there are currently 2508 total claims, and that was as of December 2019. And NIOSH does plan on developing a TBD for four of these 25 sites.

Okay. And what we have decided to do in our review process is -- is going to consist of the completeness of the data sources. We now have some access to the SRDB, so we can assess this completeness. We're going to look at consistency between the DR guidance and data sources, technical accuracy -- accuracy of the guidance and the scientific basis and adequacy of data. Then we make a comparison between the DR methodology and the

DR templates. And then our initial goal was to review one or two adjudicated cases. And in fact, we have already completed our review of the first two DR methodologies, slash, template documents, which we will be presenting to the subcommittee at the next meeting. And we did select two -- we only select the two cases for that. But I'm gonna pause here just to propose an idea that I had when -- in preparation for a dose reconstruction review methods planning meeting. David Kotelchuck met with Rose and I. Rose is -- we've turned over the reins. She's the -- the SC&A contact for this -- this work group, and he set up a meeting with us just to determine what -- what agenda we may want to set up to have a meeting. And so, since these -- this work group focuses on assessing the consistency of professional judgment, and one of the previous recommendations by the -- the work group with to assess, maybe, small AWE sites that don't have a TBD. It got me thinking that perhaps we could coordinate efforts in this subcommittee with that work group to include, maybe, more than one or two adjudicated cases. And we could include a section in this report on professional judgments that -- and that data would ultimately be shared with dose reconstruction review methodology work group. I'm not sure if this effort will be fruitful, but since the subcommittee is just in the beginning stages of these reviews, I thought it was worth exploring.

I've also discussed this with Josie and she was willing to present this to the subcommittee to see what your thoughts are. And in talking with David Kottelchuck, he seemed to be open to the idea also. So, the only thing I think is that if we really hope to collect any meaningful data, we probably will need to review perhaps as many as five or six cases. And what

we'll do is something similar to what we do in the blinds. We'll keep track of --

we have sort of developed in that work group a listing of key words or key elements to look at that may require professional judgment. And we could include, as I said, a section in this report and also develop maybe a spreadsheet to keep track of these. I just thought doing a few more cases from one site, we may be able to make some comparisons since they're all from -- from one site and perhaps actually get some meaningful data from that.

So now, in moving on, so how is the subcommittee tracking the progress without access to the BRS. And so, we have developed a temporary BRS, which consists of maintaining two tables for tracking document reviews. The first is the BRS tracking matrix summary, and that's just an overview of the number of findings and observations and their status. And then the second is the BRS tracking matrix where we provide details of the resolution -- resolution process for each of the findings and observations.

So, on this slide, I provide what actually gets tracked on each of these tables for the BS -- the BRS tracking nation -- matrix summary. We, obviously, there's total findings and total observations, and then we provide the status of each of the observations and finally findings, obviously, whether they're open, in progress, in abeyance, or transferred. And then findings and observations, the closed dates for those and whether the findings have been presented to the full board. And for our details --details, they're maintained in the BRS tracking matrix, and they include a finding or

observation number, a date, a description, an SC&A follow-up action, and we provide NIOSH's response and follow-up action, and ultimately, the subcommittee's actions, any follow-up actions and the resolution. We also list the finding status, the current finding status, and ultimately the Board action and resolution for each of the documents.

So, that's what I am planning on presenting to the full Board in December, and I will take any suggestions, recommendations, or anything else. And I guess Josie would probably also like to hear people's thoughts about the professional judgment issue.

CHAIR BEACH: Thank you, Kathy. Appreciate that review. And any comments questions? Paul, if you have any let's start with you.

MEMBER ZIEMER: Okay. I -- I'll start with a comment. I think it's a great summary. It's -- it's good for us to see what we're doing to start with, and certainly be nice for the Board to get an overall picture of what's been done and the progress that's been made in reviewing the documents. So, I really compliment you, Kathy, for tracking all these things for us, particularly during this period when you don't have access to the kind of computer backup that we would like to have.

I -- I do want to ask -- well, in -- in -- you would probably add something about the professional judgment and your one slide on methodology and template; us that right?

