

This transcript of the Advisory Board on Radiation and Worker Health, De Soto Work Group, has been reviewed for concerns under the Privacy Act (5 U.S.C. § 552a) and personally identifiable information has been redacted as necessary. The transcript, however, has not been reviewed and certified by the Chair of the Hanford Work Group for accuracy at this time. The reader should be cautioned that this transcript is for information only and is subject to change.

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U.S. Department of Health and Human Services
Centers for Disease Control
National Institute for Occupational Safety and
Health
Advisory Board on Radiation and Worker Health
Santa Susana Field Laboratory Work Group & De
Soto Working Group
Thursday
October 15, 2020

The Work Group convened via Video Teleconference,
at 10:30 a.m. EDT, Phillip Schofield, Chair, presiding.

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Present:

Phillip Schofield, Chair
Henry Anderson, Member
Josie Beach, Member
R. William Field, Member

Also Present:

Rashaun Roberts, Designated Federal Official
Nancy Adams, NIOSH Contractor
Terrie Barrie
Bob Barton, SC&A
D'Lanie Blaze
Rose Gogliotti, SA&A
Milton Gordon, SC&A
Lara Hughes, DCAS
Jenny Naylor, HHS OGC
Chuck Nelson, DCAS
Lavon Rutherford, DCAS
John Stiver, SC&A
Tim Taulbee, DCAS

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Proceedings

(10:32 a.m.)

Welcome and roll-call/introductions

Dr. Roberts: Welcome to the Advisory Board on Radiation and Worker Health. This is the Santa Susana Field Laboratory Area IV and Desoto Working Group. I'm Rashaun Roberts. I'm the Designated Federal Official for the Advisory Board. Before we get into the Group's business, let's start with roll call and address conflicts of interest. And I'll go ahead and speak on behalf of the members of the Board who sit on this Working Group.

Really in order for them to be on the Working Group, they cannot have conflicts. And with that, let me do roll call starting with our Chair and go in alphabetical order.

(Roll call.)

Dr. Roberts: Before I hand the floor over to Phil who chairs the Work Group, Phil Schofield, in order to keep everything running as smoothly as possible, and so that everyone speaking can be clearly understood, please make sure that you mute your phone if you're on the phone, unless, of course, you need to speak. If you don't have a mute button on the phone, you're going to need -- (telephonic interference) --- there is an example. You need to mute your phone.

If you're on Zoom, the mute button is in the lower left hand corner of the screen. If you're on the telephone press *6 to mute and *6 again to get yourself off mute. Okay, so if everybody could periodically check and make sure that you're on mute.

The agenda and the presentations that are relevant and other materials that are relevant to today's

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materials can, of course, be found on the NIOSH/DCAS website. All of the materials were sent to the Board members and other staff prior to the meeting.

You'll see that today is a pretty full agenda. It can be difficult to know how long the meeting will run and that said, I did want to let everyone know that due to commitments that I have, we'll need to end the meeting at 5 o'clock Eastern, if it runs that long. We can, of course, schedule another meeting to cover any items that we were unable to cover today.

And also, if any of the Board members need to sign off before the meeting is over, if you would just please let us know.

So with that, let's go ahead and get started and I will turn the floor over to Phil.

Chair Schofield: This is Phil Schofield. As Shaun said, I have no conflict. There will be a chance for the public to comment later on. If you please hold your questions until the presentations have been presented, we'd appreciate that. And I assume Lara is going to be the first one presenting for NIOSH.

Dr. Hughes: Yes. Let me just try to share my screen.

Member Field: I see Henry is on now.

Member Anderson: Yes. Sorry to be a little late.

Dr. Hughes: Okay, can you see the first screen and presentation load?

Dr. Roberts: Yes.

Chair Schofield: You're good to go, Lara.

Area IV SEC Petition #235

Dr. Hughes: Okay. So this is the NIOSH presentation

for SEC-00235, Area IV for the Santa Susana Field Laboratory. This is a presentation that's based on a White Paper that we sent to the Advisory Board and the Work Group in February of this year. And it was meant to be a summary of the efforts that were done for this petition because the discussion has been going on for several years and there has been a lot of discussion back and forth, a lot of papers produced. It was intended to be a summary of the effort and hopefully, it helps the Work Group in the decision-making process.

So I'll give you a brief overview and also talk about the current status of the efforts and some petitioner submissions we have reviewed.

And we'll have questions and discussion.

Yes, was there a question?

Dr. Roberts: I'm sorry, Lara. I'm hearing something in the background. I don't know if anyone else can hear it, but again, just to remind people to please get on mute. Thank you.

Dr. Hughes: I can sort of hear myself talking in the background which is very distracting, but --

Dr. Roberts: That's what it is. Somehow your mic is picking up you again.

Dr. Hughes: Okay, I'm not sure what I can do about that. I can try to switch to computer.

Dr. Taulbee: I think the feedback is coming from the person whose phone ends in 949. You can see that as you're speaking that box is lighting up to where that person is not on mute.

Dr. Roberts: So if you're on the phone, press *6 to mute or use your mute button. Thank you.

Dr. Hughes: I think this is better now. Can you tell? I think it sounds better to me. So I'll keep going. Is that okay? All right.

So a little bit of background. We've all heard this before, but just a refresher, Area IV of the Santa Susana Field Laboratory is a site or part of a site that encompasses about 2,850 acres and is located in northwest of Los Angeles. Does this forward? Does the presentation forward for you?

Dr. Roberts: It hasn't, no.

Dr. Hughes: Oh, okay.

Dr. Roberts: We're still on the main slide.

Dr. Hughes: Because mine does. I'm not sure. Let me just -- okay, here we go. I have two screens and they're both shared and I'm trying to decide which one is -- is this better? I apologize. Every time I do Zoom, it's different.

So the site is located about 30 miles northwest of Los Angeles. It is divided into four administrative and operational areas and they're called Area I through IV.

Area IV is the area I've highlighted in blue in the upper left corner and that is about 290 acres. And that is the only site that is covered under this program because that's the site that had nuclear DOE operations that are termed eligible for the site. The site eligibility again, that's not done by NIOSH. That's done by DOE/DOL.

So the operations at Santa Susana, there were DOE operations from 1954 through 1988 and then remediation from 1988 through the present. The DOE operations consist of reactor testing and development and nuclear support operations, such as nuclear fuel fabrication, energy and non-nuclear

research and development, also, at the back end of the process, removal of fuel from reactors and the disposition thereof.

The remediation period consisted of the D&D of the structures and components, the characterization, treatment, packaging, and temporary storage of radioactive and mixed waste.

As for the SEC petitions for the site, there are four. The current one is SEC-00235. This petition has been presented to the Board in 2017, I believe, and is currently with the Board and NIOSH has not recommended a Class to be added to the SEC. NIOSH's conclusion was that dose reconstruction was feasible for the evaluated period from 1991 through 1993.

There are three prior SEC Classes that have all been added to the SEC. And those are all based on one form or another of internal dose reconstruction and feasibility which results in the entire operational period up until 1988 being in the SEC Class.

So NIOSH has produced a number of documents along with this petition. First was the SEC-00235 Evaluation Report. That was published in May of 2017. When this Evaluation Report was presented to the Board, it was handed to SC&A who did the review of the Evaluation Report and raised a few issues that we did not address in this report. One was it was suggested that we look at the air sample data for this evaluated period to rule out that there was some elevated aerosols, to demonstrate that the air sample results were in line with the remainder of the remediation period. Also, there was a desire to see an analysis, a detailed analysis, of the status of operations that involved thorium and americium during the remediation period. And this was addressed by NIOSH by publishing two White Papers that were the topics I just highlighted and those were

presented in November of 2018. Those again were presented to the Board -- the Advisory Board and the Work Group and they have been discussed.

And then in February of this year, we presented a write up that summarized the discussions so far. And that's what we're kind of discussing here now.

So SC&A produced a bunch of documents as well. So first they did the review of the SEC-00235 Evaluation Report. The second report was an analysis of the remaining internal dose topics related to the evaluation. That was SC&A doing a review of these two NIOSH White Papers, the White Paper on air data and the White Paper on americium and thorium operations.

And then there was another report issued that looked at some petitioner-specific concerns regarding SEC-00235. I think that was the evaluation of the Boeing Incident Database that was submitted by the petitioner. That was something around 1500 incidents and occurrence reports that were looked at.

And then also, SC&A produced a document to -- there was another review of documentation provided by the petitioner and that report was issued in 2019 in November. And just last week, SC&A issued another report -- there was another review of petitioner-submitted information.

So there have been five prior discussions before the Advisory Board for this petition, starting in August 2017 and the last one was in August of 2019. Each time this was brought up, there were more questions raised by Board members and the petitioner and usually we receive additional documents by the petitioner that we review and then report back to the Board or the Advisory Board, the Work Group or the Advisory Board.

And so there have been three prior Work Group discussions. The last one was in March 2019 where SC&A presented the review of the NIOSH White Papers.

So the current effort on the NIOSH side of SEC-00235 and Area IV of Santa Susana overall is as follows. There are several outstanding issues related to internal and external co-exposure model. That is something that we are dealing with many of the sites that we are looking at under this program and that we have changed the criteria that are used to develop these models. So the existing co-exposure models for Santa Susana will also have to be reviewed and that hopefully should address some of the outstanding issues that are still on the issues matrix. SC&A has reviewed the co-exposure models for Santa Susana several years ago and there were still some outstanding issues. And those will be addressed when these models are reviewed.

There's also TBD update outstanding. We typically do a TBD update after SEC issues have been resolved at the site. The TBD itself is a summary document. It is not all we use for dose reconstruction, so the fact that a TBD document is outdated or somewhat older does not preclude us from doing dose reconstruction. What happens if we come across a claim that is -- has particular research needs to address that the dose exposure scenario, then what will happen if the dose reconstruction team will actually go and do research, research the documents that we have in our document database, so the TBD alone is the only document that is used for dose reconstructions, far from it.

So the current -- and now to the current effort that actually is directly related to SEC-00235 is the development of the dose reconstruction model using a breathing zone and general air data during the

remediation period. This is something that came out of the Work Group discussion for SEC-00235 and NIOSH has committed to doing this.

And when we started looking through our database, we realized that we did not actually target breathing zone and general air data during the remediation period, during our prior data capture, just because - - it was not the top tier of data. We usually look at bioassay data, things like that.

Collecting air data is not typically done just because it's a very large effort to collect and catalog that type of data. So we decided we needed to capture this data. You'll see some materials that were not previously targeted. This data is available actually at the Cincinnati records center. However, when this effort was commencing, due to the close down, due to the current situation with COVID-19, so we cannot go and do data capture. And they also cannot do this for us. So this effort is currently on hold and it will commence as soon as it's possible to do so.

Also in this paper, what we did was some clarification of recurring issues or issues that have been made in the past that we did not address during Board discussions or Work Group discussions.

And one thing I'd like to clarify for Board and Work Group members is the data access, that all parties that are involved in the decision-making process of this SEC petition and others which have access to all the database systems that are used to store relevant information such as the Site Research Database, the Claims Database, the SEC Document Database, all of this is available to every Board member and SC&A. NIOSH staff are available to help if something is not clear or cannot be found, NIOSH staff can facilitate search and access if needed.

The public website of NIOSH publishes the data, the

documents that NIOSH releases. However, those are often redacted because of the requirements of the Privacy Act. So if only those documents are considered, there will be some issues with not knowing who those are from because author names may have been redacted, especially when it comes to things like interviews. The interviewee name will not be on the publicly-available document. However, it is available in the SEC database or the Site Research Database. So if the Board or SC&A has questions about who a particular interview is from, they can contact NIOSH and we'd be able to help finding the unredacted version.

Again, the Area IV Site Profile, this is a somewhat outdated document. The main documents that deal with internal and external data are from 2010, so they do need updating at some point. However, just because the document is outdated, does not mean that the data is not available from other sources. Also, keep in mind that we're looking at a time frame starting in 1954 for some of these claims. So outdated is a somewhat relative term.

And there was another recurring discussion point regarding the NIOSH White Paper on air sample data. The issue is the granularity of the air sample data and this is something that NIOSH has addressed with the Work Group before this effort was started. However, it also has been an issue that has been raised and that we have not been able to come to a satisfactory conclusion.

The issue here is that the air data analysis that was done for the NIOSH White Paper is using the quarterly averages reported in the quarterly reports. So if you take a quarterly average, and average it over a year, you end up with smoothing out the data, meaning you lose granularity and you would potentially miss a localized, very high sample by

doing this.

However, for this White Paper, the desire was to go back and just get an overview of what the data looks like during this time. And it was not intended to be an effort to go and collect and analyze all available air data during this time. It would be a very, very large effort. It was okayed by the Work Group that we just use the quarterly reports. However, this has also been an issue that has been brought up over and over again as a problem as to why we cannot accept this data. So I'd just like to point out that this is something we've pointed out before we did the effort and now after we've done it, we could repeatedly -- I guess repeatedly brought up as a problem.

So the next segment is the petitioner submissions. So since the Evaluation Report was presented to the Board, several more documents have been submitted in support of this SEC. There have been about 18 documents or collection of documents totaling about 1,700 pages of information. It has been reviewed by NIOSH and placed in the appropriate data collection database.

There's also something called the Boeing Incident Database which is a collection of about 1500 incident and occurrence files that we reviewed and uploaded if we didn't already have them.

And then there was some additional documents that were submitted in June and August of 2020. This was new information related to SEC-00235 and SEC-00246, about 29 pages of documentation and also Worker Affidavit.

SC&A has been tasked with a review of this new information in July 2020 during the Board call. When reviewing this, all the entirety of this additional information, NIOSH has not identified information that would change the conclusion of SEC-00235 or

SEC-00246.

So that concludes the NIOSH presentation on SEC-00235 and I'll turn it over to discussion.

Member Beach: Lara, this is Josie. As I was reading that report, first of all, I appreciate the way you put it together. It was very helpful having the history all in one spot.

The question I had was on the last thing we were talking about, the air sample data, the quarterly review. I know the Work Group okayed that, but then when we got to the Full Board discussion, correct me if I'm wrong, isn't that when we had more questions that came up about using that data?

Dr. Hughes: Yes. It's been -- there have been several questions. That's true, yes. That's correct.

Member Beach: Have we come up with a way to resolve that within the Full Board? I know the Work Group said it was okay, but then it was questioned. And I don't remember if we've come up with a resolution for that discussion topic, because I suspect it will come up again if we don't come to some agreement.

Dr. Hughes: Yes, I do not think it has been resolved. No.

Member Beach: Okay.

Mr. Barton: Well, if I might, just to add a little bit of background to that. The whole discussion was about this approximately two-year period in which the site was using a vendor for the bioassays, called Controls for Environmental Pollution. And it was found out that they weren't a very good vendor. There were falsification issues. So that was really the qualification criteria for SEC-00235.

So one of the things we were trying to validate was can we use a co-exposure model based on operational data, so that would be prior to 1989. Can we use that co-exposure data to cover this period in which we just simply can't use the bioassay data. And then again, that was in the early '90s. I believe it was mid-1991 to mid-1993.

So one of the things we thought of was, well, let's look at some of the general air and breathing zone sample data that we have in these quarterly reports and let's compare the operational period to the residual period of data to see can we use the operational bioassay data which is acceptable to reconstruct doses during that period when we just simply can't trust the bioassay.

And this is where, as you point out, Josie, the Work Group okayed it, but in discussions with the full Board, and as Dr. Hughes pointed out, the granularity of the data was questioned because all we had was quarterly averages and quarterly maximums.

So I mean really, there's really two main issues under discussion for SEC-00235. This question of the two-year period when we can't use the bioassay data and the other question is how do we construct doses to americium and thorium during the residual period for D&D operations and waste management and the like. And they're both really tied to air sampling data.

The proposed path forward, as again, Doctor, you've pointed out, is to basically go and capture a lot of this breathing zone data. So as part of that effort, I mean I see them as both issues joined together in that we could probably do a better job and have more granularity to the air sampling data to give us better confidence that co-exposure from the operational period could be applied during the residual period and also to develop a co-exposure model for americium and thorium based on those residual period of

breathing those samples for workers who are actually in there dismantling gloves boxes and the like. So hope that helped out.

Member Beach: That does help out. So let me clarify. Capturing the data is something that we may consider at this point.

Dr. Hughes: Yes, we do. And we're actually in the process of doing that. We can't currently. So as soon as the record center is telling us that we can come and collect data this will proceed.

Member Beach: Thanks.

Chair Schofield: Anybody else?

Member Anderson: Any outstanding data issue right now capturing that data?

Dr. Hughes: I'm sorry. Could you repeat the question?

Member Anderson: Is that the one outstanding data-related issue we now have?

Dr. Hughes: Yes. It's a large one, but it is outstanding and the reason we can't go right now to collect this data is the record center is closed for visitors.

Chair Schofield: Any estimate how long that will take once you finally get access?

Dr. Hughes: I'm not sure.

Chair Schofield: How much time you will need?

Dr. Hughes: It's probably, I would say maybe a week or two of data collection and then it needs to be analyzed and input. So we're looking at months, sure.

Member Anderson: Do you have any sense of how

much data is there and how many boxes?

Dr. Hughes: Not really. I know they did quite a bit of air sampling, so there is a lot there. So I hope we're looking at a relatively reasonable time frame, so hopefully, it's, you know -- it's not something we normally do a lot, just because this is a fairly modern era and we tend to focus on a different type of bioassay data, urine bioassay or whole body counts. That type of thing.

Member Field: For your quarterly data, you don't even have any information how many measurements were collected during those periods I assume then?

Dr. Hughes: It is reported, yes.

Member Field: It is?

Dr. Hughes: In some cases, yes, if you look at the quarterly reports. It may be there. It may not be there. It just depends. I think that it reports on both measurements for those averages, yes. I'd have to go back. It's been a while since I looked at it.

Member Field: Yes.

Chair Schofield: Anybody else have any questions?

Mr. Barton: Because of reports that we have in hand were, again, quarterly summaries by the Health and Safety Department, again, the granularity wasn't necessarily there to have the confidence from the Board that we can properly bound the doses for this residual period.

Again, I think that the path forward is there because part of the NIOSH's path forward is going to collect data anyway so that we can develop co-exposure intake for americium and thorium.

Again, SEC-00234 was based on americium and thorium and so now we'd be talking about potential for exposure during D&D operations and again waste management, but we don't have necessarily the primary bioassay data which is preferable, so we don't have urinalysis or people monitoring to be able to use that to reconstruct the doses which is why we're taking this alternate route or at least looking into it to make sure it's feasible of using breathing zone data for again the workers who are actually in there doing the D&D work and the like.

Again, the two issues are tied together and I'm not sure we'll know how much data there is until the record center is open and we can go and capture it.

Member Beach: Sorry, Bob. I guess one of the questions, do we have any sense of when the record center will be open?

Are you hearing anything, Lara? Other things are starting to open up quite a bit.

Dr. Hughes: I have not heard anything recently. I can check, but they know that we are looking and they have been very cooperative in the past, so the -- our ORAU Team, they have a very good rapport with the people over there and they do know that we're waiting. So I've assumed that as soon as it was possible for them to accommodate us that we would hear from them. I think that the ORAU Team checks periodically. I have not had a conversation with them in the last month or so, so I don't know.

Member Beach: Understand, thanks.

Chair Schofield: Does anyone from SC&A have any comment on that?

Mr. Barton: Well, I think the path forward is there. We need to go and look at and capture this breathing

zone data. And as part of that, I think it might be just a follow-on that we might be able to gain more insight into what was part of the granularity of the air sampling data during the operational period as well, which might shore up some of the concerns about using the co-exposure model which again, during the operational period, the co-exposure model which covers plutonium, uranium, and fission products, is all based on actual bioassay data.

So the question is can we use that for these residual operations. We did a comparison using the quarterly averages and the quarterly maximums. As I recall, there were orders of magnitude difference between the two values, the operational period being obviously much higher, logically much higher. But again, the granularity wasn't necessarily there because all we had was these sort of higher level summary reports.

So I think the path forward is there to resolve these issues. It's just a question of when we can go and access the data, whatever data is available and I guess it's in Cincinnati.

I think the path forward is there. We just have to wait to see what we can find and what we can formulate as far as co-exposure intakes.

Chair Schofield: So I've got a question on the residual period. The monitoring for that, was that done on a daily basis? Did they have room air monitors or did they only bring equipment in when they had people working in the area?

Mr. Barton: Honestly, I don't want to shoot from the hip here because I don't think we know. I don't think we know until we can go and actually look through what the records were that went into creating these, again, they were quarterly Health Physics, Health and Safety Department reports, so we don't know

necessarily all the areas that they had perhaps to continuous air monitoring in versus really we'd be interested mostly in breathing zones. But I don't think we have information --

Dr. Hughes: We do have the number of general air samples that we're using. For example, the hot lab facility, which is kind of the -- what we consider the bounding scenario, I think it's listed in the quarterly reports. The breathing zone, of course, that was only on when they were actively doing stuff. So we have a little bit of information in the quarterly reports. We kind of know -- have a rough idea of what should be there, so hopefully we can actually find it.

Chair Schofield: So how is the breathing zone actually monitored, rather than the area monitoring?

Dr. Hughes: The breathing zone was -- they had the sampler. I think it was a lapel sampler and they were wearing it as they were doing the dismantling work.