MS. BEHLING: Yes, if it's something that you all agree with, and I also -- prior to doing that, I -- I was thinking that I would go back and just talk to Dr. Kotelchuck, and based on my understanding from our -- our discussion, he seemed to be open to the concept, and I just want to go back

and verify that with him also.

MEMBER ZIEMER: Right. Well, the additional comment I'll make at this point is I -- I -- I think you probably will just need to try that on a couple of cases that as you've indicated, and it will determine how (indiscernible).

MS. BEHLING: Agreed.

MEMBER ZIEMER: -- the template review. I have another question though. On slide 11 where you talked about the statistics from the -- in the guidance documents, you mentioned the 25 current sites and 2500 cases as of December 2022, and I'm not sure exactly what you're counting. It seems like an awfully small number of cases. What cases are we talking about?

MS. BEHLING: These are the --

MEMBER ZIEMER: Per site, on average?

MS. BEHLING: Yeah, I'm --

MEMBER ZIEMER: Are you talking about active -- active cases or what?

MS. BEHLING: Yes, and Tim can jump in here. Actually, what I wanted to do for this slide is include the actual sites, the locations, and the number of claims for each site that Tim had presented to the subcommittee, but my production editor wouldn't -- said that I wasn't allowed to do that because the 508 compliance issues. So, what I ended up doing is making a summary and putting the statistics on this particular slide, but that -- yeah, that represents at least the 25 sites that are listed in Tim's table. First one was Metals and Controls and that was 476 claims currently or as of, I guess, December of 2019. And then the claims reduce from there. And obviously,

the first -- the claims or the -- the sites with the highest number of claims that Tim presented, they are going to be doing a site profile for those, so we will -- we probably will not discuss that in the subcommittee until that site profile is being done, but so they wouldn't be included. But yeah, that's a total number.

MEMBER ZIEMER: You're -- the 25 sites are sites that currently have no site profile? What are the 25 sites?

MS. BEHLING: Okay, I'll tell you what, one of -- the best thing for me to do --

MEMBER ZIEMER: Roughly.

MS. BEHLING: Okay. I'm sorry?

MEMBER ZIEMER: I don't need to know everyone, but -- all right. You're not including the major sites here.

MS. BEHLING: No.

DR. TAULBEE: No.

MS. BEHLING: And it's a matter of fact, what I can do and I -- it's -- I'm glad you asked this question because it's now prompted me. I can provide you and the full Board with a separate handout that we can refer to. I can create this table that Tim had presented and have that submitted as a handout, and that it can be referred to when I talked about this particular slide. But to answer your question -- and it sounds like that's something you may want me to do for the full Board meeting -- but in answer to your questions, the first four sites on Tim's list was Metals and Controls, BWXT, General Electric, and Wah Chang, and thereafter we started with Amchitka Island and Westinghouse Nuclear Fuels and Albuquerque Operations Office.

These are a few. Now, you as subcommittee has -- have already tasked SC&A to review the Amchitka Island and the Albuquerque Operations Office, and we will be presenting that review at the next meeting.

MEMBER ZIEMER: Okay, yeah, thank -- thanks. So, that -- that makes sense now. Twenty-five hundred cases -- cases for 25 sites, so the average number of cases per site, roughly 100. These are all small.

MS. BEHLING: Yes.

MEMBER ZIEMER: Yeah. Okay.

DR. TAULBEE: And -- and Paul, this is Tim. If I could interject there. These top four sites all have well over 100 each. Many of the --

MEMBER ZIEMER: Yeah, I'm talking --

(Whereupon, Dr. Taulbee and Mr. Ziemer speak simultaneously.)

MEMBER ZIEMER: -- averages. Yeah, there's -- yeah, some have very few.

DR. TAULBEE: Most --

MEMBER ZIEMER: Right. Gotcha.

DR. TAULBEE: -- have less than a hundred, --

MEMBER ZIEMER: Yeah.

DR. TAULBEE: -- way less.

MEMBER ZIEMER: Yeah.