And I do not have any specifics of air flow and things like that. I think we have the total number of hours they were worn and things like that. I'd have to go back and look to give you the specifics, and then the general air data were just general air data. I think they were 24 hour -- maybe weekly. I'm not sure. I'd have to go back and look at the quarterly reports.

Chair Schofield: One other quick question. Were all personnel working in there just given those PUPs (phonetic) or breathing zone monitors?

Dr. Hughes: The people that would go in to do the work, the dismantling work, for example, things like dismantling the glove boxes from the hot lab, yes, they were given breathing zone sampling. We're looking at small -- those were like teams. It was like a couple of workers, that type of thing from what I've seen.

Chair Schofield: Okay. Thanks.

Mr. Barton: I think it would be not -- I don't want to say incident based, but maybe job based. I don't think, or at least I don't believe, that all of the workers wore breathing zones all the time.

Dr. Hughes: No, no. They did not.

Chair Schofield: Based on what the job was. So I mean it's going to come down to when we see what the data was for these different jobs, how we put that all together to make sure we come up with a bounding intake estimate for the residual records.

Member Field: I just had a quick question of that breathing zone monitoring. So you need that air data for the residual period for americium and thorium, right? Is that's what's actually measured then? Or is it some --

Dr. Hughes: No, it's a gross, it's a gross measurement.

Member Field: It's a gross measurement. Okay.

Mr. Barton: So I imagine any sort of co-exposure intake would basically take that gross measurement and assume it's entirely americium or entirely thorium, whichever one is going to be bounding for the claim. I don't want to speak -- there is no co-exposure model put together yet because we haven't captured the data yet, so I imagine it would be something along those lines.

Chair Schofield: Would SC&A like to make any comments?

Mr. Barton: Not beyond what really what we've discussed. I guess a couple of minor comments.

Lara, you put up a slide about sort of on-going

concerns that included access to the data and let me just thank you for sort of holding my hand through figuring out how the SEC viewer works and I do want to say that you've actually been very responsive to all my questions that I've sent over.

With regard to the TBD, again, I don't really want to speak for NIOSH, but I know being involved, at least personally with the dose reconstruction audits, I think it has to be understood that TBD isn't specifically binding to have dose reconstruction performed. It's much more a fluid process than that. And as new information comes in, new methods are developed, it might not be necessarily reflected in the TBD, but they're in use in actual up to date dose reconstruction.

I don't know if NIOSH wants to expound on that a bit more, but I think that needs to get out there because certainly I was under the misconception that the TBD is binding until it's updated, but as it turns out, the process is much more fluid than that and metrics are constantly being updated with what's referred to as a site-specific template which are essentially the DR methods that are being used for claims as they come in which are constantly being modified. So again, it's a much more fluid process that are being tied to a TBD that could be as much as ten years old. I just wanted to add in that point for clarification.

I think that's all from SC&A.

Milton, I think I see you out there. I don't know if you had anything you wanted to add based on the NIOSH presentation.

A lot of these topics are going to come up again with SC&A's presentation regarding Area IV, so there certainly will be an opportunity to ask more questions regarding this stuff.

Mr. Gordon: Yes, I don't have anything further. Like you said, there's going to be some overlap and a little bit of reiteration as we go through our presentation. I don't have anything else.

Member Beach: I wonder if Phil is on mute.

Member Field: That's what I was thinking, too.

Chair Schofield: Yes, Josie, I was.

Member Beach: It looked like you were trying to talk.

Chair Schofield: I was. I was just asking if anybody else has any comments before we move on to the TRUMP-S and the EPA Documents.

Bob, are you presenting for the SC&A?

Mr. Barton: Yes, let me go ahead and share my screen here. Okay, hopefully, everybody can see the title flag for SC&A's material here.

Member Beach: Yes, I sure can.

EPA and TRUMP-S documents

Mr. Barton: Okay, great. Alright, so we have one presentation that's up on the Board website, but it actually covers four different reports, memorandum, and White Papers that SC&A has put together over the last year and a half or so. And so we put it together based sort of in order of the agenda. As I move along here, these are the four items that we're hoping to cover today.

The first one is very important to SEC-00235 and it concerns the TRUMP-S Program and also a 2012 EPA Characterization Study. These were brought up by CORE Advocacy and SC&A was directed to take a close look and to see how they might be applicable to the feasibility to reconstruct doses again after

1988 during this residual period.

These are sort of the four items and we'll go through the first one, I think, and then I believe NIOSH has the next item. But anyway, the first item again, relates to this TRUMP-S Program which stands for Transuranic Management by Pyropartitioning Separation. It's a mouthful. But anyway, this memorandum is also available on the DCAS website. It's titled Evaluation of Petitioner-Specific Concerns SEC-00235. And again it was mainly centered around other operations going on at Area IV after the SEC period that's currently been established that would preclude dose reconstruction.

It is really based on a set of reports that were performed for EPA in 2012 by a company called HydroGeologic which is out of New York surprisingly. But again, there's your Transuranic Management by Pyropartitioning - Separation. And what they were essentially doing was taking these transuranic elements and trying to figure out a way to stabilize them so that they could either be stored or perhaps later even reprocessed, but mostly just to make sure that they weren't such a hazard for internal doses.

And these sets of reports indicated that there might have been a 2-year period beginning in July of 1988 that performed this work in Area IV which is obviously going to be of great concern because now you have transuranic doses that you have to be able to account for beyond what was already there from previous activities. So I mean absolutely they were doing a fuel decladding of spent fuel essentially, so you're going to have americium, you're going to have neptunium. We're going to have all these sort of nasty elements. That was the reason for SEC-00234 which again was up through 1988. But if these activities were going on after that period, then that might obviously pose a problem from the feasibility

of dose reconstruction.

So these reports indicated, and again, they were put together for the EPA back in 2012 and it was essentially a paper study of historical documents to establish what might be in all these different site areas so that later on they can go and during further remediation activities sample and see what should we be looking for essentially in all these different areas in Area IV.

Now in TRUMP-S specifically, according to the documentation here, was planned to occur again beginning in July 1988 for two years in Building 4020, also known as T20 or the hot lab. But also support operations were supposed to occur in Building 4023 which is essentially adjacent to the hot lab.

There were also 50 total areas specifically identified in this Historical Site Assessment that listed americium and thorium as a radionuclide of concern, meaning it might be there, not necessarily that it was there in an operational sense, but if you're going to go and sample it to figure out what you need to clean up, the 50 buildings in Area IV identified americium and thorium as potentially being there for future testing.

So we went in and we took a close look at again this Historical Site Assessment which was put together in 2012 for EPA and let's figure out what's going on with this TRUMP-S research program, you know, did it happen essentially, and how does that affect any conclusions about feasibility of dose reconstruction. And that involved, basically what we did is we looked at the 2012 report and then we went and dug deeper into what references they were using and then we did further searches to see if we could find even more information to try to get a handle on whether this TRUMP-S is a real problem for Area IV.

So there's sort of a time line here that we put together of the key documentation that really sort of laid out the story of whether this happened at Area IV or as we'll find out we eventually conclude most likely it did not actually happen in Area IV. And you'll see what I mean as we go through this.

So the first document and these are sort of in chronological order was in October 1988. And it was talking about revisions to the Area IV usage application so that they could conduct the TRUMP-S Program. And again, this is right in line with what we saw in that EPA document that in mid-1988 they were supposed to start the TRUMP-S Program. And so now we've gone in and we see that there's internal correspondence that we need to modify our applications to be able to do this.

In July of 1989, there were meeting notes essentially that talk about -- it was a planning meeting to validate the use of a glove box for this research work.

You move into mid-1989, we believe this document was probably from August although it's actually undated. There's a handwritten note on it that -- basically '89, so that could be a date. It might be something else. But it talks about what are we going to do with the waste. And again, the important part of this the use of a future tense, the waste to be generated in late 1989 and early 1990. So this suggests to us that they still hadn't gotten started.

October 1989, they had what's called a test readiness review and again, this is all pre-planning stuff before we're actually -- before they were actually going to go in and do this research program at Area IV. Also in October 1989, there's internal correspondence talking about the necessary actions again before beginning the radioactive portion of the TRUMP-S program. So at this point, we still don't think it had gotten off the ground.

In February 1990, there's a letter to the NRC for a license amendment to allow the TRUMP-S program to actually get started. So again, February 1990, we're still not going yet.

Also in February, there's correspondence that Rockwell was still awaiting permission from DOE to start up the test and that's in quotes because that's exactly how they put it. It also indicated that it likely going to be impractical to do TRUMP-S at Area IV and so they start looking for another site to essentially do this work at.

Here's really where the evidence comes down for me. Again, February 1990, you have a local newspaper article talking about public opposition to again --- a future tense -- the planned TRUMP-S project. Apparently, several people had actually filed a lawsuit to block the project from occurring at Area IV. A follow-up article in May of 1990, again, the TRUMP-S project which was originally scheduled to take place was relocated to the University of Missouri Research Reactor, otherwise known as MURR.

In September 1993, you have D&D for Building 4023 which was the location identified in the EPA report as possibly being used as a support location for TRUMP-S research, but we could not actually find any specific isotopic analysis of those D&D operations. So it's sort of a dead end for us, unfortunately.

October 1994, there's a confirmatory survey of that Building 4023, again it's supposed to be a support facility for the hot lab. The building was cleared for unrestricted release. And in this one we did find soil samples taken, but they only analyzed them for the uranium and cesium and used that for what it is. They apparently were not concerned that there was transuranic material necessarily there.

And then you have February 1998, the State of

California released the site for -- without any sort of radiological restriction.

So that's really the story on TRUMP-S. And I think the important ones there are the newspaper articles which really document that there was basically public outrage about trying to use the hot lab for this one last experiment using transuranic material and eventually they just decided well, we're going to move it -- we're going to do it in Missouri and we're not going to do it in Area IV. And I think that's really borne out by the fact that all these references, I mean they were really trying to boot up the program. They were trying to get it done. It's described as the one last hurrah for operations in the hot lab. And from our view, the evidence suggests that it just simply never got off the ground. And so they moved it to Missouri and they definitely did the project there.

Now also, as I mentioned, there were 50 buildings that were identified in the Historical Site Assessment, that's again that 2012 EPA document, that listed americium and/or thorium as a radionuclide of concern. Now you have to keep in mind that it fully acknowledged that americium and thorium would be there during that residual period. The real question that we're trying to ask ourselves is was there an operation going on beyond your typical D&D activities that again preclude or make it inexcusable to reconstruct doses.

So we reviewed all the information contained in those reports for the 50 buildings. In fact, in our report which again is posted on the website, we describe each building. In a lot of cases, these buildings had already been D&D and maybe a concrete slab there, but again, you have to understand the purpose of these Historical Site Assessments was to aid in future analyses, soil sampling, what have you, to decide if further remediation was necessary.

And with this document review, they weren't actually out there measuring americium and thorium and saying it's here. They're saying it could potentially be there, just based on the historical activities at Area IV which obviously, again, that was really the impetus for SEC-00234 up through 1988 was the fact that we can't reconstruct doses to the operational use of thorium and americium. They just said Attachment A contains a pretty thorough table of each of the 50 buildings in describing what they did historically and why they were selected in this report as having americium and thorium as a radionuclide of concern.

As I said, we fully expect that there would be residual contamination there which again is the reason why we need to develop some sort of co-exposure matrix, again, based on these breathing zone samples of the D&D workers so that we can account for these contaminants because they are there in many of these facilities and we need to be able to account for them in dose construction.

So that is actually the end of that portion of the presentation. I'd be happy to field any questions.

Member Beach: Hey, Bob. Josie. I do have a question on the TRUMP-S project. I know you found the newspaper articles. Did any -- and this can go to NIOSH also, did anybody go in and look in Missouri and see if that project actually took place there, other than those newspaper articles?

Mr. Barton: It absolutely did take place at Missouri.

And, actually, Milton, I know you've been looking into this a bunch. Do you, do you want to weigh in on that?

Member Beach: And what years was it in Missouri, if you don't mind?

Mr. Barton: I believe it was the early '90s essentially.

Member Beach: Okay.

Mr. Barton: And they tried to get it off the ground in Area IV, and then they moved it to the University of Missouri. And I believe that that research was conducted, again, early '90s. I don't know the specific dates, however.

Member Beach: Okay.

Mr. Gordon: I believe, yeah, I believe the dates went from basically 1990 through 1998. There was also a little bit of public opposition there from what I had read. And it did take place. They had to get some amendments to the NRC license to do it at their reactor. They conducted the experiments.

The transuranic waste that was generated from the project was ultimately moved to Argonne National Laboratory. And at that point Argonne completed its characterization and shipped it to WIPP.

Member Beach: Okay, thank you.

And just one more --

Chair Schofield: I have a question on that.

Member Beach: Oh, go ahead.

Chair Schofield: Go ahead, Josie.

Member Beach: I just wanted to know, a lot of times before they do some of these projects they'll do some testing. Are we 100 percent sure that there was no actual pre-testing done at Santa Susana on that TRUMP-S?

Mr. Gordon: I don't think, I don't think it can be 100 percent ruled out. It is possible, like, in Building, I think, 123 to have an ICP lab in there. It could be

possible that maybe they analyzed a few samples or something. But we just don't have any documentation that really verifies it at all.

We do know prior to 1998 -- and this programming was an ongoing program in conjunction with Japan. It was more of a commercial operation where they teamed with DOE, DOE's facilities. And there were some activities that occurred in Japan.

And it is likely that some of the personnel, you know, at SSFL, were involved, even if peripherally. But we don't know the extent or anything at all. There's really just no documentation to say 100 percent sure absolutely nothing was done from a radiological standpoint.

For the main test itself, it definitely did not occur, and it occurred at the University of Missouri.

Mr. Barton: I think it's important that a lot of these documents that we point out, again, they all point to, you know, the planned radiological portions. And so I think they did, they did all their planning. They really wanted to get it going. And the pressure just got to be too much and they had to move it.

I think that's our best guess. But Milton is correct, I don't think we can be 100 percent sure that nothing. What we do know, that they had actually refused the material. And I believe it might have been, even been stored at De Soto, which is essentially the front door to that entire complex, ETEC. So, they even had, they had the material. Again, the use of the future tense all the time about talking about the startup of the radiological portion of the experiment again suggests to us that it just didn't take place.

And if you see the slide that's still up, again in February 1990 it was a planned TRUMP-S project, and a TRUMP-S project originally scheduled to take

place.

I have to imagine that if they had done some of the work there the newspaper coverage would use different terminology. But, again, we can't be 100 percent sure.

Mr. Gordon: And we do know that there is document -- it is documented they moved, did move the equipment from Area IV to MURR in Missouri. And very likely they would have done that if the equipment had already been used and was radioactive or contaminated at the time.

Chair Schofield: Well, I've got a question for you. During this time when they might, as Josie said, they might have done benchtop scale size experiments with it, did you notice an increase in the quarterly reports of neutron exposure?

I mean, pyropartitioning has a tendency, you tend to see an increase of neutrons has been my experience.

Mr. Barton: Well, again, I don't want to necessarily shoot from the hip. We did not see anything like that that would indicate to us that the project was going on. However, I'm not sure that the quarterly reports would have had the specificity about neutron flux rates specific to these facilities.

I don't know, does NIOSH or ORAU have any comment on that?

Dr. Hughes: I don't have any. I do not think we've seen that, but I cannot, I do not know what the quarterly reports on neutrons during that period look like at this point. I would have to take a look.

I do not think that there was a noteworthy uptake during the remediation period in general. But, as Bob stated, I don't, I just don't think that we have that granularity at this point.

Chair Schofield: Well, my only comment on that is that for the, you know, where they're doing the residual area I would not expect to see that, but only those personnel who might have been doing the experiments. Because you do quite often see a increase in the neutron levels using pyropartitioning.

Dr. Taulbee: This is Tim. I mean, we're, we're kind of speculating on whether they did any bench type of experiments or something along those lines. This wasn't a huge -- I mean, this was an experiment in and of itself. That's what this whole purpose was about. And, so, they were looking for a facility that they could do this type of work.

I can't imagine that you would get any significant neutron doses off of anything you'd be doing on a bench top type of scale.

And there's no indication that this even occurred from that standpoint. In fact, a lot of indication of it was planned to occur and then moved to the University of Missouri.

Chair Schofield: Okay. My point was being that if you did see that neutron increase, then more than likely there was some bench top scale. If you did not see it, well, obviously it's not going to be a real high neutron levels but it would kind of put a fingerprint on it. And if I would expect to see that, those personnel doing it, you would see their exposure records. Their neutron level would go up some only during that time they were dealing with the partitioning process.

Mr. Barton: And when we talk about bench top scale, I mean, they were still having meetings just trying to get the single glove box that they were going to, you know, doing leak tests and things of that nature. So, they, they wanted to do it, but again we just -- the evidence isn't there that the radiological portion

really ever got off the ground.

Member Field: In one of your previous lives wasn't there something about they were looking for, they were waiting for a license?

Mr. Barton: Yes.

Member Field: Or did I misread that?

So, was there ever any evidence they ever got the licensing that pertained to this work. Is that right?

Mr. Barton: Right. These were amendments and permission from DOE specifically to start up the tests in the glove box. You'll see the slide. I'm not sure if I'm still sharing those but, yeah, February 1990 they were trying to get DOE permission. And even at that point they were, like, we need to probably find another location for this.

Member Field: Yeah.

Chair Schofield: Anybody else have any comments?

Member Field: I guess I don't.

Is there any follow-up at Missouri, at MURR?

Mr. Barton: Well, one thing, just a recent development, and maybe it will catch us back up, we're trying to contact people at the University of Missouri, and trying to track down some of the people who wrote up technical reports based on this work. Maybe they know --

Chair Schofield: Right.

Member Field: -- if any of it actually happened.

So, Milton, we were talking about that the other day. I think we have some correspondence out trying to get information from one of the professors that was

involved directly with that work. But I don't believe we've heard back.

Mr. Gordon: I emailed one of the professors asking about the project, and I've not got a response. And there's been some technical papers published that resulted from the tests. And trying to research the authors to see if I could find them, and have been unsuccessful with that.

Chair Schofield: Okay. Well, no more questions or comments, I think we'll move on to the De Soto avenue.

Mr. Barton: If I might ask or pose a question.

You know, I guess the records, a lot of them are contained in Cincinnati. If there was anything that indicated TRUMP-S work, NIOSH, I assume that you would be alluding to that documentation. And then maybe even any future data captures, obviously any new information found through that, I mean, maybe that's something that we could add to our search criteria for when the Records Center does open and we go to capture the air sampling data.

I wonder if there's any avenue there that might help clarify even further this --

Ms. Blaze: Bob, this is D'Lanie. I know I'm not really supposed to chime in, but this is relevant.

I spoke with Cincinnati office just last week about the FOIA for all the TRUMP-S documents I've been waiting on for I think over a year now. To my knowledge, they're in the office working on the fulfillment of this FOIA request.

Mr. Barton: Okay. So, there might, there might be more, more there that will help us to understand whether there was really a radiological exposure potential to this stuff.

Mr. Gordon: Bob as well, and Lara, correct me if I'm -- more Lara -- correct me if I'm wrong, but I believe we established that same search criteria with the Records Center as they go through all those records. We identified specific criteria for things that we wanted them to capture and to provide to us. And I think they've been doing that.

Am I correct, Lara?

Dr. Hughes: Yes. Yes. They have a keyword list that they search when they get new stuff in.

So, but as Bob said, we can certainly, you know, when we go back and do another search we can certainly look again. I do believe we attempted to collect what's available on this topic. But, I mean, you know, it never hurts to, to add it to the next round.

Mr. Barton: I guess to just summarize. At this point it's SC&A's belief that all the radiological work occurred at the University of Missouri, just based on the evidence that we have so far. And, again, like the dose reconstructions, these situations are always fluid, so as new information comes up we always learn a little bit more.

Member Beach: Bob, this is Josie.

Before you go on and, Phil, if you don't mind, can I ask Lara a quick question on the Record Center? I missed it earlier. Are you there?

Chair Schofield: Lara, did you hear that?

Mr. Barton: I can hear you.

Member Beach: Anyway, I was just wondering is there a way to have the Record Center scan the documents and put them online for access by NIOSH? Or is that, is it, is that too big of a project?

Dr. Hughes: I think at this point it would be too big of a project. In some cases that has been done for other sites, depending on how many records there are to search. But if we're looking at, you know, 50 boxes, and then you need to kind of have the expertise of our data capture team to go through and identify what needs to be collected.

We have had cases in other sites where we just said, well, you have to scan the whole box and send it to us --

Member Beach: Yeah.

Dr. Hughes: -- in a format. But, unfortunately, there are so many records there it just would not be efficient. And I think, I think we have tried that avenue with them, but it's also a matter of resources that they just do not think they can do it at this time.

Member Beach: Yeah. It's a huge undertaking. I just thought I'd ask. Thanks.

Chair Schofield: Anybody else?

(No audible response.)

Chair Schofield: Okay. Why don't we move on to the De Soto Avenue SEC Petition 246.

De Soto Avenue SEC Petition #246

Dr. Hughes: Okay. So, I think that would be me presenting on this again. Where is my presentation?

Okay. Sorry. Can you see the presentation mode or do you just see the --

Member Beach: Yes, it's up.

Dr. Hughes: Okay. Is it in presentation mode? Okay. Here we go. Do you see my notes page or the presentation page?

Member Beach: Both.