CHAIR BEACH: Kathy, this is Josie. Just in thinking about this particular site -- slide, a handout would be okay. I don't know if -- if we need it. If just rewording this slide to make it a little more clear for somebody looking at it. What -- what -- what do -- what do you think, Paul, since you brought it up?

MEMBER ZIEMER: Yeah, I think if you just describe what's -- what the 25 current sites -- what -- what are we talking about, because the first thing that pops into people's minds are the big sites. Make sure --

CHAIR BEACH: Yeah.

MEMBER ZIEMER: -- that they know that -- yeah, these aren't the -- these aren't the Los Alamos or the Oak Ridges or anything like that.

MS. BEHLING: Okay. Great -- good idea --

CHAIR BEACH: Maybe just a little bit more information clarifying, potentially.

MEMBER ZIEMER: Yeah, I don't know that they need -- they don't necessarily need the list of them all.

MS. BEHLING: Okay, thank you.

CHAIR BEACH: Yeah. Okay. Anything else, Paul?

MEMBER ZIEMER: Oh, no, I -- I appreciate the presentation.

CHAIR BEACH: Okay, thanks. Loretta, anything from you? Questions, comments, additions?

MEMBER VALERIO: No, no, I'm good. That was actually a really good presentation. So, thank you, Kathy, for that.

MS. BEHLING: Thank you.

CHAIR BEACH: And Torrie, what do you think?

MEMBER CASSANO: I am good. I like the idea of doing something about professional judgment. The question I have is if we're going to do any kind of review of these, you know, a point review or whatever we do of some of the dose reconstructions, are we going to just make general comments or do we -- the person doing it get feedback if they find an issue? How -- how

--what -- what -- how does that -- how would that work?

MS. BEHLING: I --

CHAIR BEACH: Kathy, I could tackle that one, --

MS. BEHLING: No, go ahead.

CHAIR BEACH: -- I'll let you --

MS. BEHLING: Go ahead.

CHAIR BEACH: No, no, go ahead, because it's a little bit different than the dose reconstruction professional judgment.

MS. BEHLING: Right. And I'm just going to be pointing out these judgments, and what we're most concerned -- or what we're trying to do is find avenues to assess the consistency of -- of these judgments. And that's very, very difficult to do unless you have two cases or several cases from the same site that have very similar job categories and all of those things. And it -- it's very difficult to do, but I just thought this might be an avenue. I would -- will collect that data. And Josie is also a part of that work group, and I just thought it would be something we will discuss here, but it would be something that would be transferred over to the dose reconstruction review methods work group, and they delve into it more so. This is more of a collaborative effort between the subcommittee and the work group. It's a little unprecedented, but I thought we had the opportunity to -- to do that. And since -- especially since Josie as part of both of these, the subcommittee and the work group, it would make sense to do it.

CHAIR BEACH: Okay. And then Kathy, the cases -- you were talking about starting with five. And where would those cases come from? What -- is there a specific site?

MS. BEHLING: Well, they would be done along with our review of this DR template and DR methodology.

CHAIR BEACH: Okay.

MS. BEHLING: So, when we do Norton Company, there're currently 82 claims there. And when we do the review of the DR template and the DR methodology, and we tack on to that a review of some cases, they would be picked from those 82 cases that currently --

CHAIR BEACH: Okay. That -- that's what I thought, I just wanted to make sure we were all clear.

MS. BEHLING: Okay, sure.

CHAIR BEACH: Okay, great. And then I have a question. Back on slide five, you talked about the 90 total PERs and 14 of them were determined not necessary. So, back when Wanda was chair, and I don't know how long ago those were determined, I would kind of like to go back and -- I know it's extra work for you, but why those 14 were determined not necessary unless you or Paul -- I know Paul's been with this subcommittee since the inception.

MS. BEHLING: Okay. If you -- if you want my opinion, I actually when -- when I when I pre -- prepared these slides, there were some PERs that were determined that were not necessary that I said to myself, hmmm, I'm not even sure we looked at the DR guidance for some of these sites. So, I thought also it might be a good idea just to go back and revisit them and have you make a decision as to whether we want to reconsider looking at them.

CHAIR BEACH: Yep, yes. I think that we -- I do -- would like to see

that happen. Others agree? Disagree?

MEMBER CASSANO: Agree.

MEMBER ZIEMER: Yeah, this is Paul. And I honestly don't -- don't remember why that occurred early on. So, I -- I agree. We should go back and see -- at least --

CHAIR BEACH: All right. So, --

MEMBER ZIEMER: -- find out what's going on and educate ourselves on that issue.

CHAIR BEACH: Okay, thank you. Loretta, you agree with that?

MEMBER VALERIO: I agree.

MEMBER VALERIO: Okay, thank you. And I was just -- Rashaun told me, Tim, you have your hand up. I can't see that, so I apologize. Did you have a comment or question?

DR. TAULBEE: I have a question for Kathy. On slide four, you scrolled up one -- there. You said that only three of the IGs had been reviewed. I have the four of them had been, and I guess my question is that the SPRs didn't review the fourth one, or?

MS. BEHLING: Okay.

(Whereupon, Ms. Behling and Dr. Taulbee speak simultaneously.)

MS. BEHLING: Okay. I have to go and look at that myself. Bob Barton and I had a little bit of a conversation on --

MR. BARTON: Yeah, this -- this -- this is -- this is Bob that might be because -- Tim, you might be referring to ID-6, which was --

DR. TAULBEE: You are correct, yes.

MR. BARTON: -- the SEC issues work group. So, it really didn't pass

through the procedures work -- procedures subcommittee. I think -- I think that's what you're referring to. So, we can certainly --

DR. TAULBEE: Right.

MR. BARTON: -- correct that.

MS. BEHLING: Okay. So, --

DR. TAULBEE: Because it gives the impression it hasn't been reviewed at all, but the full Board reviewed it -- well, after the subcommittee, and then the full Board approved it. So, there's nothing --

MS. BEHLING: Okay.

MR. BARTON: That's correct. And we -- we can -- and we can -- we can modify that slide.

MS. BEHLING: Yes. I apologize for that. Yeah, I wasn't sure we --

MR. BARTON: It was just -- it was discussed in a different venue. And so, okay.

MS. BEHLING: Okay, and I apologize. I will make the --

CHAIR BEACH: Oh, no worries. That's why we're having this --

DR. TAULBEE: Okay. Thank you.

CHAIR BEACH: -- that's why we're having this conversation. If -- when you send out the re-reviewed slides prior to the December 7th meeting, if everybody would get those in or look at it, so that if there's any other additional comments or changes. I have one other -- there's nothing in here on how often the subcommittee meets. Is that something that we want to share? Is that important? Anybody have any thoughts on that? Well, hearing none, I guess that's not important, correct?

MEMBER ZIEMER: Well, maybe you just -- were you talking about

frequency or just giving the dates?

CHAIR BEACH: Yeah, frequency and the dates, because we've -- we've been meeting fairly regularly. I -- and -- and on that same note, how far back do these accomplish -- accomplishments go? This -- this has quite a history, correct, Kathy?

MS. BEHLING: Yes, it does.

CHAIR BEACH: So, it's like if -- and I don't know if it's important to note that we've met, because that's obviously something people can see. But like, how -- what's the history of how far this review goes back? I mean, that might be just a bullet point. And this is work over the last 10 years, 15 years, eight years. You know what I mean? Because it's -- it's quite a long time span.

MS. BEHLING: Yes. Yes. Good point. I will add something.

MEMBER ZIEMER: Well, Kathy, I think you're covering everything back to when the subcommittee was formed, are you not?

MS. BEHLING: That's what I was trying to do, yeah.

CHAIR BEACH: Okay.

MEMBER ZIEMER: Yeah.

CHAIR BEACH: That -- yeah, that's a long, long, long history. Nice work. Thank you. Any other comments or questions? Okay. Hearing none, can we go ahead and move on? So, our next topic is preparation for the full Board meeting, the tech -- the technical guidance documents.