Dr. Hughes: Both? You do see both? Okay. All right.

Member Beach: Oh, wait. No, no. Now it's just the presentation.

Dr. Hughes: Okay. All right.

Dr. Taulbee: If you go up to display settings you can make it one screen, Lara.

Dr. Hughes: Okay. Which one do you see, the slide view or the presenter view?

Dr. Taulbee: Oh, we see the presenter view.

Dr. Hughes: Okay. How's this?

Dr. Taulbee: That's fine.

Dr. Hughes: You see that. Okay, yeah. So, I cannot tell what you can see.

Okay. So, this is the update on the De Soto Avenue Facility SEC 246. Again a little bit of side background, petition history, and then some NIOSH responses to the SC&A review of the SEC 246 Evaluation Report and questions and discussion.

So, the De Soto Avenue Facility is also located in outside Los Angeles, California, Canoga Park. It is a DOE covert facility for EEOICPA from 1959 through 1996 with a remediation period in 1988 -- 1998.

Two of the buildings were involved in radiologic work. Building 1 did fuel fabrication, and Building 4 did research and development.

They had a Gamma Irradiation Facility and Helium Mass Spectrometry Lab.

The De Soto Facility was located, is geographically

close to the Santa Susana Field Lab, and they were operated by the same contractor. So, they were essentially -- they were not the same site. They were not the same site under EEOICPA, but they did share the same administrative level, the same contractor, same employees to some extent.

The petition history. There was one earlier SEC Petition 168 for De Soto. That added a class to the SEC from 1959 through 1964. And this was based on the internal dose reconstruction and feasibility of the first official use of the early bioassay data.

And SEC 246 was evaluated, and NIOSH determined that the dose reconstruction was feasible for 1965 through 1995.

Little bit of an overview of this petition. This petition was received in December of 2017. The Evaluation Report was sent to the Board in August of 2018. The NIOSH evaluated class was all workers who worked at the De Soto Avenue Facility in Los Angeles County, California, during the period from January 1st, 1965 through December 31st, 1995.

NIOSH did their evaluation, and did not recommend the class to be added to the SEC.

When this was presented to the Board, the Board handed the task of reviewing the NIOSH evaluation to SC&A. And SC&A issued their review in December of 2018.

The main issue of the De Soto SEC evaluation was the question did the De Soto Facility have the same issue for internal dose reconstructions with americium and thorium that made SEC 234 at Area IV an SEC class?

So, the documents available, again the Evaluation Report, dated July 2018. SC&A did their evaluation of

the NIOSH -- their review of the NIOSH Evaluation in December, published that in December of 2018, or presented it in December of 2018. And then NIOSH prepared responses to the SC&A review. And that is dated May 2019.

And then there was a recent publication by SC&A that summarized the additional worker interviews that were done for De Soto, but also for Area IV to some extent. These interviews were done in 2018, 2019. And they were finally published in 2020.

The reason there was some time between when the interviews were done and when they were published is the fact that we have to send the interview notes back to the interviewees and get their consent before we published this in a report.

So, the responses, the NIOSH -- quickly going over the NIOSH responses to the SC&A findings. There were four findings and six observations.

Finding 1 was related to gaps in documentation such as HP logbooks from smear and air surveys. SC&A pointed out that there are some years where we just don't have all of these type of data, you know, in the Site Research Database.

And, generally, NIOSH agrees that, yes, we don't have all of that type of data. But when we do an SEC evaluation those are usually pretty targeted toward certain areas when we do this. We typically have about a week or two at the data capture site. So, sometimes, as is the case for Santa Susana, or for the Santa Susana sites, there is a lot of data available because we're looking at a lengthy operational period.

We just cannot collect it all. And so we usually try to prioritize data capture efforts on what we think is the most important to answer the question at the end.

And in this case we don't have all this type of data yet. We might collect it during a future effort, if needed. It's always nice to have more information to be able to refine the picture. But, again, we operate under a priority schedule.

Finding 2 was related to a contaminated container that was found in a hood. And I think the key word was that the Incident Report mentioned spent fuel. And so that was kind of researched to see if they actually did handle the spent fuel at De Soto.

We found that we do not think that they handled spent fuel at the De Soto Facility for the main reason that the facility was not equipped to do so.

The Area IV site was equipped to handle spent fuel. They had what they called the hot lab. That was a facility that was designed for that type of task, and the De Soto Facility did not have that type of facility that had this level of shielding and glove boxes that would be suitable for such a high dose environment.

Finding 3 was related to some contamination that was found in the drain of the Mass Spec Laboratory. There was some americium-241 contamination found. This is something we looked into a little bit. We haven't found a terrible large amount of data.

What this indicates is that there seemed to have been some kind of spill or something that happened in this analytical lab. This is a indication that they handled a laboratory, analytical laboratory type of amounts possible. It's not an indication of processing large amounts of americium or handling spent fuel. However, this is a somewhat puzzling occurrence, and we're kind of on a path forward to look into that some more to see if we find any additional information to shed some light on this, what this is.

And Finding 4 was related to interviews. SC&A

suggested that more interviews be done to get a better picture of the De Soto work environment and how -- what was done and how it was interrelated with Area IV operations. And that was something that was completed.

And SC&A just published the transcripts of those interviews in the summer.

And there were six observations. One observation was that there was some americium-241 source material present, but there was no evidence of fabrication.

The TRUMP-S material was shipped to the site because, as Bob mentioned earlier, that was kind of the front door. That was their main shipping, shipping and receiving area. But there is no evidence that they handled unencapsulated americium.

Americium was present in smoke detectors at De Soto. Observations 1 to 3, NIOSH acknowledges that, the statements, but no NIOSH response is needed. This is mostly findings. There's not really much to resolve here.

There was mentioning of Observation 4. A 1977 license document had uranium-236 isotope information listed. However, we looked into this somewhat, and found no indication that uranium-236 was present at the site.

And then Observation 5 was regarding the dose assignment details for thorium.

So, when the De Soto Evaluation was taking place there was some, there was some evidence that they handled, they did certain projects or campaigns where they handled thorium. But these observation were monitored. And we do have this monitoring data so we could come up with a dose bounding approach.

This is something that needs to be detailed in a TBD revision.

Observation 6 was that additional thorium operations were not addressed. Again, this is a TBD issue, something to detail when the dose reconstruction approach is detailed or outlined, and any additional information will be added, if available. We do believe that what was presented in the evaluation for this bounding scenario, there is, I think SC&A pointed out there were some timeline issues. It could be that some material was handled possibly a little sooner or later than we had indicated in the report.

Observation 7 was regarding possible interview candidates from the EPA effort in 2011. There was a published document where EPA went out and interviewed former workers at the site. And the suggestion was that we could go and try to identify these workers, and also see if they would be willing to talk to us. And this was looked into and followed up on. I don't believe that actually anything came of this.

And the last issue was that the Board asked NIOSH to clarify, to clarify why americium and thorium nuclides were reported in the stack emissions at De Soto. This was also detailed in the NIOSH response.

This was because the site, both sites, De Soto and Area IV, sent the samples off to a commercial vendor and they just asked them what, you know, they discussed the fact whether they wanted these samples analyzed. However, none of the effluent levels were above the minimum permissible concentration. And the levels that were seen at the De Soto Facility were not indicative of processing americium or thorium at De Soto.

However, they did report back because that's what the site had ordered from the vendor lab.

And that concludes my presentations -- presentation. So, do you have any questions?

Member Beach: I guess I'm wondering is there going to be any other papers coming on any of those topics, the observations or findings that you just discussed, other than what we already have?

Dr. Hughes: Not unless the Work Group requests us.

Member Beach: Okay.

Dr. Hughes: If you specify a certain topic, we can certainly go back and provide more information.

Member Beach: Okay. I just was wondering if there was anything in the works. Thanks.

Chair Schofield: Do you know if there was any positive detection of americium in the stacks? Or was that just like a generic -- I mean, I understand there was a basically generic box, but did they actually have any data showing positive results there?

Dr. Hughes: I'd have to go back and look. It was below the MPC. I'm not sure if it was above the, whatever the, you know, detection limit. I haven't looked at all the stack data.

Mr. Barton: I believe there was at least one year where there was a measured result that was slightly above the detection limit. And I believe it was in the '90s almost.

So, yeah, I do believe there was at least one positive measure that is above the detection limit for americium. And it's just barely above the detection limit. And, again, it was sort of, sort of odd.

You know, I guess, I guess when we talk about De Soto the real troubling or long point in the tent is that, that americium sample in the drain line. And,

you know, it's not an incredible amount that they found. Specific activity of what they found still was low.

But then it raises a lot of questions about when did it get placed there? What was the concentration of it when it got placed there? How much scale sort of mixed in over the years so that when you go to measure the actual concentration of that material is it diluted?

And, Bomber, if you're out there, I know we had this discussion related to Metals and Controls last month about when we talk about measurements in pipe scale, and how does that change over time, when did it get there. It's quite possible that it might have been placed there even prior to 1965, in which case it's already covered, whatever the situation was would already be covered by that SEC.

But it's troubling because essentially both SC&A and NIOSH hit a dead end. Just trying to figure out why it's there, how did it get there, when was it placed there, when was the activity that not necessitated but that caused that contamination to be placed in the mass spec drain line?

Member Beach: Well, and Bob or Lara, can I say you kind of led us to believe during your presentation, or me, that you were still looking into that drain line issue to try to figure that out. But I guess that's why my question if you've any ongoing work. Is there anything to try to pinpoint that or?

Dr. Hughes: There's future data capture. That's definitely one of the things we will keep an eye out because it is, as Bob said, it's somewhat puzzling. It's not a terribly large amount but it's also, it's unclear, you know, where it's coming from. Why is it there? It could have been a spilled lab standard of some sort, but it could have been something else.

So, yeah, I would like to answer the question for sure.

Dr. Taulbee: Well, they certainly weren't putting their smoke detectors down the drain, that's for sure.

Chair Schofield: So, I've got a quick question. From everything I've read, do you know, did they maybe process some samples from Area IV in their lab? Or did each facility do their own analytical work?

Dr. Hughes: Well, the Mass Spec Lab was a specific, they had a specific objective, and it was, it was sampling -- was analyzing metal samples for helium content. So, it did receive samples from other sites within the DOE, or maybe not even necessarily DOE complex but from other sites in the country to, you know, achieve some kind of, some, you know, measurement objective. This was, I believe, done on a commercial basis.

So, I'm not sure the samples would have necessarily been from Area IV, but would have been from wherever they got them from to do these analyses that they did for this lab.

Member Beach: And I think that -- I'm sorry. Go ahead.

Mr. Barton: Oh, I was going to say, Bob, I cut off LaVon answering your question on the pipe scale that we talked about for Metals and Control and might be appropriate for this site also. So, I didn't, I didn't want to let LaVon off the hook.