PREPARATION FOR DECEMBER FULL-BOARD MEETING AND PREPARATION FOR APRIL 2024 FULL ABRWH MEETING: REVIEW OF

TECHNICAL GUIDANCE DOCUMENTS READY FOR FULL-BOARD APPROVAL

MS. BEHLING: And can you see my screen?

CHAIR BEACH: Yes.

MS. BEHLING: Okay. Here is our current list. And quite honestly, as I went through this, it was a lot of digging and trying to compare my spreadsheet to documents that were out there on the virtual volume and trying to ensure that I captured everything onto this SPR-approved document list. And we always go to this because we are trying to determine for the, now it will be the, I guess, April full-Board meeting, which documents we want to present to them. And we need to go all the way back here to --

CHAIR BEACH: Page 4.

MS. BEHLING: -- page 4. Right. And I will say, the one thing I determined after I put this out, that there were two PERs that we have recently closed that didn't get on to this list. So, what we really have remaining is -- and these fell under, initially, that not suitable for matrix comment because I thought they were a little bit complex. There's actually -- there's 10 listed on this report. I'm going to be adding two more because they were recently closed by the subcommittee.

And so, if you look through the -- this list and this next page, I know this is small, some of these -- these previews had a lot of findings. OTIB-54 has 36 findings. Now, since I'm going to be adding two to this, that would be a total of 12 that we could present to the full Board. I'm wondering if you

might want to consider doing four and including one or two that have a lot, and so we'll do four in four -- in three segments, if that --

CHAIR BEACH: Yes.

MS. BEHLING: -- makes any sense?

CHAIR BEACH: That -- that makes very good sense. Yes.

MS. BEHLING: Okay.

CHAIR BEACH: And -- and then it does it -- yeah, an hour and a half is -- is long enough. So, we don't want to go over that mark. So, breaking it up into segments, I think is reasonable.

MS. BEHLING: Okay. And so, I'm just thinking if we select OTIB-54, we may want to select three others that don't have quite as many findings.

CHAIR BEACH: Okay. Can you -- can we do this via email, or do you know offhand which four would go together in the three different segments? Because I -- I don't think it really matters as long as we're moving through them. As long as -- you know what I mean. You're the one that has the information on what goes together. Does anybody else have a question or comments on that? Okay. Hearing none, Kathy, I think we can depend on you to break those out appropriately.

MS. BEHLING: Okay. Thank you. I will --

CHAIR BEACH: Next, (indiscernible) --

MS. BEHLING: -- do that.

CHAIR BEACH: -- and then what about the ones that say we have some findings in abeyance? Those wouldn't be on this list, correct? Oh, wait, they were presented already. Okay.

MS. BEHLING: Yeah. The only other thing that I do -- that I'm sorry -

- that I do need to do is -- the very last one on the list is OTIB-06, and I mentioned it before, there were certain -- some observations that didn't get well documented, and I'm going to keep that one open. I'm actually going to move that off of this list back to just our BRS tracking and make sure that those all get resolved. They were just more clerical-type issues, but I think that we want to track those and -- and follow up with them.

And I can remind Lori of what those were if she if she needs before we tried to present that to the Board. But other than that, the next time around, you may see a few added documents here because it seems to me that maybe I didn't include everything from very long ago.

CHAIR BEACH: Okay. Okay. And I think we're going to meet again before the April meeting, so we'll be able to discuss this again.

MS. BEHLING: Okay. And I will select four, and I will send an email to all of you and -- and then you can determine if those are appropriate. Is that how you want me to proceed?

CHAIR BEACH: Yes.

MS. BEHLING: Very good.

CHAIR BEACH: And then I had a comment on the last topic, which I failed to mention. So, I was looking to pull it back up again. Give me a second. It's a really minor -- down on your BRS tracking make -- matrix in the summary, can -- can you just add to the heading of that, that this is a temporary?

MS. BEHLING: Yes.

CHAIR BEACH: And maybe just a note of -- that we're tracking because we don't have access to the actual BRS?

MS. BEHLING: Yes.

CHAIR BEACH: So, that was a minor --

MS. BEHLING: Yeah, that's --

CHAIR BEACH: -- just for clarification. And is there any word on when that is going to be available to us? Has anybody heard?

MS. MARION-MOSS: This is Lori, Josie. No, --

CHAIR BEACH: Hi, Lori.

MS. MARION-MOSS: -- I haven't. We haven't received an update as of yet.

CHAIR BEACH: Okay. It's been a while since we've heard about that, so. Okay. Any comments on the last subject, not -- not the one I just brought up, but on the -- how we're going to move forward with presenting to the full Board? Everybody in agreement with that?

MEMBER CASSANO: Yes. This is Torrie.

MEMBER ZIEMER: Yes. Yes.

CHAIR BEACH: Thanks, Torrie.

MEMBER VALERIO: This is Loretta.

CHAIR BEACH: I think we have -- go ahead. Okay.

NEWLY-ISSUED GUIDANCE AND SUPPLEMENTAL TOPIC

CHAIR BEACH: We have one last item, the newly issued guidance and supplemental topics, and this is where we will do our tasking, correct?

MS. BEHLING: Correct.

CHAIR BEACH: Okay.

MS. BEHLING: Okay. Are you ready for me, Josie?

CHAIR BEACH: Yes, please, go ahead.

MS. BEHLING: Okay. Okay. I'm sorry. I didn't want to jump ahead. Okay.

CHAIR BEACH: No, no, no. you're good.

MS. BEHLING: Okay. Yeah, this handout, I'm -- I'm keeping the list. I have just -- of all of these DR templates that we talked about earlier, and I've just marked on here now -- I've modified this to say which ones have been reviewed, which ones are under review, and which ones are going to have a TBD assigned to them and that type of thing. So, I -- considering that we may want to add this professional judgment section onto this -- these documents, I was thinking that maybe you wouldn't want to assign a new DR template until this coordination between the DR review committee -- work group and the subcommittee agree that that's how we're going to proceed. But so, with that in mind, I did provide you with quite a big list here of documents that we can review in table two. Do you agree that we will hold off on assigning a new DR template and DR methodologies review?

CHAIR BEACH: Yeah, and that -- we don't even have a date for the other subcommittee or the other work group to meet, I think, he's out until March now.

MS. BEHLING: Right, I saw that. Yeah. Yeah.

CHAIR BEACH: So, this sub -- subcommittee agrees that we will start tracking the professional judgment. I -- I guess, I'm not sure why we need to wait. If we agreed to track them -- if they determine to use them or not use it, we can still go ahead with the tracking; is that correct?

MS. BEHLING: Okay. I don't know why not. And I don't know why

the work group wouldn't want us to do that. I don't know if Rose has any comments. I'm going to put you on the spot --

MS. GOGLIOTTI: I think that's fine. I don't see why anyone would have an issue. The full Board might want to weigh in and still though.

MS. BEHLING: Okay. And that's something I'll be talking about in December, so.

MS. GOGLIOTTI: Yeah.

MS. BEHLING: I think that's a good idea.

CHAIR BEACH: Yeah. And we can -- we could certainly hold off until then.

MS. BEHLING: Okay. Okay. So, the doc -- the handout that I am displaying now, and that's the sites of unreviewed DR methodology, templates, and reports on page -- where are we -- oh, page four. First of all, this list contains all of the PES that we discussed today. PER-40, PER-51, PER-67, and PER-83 where we presented our subtasks one through subtask three reviews. And now, in those reviews, we also identified cases that we're going to need to look at for the subtask four. So, I have those listed on this table.

CHAIR BEACH: Okay. And --

MS. BEHLING: Are you okay with that? Are we good to ask NIOSH to -- to get us some cases for those reviews?

CHAIR BEACH: I would agree with that. Others?

MEMBER ZIEMER: This is Paul. I -- I just wondered if -- if NIOSH -- NIOSH has seen, sort of, your suggested criteria. How does that look? How did those look from NIOSH's point of view? Any issues or changes or

concerns?