Mr. Rutherford: Yeah. Well, thanks, Josie. Appreciate that.

No, we are definitely looking at that, at variations in Metals and Controls. And we're reporting back to that Work Group.

Whether it's, you know, applicable here, you know, it may be. I don't know. I really can't say for sure.

Mr. Barton: I think the main question that we were really trying to get at specifically with SC&A's review and the follow-up interviews that were conducted, and it was even in Lara's presentation, the same problems exist at De Soto as were found at Area IV, where they were definitely stripping and decladding spent fuel. And there was an issue with exposure to transuranic elements.

So, what we were trying to establish is to what extent because these are essentially sister sites. De Soto was the headquarters for the entire ETC complex. We know they received materials, they stored materials. The question is, to what extent is there an exposure potential from that transuranic material?

Specifically, we look at americium. But it would be any transuranic really. What was the exposure potential there?

So, we specifically look for evidence of, you know, production scale operations, or even just evidence of contaminations with americium. And the drain line is what we found. And we didn't necessarily find other, other evidence.

So, we'll be discussing later today when we talk about the Boeing Incident Data Base there was two incidents that indicate possible work with spent fuel.

So, it's something that we need to consider. But, again, I think the main question is, you know, SEC-00234 at Area IV was really predicated on the fact that they were stripping and decladding fuel in that hot lab, and those transuranic exposures were not only dangerous, but they can't be reconstructed.

And so, again, the question is to what extent was that

material necessarily handled at De Soto?

The americium in the drain line it, again, wasn't a large amount, but it is rather troubling because we simply don't know how it got there.

Regarding thorium, too, I didn't want to give that short shrift. So, what NIOSH is proposing is they essentially have a framework for how they would reconstruct doses for thorium. And it's based on a well-documented grinding operation. And I believe it was sometime in the early 1970s in which there was air monitoring during it, but there's also, more importantly, fecal monitoring associated with the individual who did that.

So, a lot of SC&A's observations regarding that was how are you going to actually implement that information to reconstruct doses for thorium during that period. But, again, I think that if you can accept that as a founding scenario where they were actually grinding thorium, I believe it was a fuel rod, you know, there was a respirator worn and everything, but there was fecal monitoring before and afterwards, you can develop an intake rate based on that.

So, a lot of the questions SC&A has about thorium are about implementation. When we actually get to the level of performing a dose reconstruction, how are we going to apply that scenario, and when is it applicable? And that's why SC&A pointed out a couple of other instances in logbooks where they indicated work with thorium, thorium oxide, and grinding, that sort of thing. And, again, we have sort of a framework operation that could be applied. It's SC&A's question of how it would necessarily be applied.

But that generally falls into the Site Profile category rather than an SEC discussion.

(Pause.)

Mr. Barton: Phil, you might be on mute still. I don't hear anybody talking.

Chair Schofield: Count your blessings.

Okay. If there's no more questions, unless people want a short break why don't we move on to the incident Data Base. That's a fairly lengthy document there.

Member Beach: Are we -- wait, are we voting on a break or not?

Chair Schofield: Yes.

Member Beach: Anybody want one? If the other one's pretty lengthy, maybe we should take 10.

Chair Schofield: Okay.

Mr. Barton: Well, per the agenda I think the next item is actually a description of the interviews that were conducted.

Member Beach: Oh, okay. That's not, yeah, that's not lengthy.

Chair Schofield: Bob.

Mr. Barton: Yes?

Chair Schofield: I'm sorry. Read wrong line.

Mr. Barton: Okay. Let me just see if I can share my screen here.

I know last time it was showing the futures next slide thing. Let me see if I can get rid of that so people get a better.

Hopefully that looks better for everybody. We should

be looking at a slide that says Summary of Worker Interviews Conducted in 2018 and 2019 in Support of the SEC-00246 Evaluation.

Member Beach: Yep. That looks good.

Mr. Barton: All right, great.

Yeah, these were really documented in a memo that was released publicly on July 14th of earlier this year. And, obviously, rather a sensitive issue when we have publicly released documents.

So, it is a very 10,000 foot summary of the interviews that we conducted. However, the full summary, the full notes, essentially, of each interview are available to the Work Group on the SRDB.

All right, let's move along.

So, again, as part of our SEC review we pointed out that there hadn't been a lot of actual interviews conducted with workers specific to De Soto and specific to this period, again, to establish were the same problems occurring at De Soto as were seen at Area IV that necessitated the SEC?

So, we interviewed six former Energy employees. And that number is pretty much limited by who we could find. I know NIOSH's contractor ATL did a lot of outreach work trying to find as many interviews as possible.

SC&A, we had made some suggestions in our original review. We ended up with six. Unfortunately, we were only able to get five of the summaries confirmed.

And just a little background on that. What happens is, especially in a telephone interview, there will be numerous people taking notes. Those notes are then consolidated into a summary. The summary is

cleared by the Department of Energy and then sent back to the interviewee. And they can either modify it, they can confirm it, they can add more information, they can take away information.

Unfortunately, one of the interviewees we just were unable to contact. And so only five of the summaries are actually included in the publicly released document because if we can't actually confirm the Energy employee's, essentially, willingness to go forward with the program and confirm that we got it right when we wrote the summary, it's just not appropriate to release in a public forum.

Now, these interviews were, again, the focus was De Soto, and specifically americium and thorium. Was it a major thorium campaign that occurred prior to 1965 where they were actually making thorium fuels or was it sort of a one-off like the grinding operation that I described earlier that sort of serves as the framework for reconstructing doses during this period?

So, a target was those, those two exposure pathways. However, as has been discussed many times in the past, De Soto and Area IV are essentially sister sites. And there was a lot of movement in between the two sites. And so we obviously were interested in any information the interviewees had about both areas.

So, the focus was De Soto, but that doesn't mean we ignored Area IV.

So, I'm going to go through these, each of the five confirmed interviews very briefly. Again, we're sort of restricted by what is in the publicly available version. But for the Work Group members out there, you can certainly see these full summaries of what was confirmed by the interviewee.

So, for the first worker the relevant employment period was from 1965 to 1978. They indicated that thorium testing did occur at De Soto. They don't recall any thorium fuel fabrication, which would be obviously a lot bigger project.

As we already pointed out, there was some thorium work that occurred there, so those doses need to be accounted for. And NIOSH has proposed a framework, again based on that grinding operation in the '70s.

This worker also indicated that any work with spent fuel would only have occurred at the Area IV hot lab. And that's Building 4020, or T020, just also known as the hot lab. And this worker didn't believe that americium sources were opened or breached, or that fabrication would have occurred that would have had unencapsulated americium specific to De Soto.

The second worker worked from 1965 to 1967. Again believes that some thorium work occurred at De Soto but wasn't directly involved. Again, we've already acknowledged thorium work occurred there. We need to account for it in dose reconstruction.

And, again, indicated that spent fuel was all handled up at the Area IV hot lab. And also specifically indicated that only fresh fuel had been handled at De Soto. They had no knowledge of any americium source fabrication.

Worker three -- and, again, these numbers have no connection to the actual person. So there's no personally identifiable information included here. Again, relevant employment 1981 to 2006. They indicated no thorium fuel. But they did talk about natural thorium sources contained in a, I guess, commercially-obtained ceramic material. But certainly nothing like the thorium fuel fabrication that occurred prior to 1965 at De Soto which was part of

that why there's an SEC up through 1965.

This worker only recalled remediation activity, could not recall any fuel fabrication occurring there during their employment.

And stated that americium was there in the form of sealed sources, and they were actually involved in leak checking them, which apparently occurred once per quarter. Did not indicate any issues with leaking sources.

Worker four, the relevant employment was from 1972 to 1987. Again, no recollection of spent fuel work occurring at De Soto. Also stated specifically that no transuranic material was ever transported to De Soto. And had no recollection of americium work.

They may have had a solution concerning americium but the interviewee was not clear on how it might have been used. And this might be exactly the type of situation in a Mass Spec Lab where they might have had some bench-scale work done with it. Or, again, we don't know how that americium ended up in the drain line. But, you know, the person couldn't remember that the material might have been there but, again, did not recall how it might have been used. So, again, it's sort of a frustrating dead end.

But they actually stated that they didn't recall any work with americium except used as encapsulated sources to calibrate instruments and things of that nature.

We'll go from Worker four directly to Worker number six, again because we couldn't get that fifth interview finalized or confirmed by the Energy employee. And so we are just simply not allowed to include it here.

This person's relevant employment began in 1983. Somehow we didn't ask or none of us wrote it down

when they stopped employment, unfortunately. But, again, we're talking about 1983 and onward.

This person was actually selected specifically because we found their name in health physic logbooks as finding bags of thorium in Building 4 at De Soto. And so that we specifically targeted this individual because we wanted to know more about that.

But, unfortunately, the individual just didn't recall that happening, so had no more information along that line of questioning.

They stated they didn't recall large quantities of radioactive material being there. They stated that all that material would have been removed prior to remediation.

And, also, this individual had no knowledge of any fuel decladding activities occurring at De Soto.

So, in summary, these interviews did not suggest that decladding spent fuel happened at De Soto. In fact, a few of them, as I mentioned, affirmed that they believed at least that all those activities would have occurred up on the hill which is Area IV, what they refer to Area IV as, again in those specially-designed hot cells in the hot laboratory Building.

And based on these interviews, again this is just purely based on the interviews and what they stated, they suggest that unencapsulated americium exposures at De Soto were not probable. However, again we would remind that other documentation suggests the presence of contaminated material using clean and decladded fuel.

Lara mentioned that in her presentation, a container that had been identified in a hood at De Soto that had sodium -- excuse me, sodium in it that was used on decladded, clean decladded fuel.

And also, again, americium in the Mass Spec drain line does suggest that at least at some point unencapsulated americium may have been handled at least on a bench-scale basis.

And, again, just bring these up because the interviews just didn't provide any direct evidence, but I wanted to remind the Work Group that there are all, there are these sort of troubling and unknown situations that might suggest there was decladded fuel at De Soto. And, obviously, we have the americium in the drain line.

But, unfortunately, none of the interviewees that we talked to had any other direct evidence or information to expound on how these things might have gotten there.

So, that's the end of the summary of the interviews that we did, again in response to our review of SEC-246 for De Soto. Again, trying to find information that would indicate whether there are problems with dose reconstruction feasibility similar to what was happening at the sister site, Area IV, specifically those fuel decladding operations that were occurring in the hot cells in the hot laboratory.

So, with that I could field any questions.

Chair Schofield: I have just one question.

Is there, did you run across any documentation that shows they had a, for lack of a better word, a vault for any of the materials and any logbooks that might go with that vault?

Mr. Barton: I believe there definitely was a storage vault at De Soto. I guess the question would be how does that reflect any exposure potential?

De Soto, I mean that was the receiving area essentially for all material that ended up at Area IV.