DR. TAULBEE: This is Tim. One --

MEMBER ZIEMER: I don't know if I'm talking to Tim or -- or --

DR. TAULBEE: I'm gonna let Lori weigh in here, but before I do, I do have a -- I guess, a concern or thought about PER-51 and PER-83, and I know they're for different reasons. But, you know, the -- we -- I would -- I would hate to have you guys look at subtask four for PER-51 and get cases and basically have the same comments that resulted in the revisions of -- for PER-83. So, they're really related to each other is -- is what my point is. But that's where I have a concern. I'm not saying to not do it, I'm just saying if you review PER-51 and you come back with, you know, comments about the, I think, it was recycled uranium under PER-83, well, we know that, and we've made those changes.

CHAIR BEACH: Okay. Good comment, Tim. Is -- is it something we can combine? Does that make any sense?

DR. TAULBEE: I think we can. Go ahead, Kathy, or whoever.

MS. BEHLING: Yeah. This Kathy. I'm sorry. I like Tim's comment there also, provided -- and -- and Ron, maybe you can weigh in, because I think we wanted -- we had different criteria, and if we see something that looks like uranium, we acknowledge that that's been uncovered and not make it a finding --

CHAIR BEACH: Right.

MS. BEHLING: -- combined.

DR. BUCHANAN: Yes, I think that'd be okay. If I do the cases, then I'm aware of what I flagged in the review, so -- of 83. If I did 51 cases, so I

would then not flag that again.

CHAIR BEACH: Yeah, that makes sense. Okay. So, combine those two and Ron'll handled both of them. And I guess Lori's the one that looks at the criteria. And if she -- Lori, if you have any questions, you can reach out, correct?

MS. MARION-MOSS: That's correct. I'll reach out.

CHAIR BEACH: All right. That sounds good. Thanks, again, Tim, for pointing that out.

MS. BEHLING: Okay. And the remaining documents on list are just ones I went through and I said, hmmm, we haven't looked at Electro Metallurgical Company to do -- work group hasn't met or anything since 2012, so I thought it would be interesting to go back and look at the revisions to -- that's why I selected some of these. And so -- so, there's -- let's see here. There's one, two, three, four, five additional reviews to do -- PER reviews and OTIBs.

CHAIR BEACH: And those are -- what page are those on?

MS. BEHLING: Okay. They're on page 4 and 5. They got intermingled --

CHAIR BEACH: Inter -- okay. They're intermingled, okay.

MS. BEHLING: Yeah. So, it's PER-68, --

CHAIR BEACH: Okay.

MS. BEHLING: -- Electro Metallurgical Company, PER-75. Battelle Memorial Institute, OTIB-36, which is actually an old one, but it's an internal coworker data for Portsmouth. And I went back and it did it for both the internal and external, the OTIB-36 and O -- OTIB-40. Not sure they ever

got reviewed. I could not find where it got reviewed under the gaseous diffusion work group. And so, I thought maybe we should be taking a look at that.

CHAIR BEACH: And then that includes 93?

MS. BEHLING: Right, and 93. The two Portsmouths, which is 36 and 40, and then 93 is conversion of committed effective dose to annual dose on new document.

CHAIR BEACH: I'm comfortable with those other members. Other members? Paul? Loretta? I think Torrie might have left us.

MEMBER ZIEMER: This is Paul. I'm okay with --

MEMBER VALERIO: This is -- This is Loretta. I'm okay with it.

CHAIR BEACH: Okay. So, let's recap. So, we're tasking subtask four for 40, 51, 83, 67, and then the additional OTIB-36, 40, and 93; is that correct? Did I capture all of them?

MS. BEHLING: PER-68 and PER-75.

CHAIR BEACH: Yeah. I had those on my other list. Okay. Thank --

MS. BEHLING: I didn't --

CHAIR BEACH: -- you. Okay. Yeah. Yep, I'm good. Okay. So, PER-68, 75, and then the other OTIBs, okay. I'm comfortable with that.