I think the main question is, you know, were they actually handling that material in any sort of production sense or in a way that would pose an internal exposure hazard similar to what was happening at Area IV?

But they absolutely had a storage vault. And they would store the material there. The question is what, how does that reflect any internal exposure potential to the transuranic material and/or thorium.

As I said, there is at least a proposed framework to take care of thorium. It would be the transuranic material and what potential is there that is the real question.

But to directly answer your question, absolutely they had storage vault where they would keep fuel. And, essentially, all material that eventually ended up at Area IV would likely have been at De Soto at some point.

Also, recall earlier that during the TRUMP-S discussion they actually, I mean they received the material, the TRUMP-S material that was to be used in the radiological portion of that experiment, that was stored at De Soto. So, absolutely they stored the material there.

Member Beach: Bob, did -- oh, sorry.

Bob, did you identify any other potential interviewees? Because I know we always ask the interviewees if they know of anybody else. Was there any others that we might be able to talk to?

Mr. Barton: I believe may -- I believe we maybe got one other name out of the interviews. I don't believe we were able to successfully either contact them, track them down, or they might not have agreed to be interviewed. I mean, it is --

Member Beach: Yeah.

Mr. Barton: -- sometimes difficult to find people who really want to sit down and talk about these kinds of things. And in other cases they will chat your ear off all day.

But, I don't think at this point we have necessarily any names that we really need to track down or that --

Member Beach: Okay.

Mr. Barton: Yeah.

Member Beach: Well, and then the other thing I was wondering about is waste records. Are there any waste records from a lot of times you have documentation on all the waste that comes out of different facilities? Do you or Lara, do you remember looking at any of that?

Mr. Barton: Well, I'll pass this one along to NIOSH. I don't recall seeing anything of that nature that gave us pause. But, you know, the main mission at De Soto was really fresh fuel fabrication. I mean, that's what they did in Building 1.

So, there was a lot of uranium exposure potential. And so that, that's really the main radiological hazard that was identified for De Soto.

Now, there are co-exposure models that include plutonium that are just applicable to both sites because, as was stated before, they were essentially sister sites. They had the same administrative policies. They had the same, --

Member Beach: Right.

Mr. Barton: -- essentially, monitoring. And so it's one co-exposure model.

But the question is can we reconstruct for any transuranic exposure potential, if it in fact existed? And based on these interviews there just wasn't a whole lot to go on.

Member Beach: And then the one interview that you didn't get into the report because you didn't get confirmation from that person, have you since gotten -- I know we got a document from him. Did you learn anything from that or?

Mr. Barton: Well, that, that document it was a signed affidavit. And that came out essentially right as we were interviewing that individual. They were identified through CORE Advocacy. And, yet, we interviewed the individual and also received the affidavit which essentially mirrors what our interview summary says.

We sent the interview via FedEx, like we normally did. Also, CORE Advocacy supplied a telephone number, which I personally repeatedly tried to contact the individual and just was unsuccessful.

Member Beach: Yeah. I saw your report that you did try several times. So, okay.

Mr. Barton: Yeah.

Ms. Blaze: I'm sorry. We had that interview all of us together.

Mr. Barton: That's correct. You were definitely on that, yes.

Member Beach: Right. Right, right.

Ms. Blaze: I must have misunderstood. Thanks.

Member Field: I thought the information on the americium as far as having a good number of sealed sources, it sounds like that leak test was helpful. It's

sort of the idea that maybe some of the contamination was from a leaky sealed source. I thought that was, that was helpful.

But it's still strange what liquid was, americium in liquid form was.

Mr. Barton: Yeah, I agree. It's sort of -- I mean, it's quite possible. I mean, I try to shy away from speculating too much or coming to conclusions that, oh, it was probably a leaky source that ended up in the drain. But it is absolutely possible. We just don't know.

Member Field: Yeah.

Chair Schofield: Any further questions or comments?

(No audible response.)

Chair Schofield: That being said, why don't we take a short 10-minute break if that's appropriate with everybody.

Member Beach: Sounds good, Phil.

(Whereupon, the above-entitled matter went off the record at 12:29 p.m. and resumed at 12:41 p.m.)

Discussion of Petitioner Submissions

Dr. Roberts: Phil, it's all yours.

Chair Schofield: Okay. Does anybody have any more questions on the -- that americium problem is really going to bounce us around. But if not, I think we'll go on to the discussion of some of the documentation provided by CORE Advocacy. Excuse me. Tongue tied today.

Mr. Gordon: Yes. This is Milton Gordon. I guess I'll be going through that. I guess we did have a presentation. I think Bob has not quite gotten back

on, and he's kind of controlling the presentation. But I can start giving some background information on our efforts.

I guess in 2017, there were a number of -- oh, there we go. Thank you, Bob. That summarizes our review of the about 1,500 pages. And it was issued in November of this past year. Basically in 2017, there were a number of Work Group discussions that raised a couple of issues. And a lot of this was covered in the earlier historical discussion this morning.

But basically, it (telephonic interference), which would remain implications for dose reconstruction feasibility potentially, and that raised the question of whether operational conditions sufficiently bound the residual conditions, basically post-operations during the environmental restoration D&D effort period, which would require analysis of available air sampling data.

And at that time, as was discussed this morning, presented this morning, SC&A had a November 2017 report where we did not identify any evidence of internal exposure to thorium and americium that precludes dose reconstruction feasibility. We found no evidence that radiological conditions during the residual period would not be bounded by operational co-exposure models.

Next slide. Okay. Thanks. the SEC petitioner had notified NIOSH in January of 2019 that about 1,463 boxes of DOE records were found. And based on their review of the materials, they concluded that the documents confirmed operations with americium and thorium at Area IV until 2008 and possibly all the way to 2010. There was new evidence of insufficient monitoring.

TRUMP-S operations occurred at Area IV from 1993 through 1998. And we had a big discussion about that

already this morning. And TRU waste generation and processing occurred between 2002 and 2008 and stored TRU waste has been occurring for up to 20 years.

So those are some of the conclusions the SEC had come up, the petitioner came up with.

So we conducted a review of the approximately 1,500 pages or so that were made available. We reviewed over 1,200 pages that were related to program descriptions, procedures, incident reports and other documents.

These contain such things as radiation protection plans and procedures, letters related to compliance of the monitoring program with daily requirements and program certification related to lab analysis of internal exposure sampling.

We did not -- and a general comment upon review of all of that is that we didn't really find anything that suggested that workers were not monitored. And this excludes the issue raised this morning about CEP, the issues with CEP and their analytical results of internal exposure monitoring. And that occurred between August of '91 through June of 1993.

So outstanding that particular issue, we didn't find anything else that suggested workers were not monitored.

There was a lot of documentation in those pages related to DOE accreditation, their lab accreditation program. DOE wanted Boeing to comply with that lab accreditation program. And Boeing was trying to stay in a position that they did not feel that they were required to meet that dose equivalent program requirements because they did not come close to meeting 100 millirem per year, the affected dose equivalent limit.

And some of their basis for that explanation was that the hot lab at that time -- we're talking about the 2001 time frame -- had already been decommissioned or at least decontaminated, and there was no alpha contamination in the hot lab.

And regarding the RMHF, the Radioactive Material Handling Facility, the contamination was not of a respirable nature. There was some alpha contamination found, but it was of large particle size. And they described it as not readily respirable.

So those were a couple of the reasons why they argued that they would not -- workers would not have come close to exceeding the 100 millirem per year committed effective dose equivalent limit associated with the DOE lab accreditation program.

Now there are a lot of documents going in the 1,276 pages that went back and forth between the two and then a lot of duplication of documents, of the same documents. But the end result was that from what I recall DOE still had them meet the DOE lab requirements.

But none of this documentation is an indication that workers were not being monitored. They were being monitored. It was a question of whether Rocketdyne was -- sorry, Boeing was going to meet the requirements of the DOE lab accreditation program.

There was also a 1994 Radiation Protection Activity Report that noted the presence of lab containers of uranium and thorium in Rocketdyne labs. But upon searching the research database, we couldn't find any subsequent activity reports after that one 1994 report where they provide any kind of follow-up information at all.

We did find some activity reports, but they just did not cover bringing it up again. And overall we did not

find any additional information regarding thorium operations.

All right. Regarding site remediation workers and their dosimetry program, the monitoring of their workers, the report showed there was a plutonium inventory of waste packages, drain line debris in the holdup tank. However, all of this plutonium inventory was consistent with D&D activities that was ongoing at the time.

We didn't find any documentation that suggested an inadequate internal dosimetry program. That's from a 1998 UE letter that stated the program was in compliance.

There was also a 1995 Rockwell letter that showed radiation worker training programs met the DOE Rad Worker II training requirements. From what I recall, there may have been a couple of tweaks they had to do to the program, a couple topics had to be changed or something, but in general their radiation worker training program met DOE requirements.

All right. The TRUMP-S program, this is basically going to reiterate what was discussed this morning.

The process was demonstrated at the Missouri University Research Reactor, and there were Boeing personnel present. And I actually saw one or two of them that had participated in a couple of the technical papers that I found online. But I actually looked those individuals up just to see if they were in the NOCTS database as people who had fallen under this program, and I didn't find them at all so.

But to, I guess, reiterate, there was public pressure, you know, to keep the TRUMP-S tests from occurring at Area IV. And from all the evidence it was moved prior to any kind of radiological operations to MURR. And the TRU waste generated, in my slide I said we

didn't know the disposition pathway. But as I said this morning, I found out through some additional research that the TRU waste was actually sent to Argonne National Laboratory.

And I was kind of wondering if it was sent back to Area IV since the program was related to the SSFL, but it turns out it was sent to Argonne National Lab. And I got that information from a DOE legacy management fact sheet that they have on their site, on their website.

But based on all the documentation that we know on TRUMP-S program that was in this 1,500 pages and what we found through the research database, it appears that only computer simulation work was done. They constructed glove boxes and some other instrumentation at SSFL, but there's just no evidence that it was ever used there.

As far as TRU waste management, transuranic waste was managed at the site. There is no evidence that it was generated by operations after 1988. There was some TRU waste generated after 1998 that was related to D&D activities but not by operations.

In one of the summaries, acceptable knowledge summaries that was in the 1,500 pages, that particular waste stream was generated by D&D activities associated with removal of residue from the hot cell drain lines that had accumulated -- and they generated this waste between 1993 and 1995.

And the other TRU waste handling during the 90s would have involved legacy wastes. The transuranic waste characterization repackaging was done in a temporary sampling and repackaging facility. And all the TRU waste was eventually transported to Hanford in 2002 in one shipping campaign, which eliminated the transuranic waste inventory at SSFL.

And that's kind of just a summary of our review of those documents. Any questions?

Chair Schofield: How long was the waste stored onsite? Do you have any idea?