Rashaun, any issues with that tasking?

DR. ROBERTS: No, none.

MEMBER ZIEMER: Would you mind repeating besides 68 and 75, what were the OTIBs?

CHAIR BEACH: Okay. OTIB-36, OTIB-40, and OTIB-93.

MEMBER ZIEMER: Thank you.

CHAIR BEACH: Okay. And then the others are the subpart four -- subtask four, excuse me. 40,51, and 83 and 67. Okay. What else? That -- I guess our next would be choosing a date for our next subcommittee meeting unless there's something I missed. I think that wraps up what we had on our agenda today.

MS. BEHLING: I have nothing else to add.

CHAIR BEACH: Thank you. Kathy, good work, as always, from --

MS. BEHLING: Thank you.

CHAIR BEACH: -- the SC&A team and for your keeping us on track.

MS. BEHLING: Thank you.

CHAIR BEACH: Rashaun, do you want to go ahead and we can choose a date? Prior to --

DR. ROBERTS: Sure.

CHAIR BEACH: Prior to the April meeting would be good. Maybe mid-March. Is that enough time?

DR. ROBERTS: It -- it is from the FRN standpoint. You know, in trying to schedule some of these other meetings, folks' availability may vary, but I'm -- I'm okay with mid-March.

CHAIR BEACH: Okay.

DR. ROBERTS: So, the -- are you thinking the week of March 11th? The week of March 18th?

CHAIR BEACH: I was just going to quickly look. Yeah, we can do the first week, second or even the third week. I -- well, let's -- let's shoot for the week of the 11th. That way if we have anything, Kathy has time to prepare for this Board meeting.

DR. ROBERTS: Okay. And are we looking at Tuesday, Wednesday, Thursday?

CHAIR BEACH: I'm okay with any of those. Preferably Thursday, the 14th. How does that date look for others? I know you'll have to get back to Torrie.

DR. ROBERTS: Yeah.

MEMBER ZIEMER: I'm out on Tuesday. Wednesday or Thursday would be good.

DR. ROBERTS: Okay. And Loretta?

MEMBER VALERIO: Those dates work for me.

CHAIR BEACH: Let's --

MEMBER VALERIO: (Indiscernible) --

CHAIR BEACH: -- for the -- I'm sorry, go ahead.

MEMBER VALERIO: I'm sorry. Thursday is definitely preferable though.

CHAIR BEACH: Okay.

MEMBER VALERIO: Okay.

DR. ROBERTS: Okay. So, we're -- the 11:00 a.m. start time and running to about 4:30 again?

CHAIR BEACH: Yes.

DR. ROBERTS: Okay. Okay. So, we'll just set that as the tentative date. And as you said, I will check with Torrie to see if she's -- she's available.

CHAIR BEACH: Can we pick -- well, an alternative might be the 21st. How's -- NIOSH, those dates work for you?

DR. TAULBEE: The week of the 11th of -- is looking like it'll work for me. The other -- the week of the 18th, probably not, but I'm not sure. There's some --

CHAIR BEACH: Okay.

DR. TAULBEE: -- things up in the air for me right now.

CHAIR BEACH: Okay. Well, let's just leave it at that one day. And if that doesn't work Rashaun, we can regroup via email.

MS. MARION-MOSS: What's the date again, Josie?

CHAIR BEACH: March 14th.

MS. MARION-MOSS: Okay.

CHAIR BEACH: And it's the 14th doesn't work, maybe the 13th, so -- but we're shooting for the 14th.

MS. MARION-MOSS: I will be unavailable on the 13th.

CHAIR BEACH: All righty. The 14th it is. Thank you, everyone.

Rashaun, anything else we need --

DR. ROBERTS: No, --

CHAIR BEACH: -- before we adjourn?

DR. ROBERTS: -- I think you've got it covered.

CHAIR BEACH: Okay. Thank you everyone for your hard work. We really appreciate it moving forward. And I think we can close.

(Whereupon, the meeting was adjourned at 3:09 p.m. EST.)