Mr. Gordon: Well, I don't -- as far as versus when transuranic waste was first generated, I don't know exactly when. It would obviously go back a good ways. But we know that they eventually removed the waste in 2002.

So as far as the transuranic waste generated by D&D activities, which would have been in the early 90s, that would have been about 10 or so years until that particular new transuranic waste treatment was removed and sent to Hanford in 2002.

Chair Schofield: Okay.

Mr. Barton: I think it's safe to assume that they were storing this type of waste, and, as Milton mentioned, there was a repackaging operation that's very well documented. I mean, they basically filmed the entire thing with, I think, six cameras.

And, you know, they had triple enclosures and it was -- you know, the era it was done in, you know, health and safety standards were very different than earlier years, especially the operational years when the really dangerous work with transuranic material such as decladding of spent fuel took place.

But I think it's safe to say that this material would have been stored onsite until it was all moved in, I think you said, 2002 it was shipped up to Hanford, right?

Mr. Gordon: Yes.

Mr. Barton: I think really the key question here is, how do we do dose reconstruction? Now for

plutonium, which we mentioned the plutonium here, there is a co-exposure model that has been developed. And I assume it will be revised based on the new guidelines, the co-exposure implementation guidelines that were recently approved by the Board back in December.

So plutonium, unmonitored plutonium, would be taken care of via that pathway. We've already spoken about americium and thorium. Again, we're talking about Area IV here right now.

Those co-exposure frameworks are currently under development, but we have to wait until we can see the breathing zone data and how it's used and how much completeness and adequacy and all those guidelines for developing co-exposure models. We'll have to see how that shakes out.

But there are methods underway, under development, sort of the americium and the thorium. And uranium and fission products also, they have co-exposure models developed based again on operational activity. So those were really the higher exposure potential activities. And those methods are at least proposed to be applied during this remediation period.

So, again, it's a question of is there something that's infeasible to reconstruct? And I guess that's really the main question that we're asking for SEC-00235 is after 1988, are there operations going on that involve transuranic material beyond your typical D&D activities which, again, we don't know if it's necessarily feasible because we haven't captured the data yet. But the path forward on that is, again, to collect the breathing zone data and develop intake rates for unmonitored workers.

But I think it's important to keep in mind when we look at all these things, the real question we're asking

is dose reconstruction feasibility. Is there something that we can't reconstruct with confidence?

So I just add to keep that in mind when we're talking about the TRU waste. And we're really trying to figure out again if there's something that happened after 1988, which is the current cut-off for the SEC at Area IV. Is there something that we just simply can't reconstruct with any level of confidence?

Mr. Gordon: [identifying information redacted], I'm sorry if I don't pronounce your name correctly, he just posted a link in the chat regarding it looks like an NRC document. I went ahead and went to the link.

It looks like this is associated with activities at the University of Missouri research reactor. But I'll kind of go through it and let you know if I see anything that jumps out at me.

Ms. Blaze: You should go on the record that the document was submitted by [identifying information redacted].

Chair Schofield: Any comments? Other questions? I got just one quick question. On the transuranic waste there, they contain plutonium -- excuse me. Was this just, I want to say contaminated material rather than actual disposal of measurable quantities of plutonium in those waste drums, boxes, whatever they were using. Are we talking about a few grams, kilograms of material that was discarded? Or do we have any documentation on that?

Mr. Barton: Well, not being able to really tell you the specifics, I think it's safe to say that legacy waste from the operations that occurred prior to 1989 involving all of those decladding emissions in the hot laboratory, again, I think it's safe to assume that that material was stored onsite until it wasn't, which was

in 2002. And I would assume that it contained significant quantities.

But, again, the question that we really need to ask ourselves is can we reconstruct the dose from the management of that transuranic waste storage and then the repackaging of it?

And what's being proposed, again, is that you use the monitoring records for workers that were actually involved in those decladding operations and applying those to this residual period and that is specific to plutonium.

Now, americium is obviously different. We don't have sufficient monitoring data for americium, which was the impetus for the SEC-00234 through 1988. And that's where as soon as we move into this residual period, we still have to account for it.

Because we have to assume that if you can't reconstruct doses to americium during operations, well, it didn't just magically disappear from the site and magically go away from contaminated glove boxes and things of that nature, which is why NIOSH is working on creating a co-exposure matrix using breathing zone data, and, again, that will be gross alpha, but you can essentially assume it was all americium, to be able to assign intakes to these D&D workers.

I'm not sure if that answers your question or if I just rambled a little bit.

Chair Schofield: I think it answers some of them, yes.

Mr. Barton: I guess back to the original question, I think we have to assume it was significant quantities of this material that was being stored onsite. And the question is, can we reconstruct with the sufficiency and reasonable accuracy the doses that plausibly

could have been incurred.

And really what is being proposed as a bounding approach is, again, using the records from workers who were actually involved in the operations, you know, back in the 70s and 80s when they were doing the really sort of nasty work with the transuranic material, at least for the plutonium part.

And then for the D&D operators, we'll just have to see what's available for breathing zone monitoring and things of that nature to be able to develop, again, exposures for the unmonitored worker.

Member Beach: Bob, we haven't seen what that looks like yet have we, those records or that data that's actually going to be used? Has it been reviewed by -
-

Mr. Barton: No. I don't believe that is actually in hand yet. This relates directly to the discussion this morning about the record center in Cincinnati and going to actually -- NIOSH is going to actually grab that data --

Member Beach: Okay.

Mr. Barton: -- and analyze it and develop a co-worker intake.

Member Beach: So that all goes back to that as well. I hadn't heard using the actual monitoring records from the workers in the 70s and 80s so that just jumped out at me.

Mr. Barton: That would only be for plutonium, uranium and mixed fission products.

Member Beach: Right, right.

Mr. Barton: We don't have the actual monitoring data for -- we don't have monitoring data really for

americium except for there were a couple of examples that were actually noted in a previous SC&A review of americium sampling.

Looking into that a little bit further, it turns out one of the two employees was actually at Argonne National Lab East and that's why he was sampled for americium. And the other individual we just simply don't know.

Member Beach: Yes, no, I caught that. Thank you.

Mr. Barton: It is possible that the other individual was involved in the operations at the University of Missouri on that slide. They sampled that individual. But, again, we don't have necessarily any evidence to make a connection either way. That's one possibility.

So the other individual, it was clearly because they had spent a few months not actually at Santa Susana but actually at Argonne National Lab and so that's why they were sampled for americium.

Chair Schofield: Looking at some of this documentation, I mean, excuse me. Were there many people that actually had their bioassays checked for americium too or is this a very limited number of people?

Mr. Barton: I believe there was two. It was two, possibly three, individuals but no. That's really the reason SEC-00234 is there is that there simply isn't monitoring data for americium during this operational period up through 1988. And now the question is, what is the exposure potential to americium past this?

And so that's why we took a close look at the TRUMP-S documentation because that would be one "operational source term." It would have been a

small experiment but that would be something that would have to be accounted for with more specific monitoring than just a breathing zone essentially.

But if we're talking non-operational and really D&D activities and we find that workers are doing that type of, you know, dismantling of glove boxes, had breathing zone and we find its representative incomplete, then I think -- well from my standpoint, I would say those can feasibly be reconstructed.

But, again, that's sort of getting down the road because we simply haven't captured or really taken a look at what we have there as far as the breathing zone data to cover americium and thorium exposure during this residual period.

Chair Schofield: Okay. Andy, Bill, you got anything?

Member Field: No questions.

Member Anderson: I don't have anything.

Chair Schofield: Okay. Just out of curiosity, when they were doing a lot of this, was there an analysis done on these waste drums and stuff or were these just using gross temp procedures?

Mr. Barton: I'm not sure that I have necessarily come across assays of what was in the waste drums. I think we can assume that all of the nasty stuff they were handling during the operational period was still in those drums. I think that's a safe assumption.

I don't know if NIOSH wants to elaborate on that. But, again, I try to circle us all back to how are we going to reconstruct the potential doses to the handling of that waste?

Again, there was a repackaging operation that was very well documented, and it's described in the SC&A report. They were very cognizant of what the risks

would have been had somebody inhaled or ingested that material when it was repackaged.

And the rest of the time it would be stewardship and then also D&D activity, which also would pose an internal exposure potential, which is why they all have to be accounted for and which is why both SC&A and the Work Group and NIOSH have agreed that we need to see if we can find those doses. And the pathway to do that would be this air sampling data and specifically the breathing zone data, which is in gross alpha. And what would happen is you would take that gross alpha, whatever the numbers end up being with the breathing zone and you would assume it was the worst contaminant that was contributing the entirety of all that gross alpha measurement.

Chair Schofield: Okay.

Mr. Gordon: If I could say something, I've been kind of skimming through the link that [identifying information redacted] had provided in the chat. And it looks like it has to do with the University of Missouri research reactor when they had to go back to file license amendment requests to NRC to adjust the levels of the amount of source material they can have in their alpha lab that they were going to use there in the reactor for the TRUMP-S experiment.

So it looks like, you know, there's a number of arguments made by petitioners. The NRC basically had reviewed the increases, and they asked the University of Missouri or required the University of Missouri to add a sprinkler system in.

There may be a couple other things that I haven't gotten to in here. But all of this is related to the University of Missouri and not to any kind of -- it looks like there is nothing related to operations at Area IV. But I'll continue to look at it and go through the whole thing, and I'll let you know if I find anything.

Chair Schofield: Okay. So the question comes up exactly where do we want to head at this point. Obviously, there's something like that question of americium whether it's possible to do dose reconstruction for some personnel.

There seems to be a significant amount of documentation for some personnel from their being monitored unless there's a group that has fallen through the cracks I'm not aware of unless I missed something. Anybody have any comments on that?

Mr. Barton: Well, I think again, and it's confusing even to me because we're sort of bouncing back and forth between Area IV and De Soto.

So what we're talking about right now is Area IV, again, during that residual period. And I think the next steps are we have to develop a co-exposure matrix and see if it really passes the test and the criteria that we've established so that we can assign doses to americium and thorium for those D&D workers.

And part of that will be to see who actually has breathing zone samples. What work were they doing? And as you point out, Phil, is there a group potentially out there that was completely missed that wouldn't be covered by the workers who have breathing zone. And so that's really the name of the game.

First, we have to capture the data and then it has to be analyzed not only for its completeness but also its representation among the affected worker population. If there's a group out there who is doing work that is not covered by that type of monitoring, that would certainly to me constitute a significant issue. I just don't think we're at that stage yet.

Ms. Blaze: Phil, this is D'Lanie. We're going to have time for me to address the Board, right?

Chair Schofield: Yes, we are.

Ms. Blaze: Okay. Great. Thank you.

Dr. Taulbee: And if I could just add on to what Bob is saying here, I mean, we've gone over this quite a bit here that we need to go capture this breathing zone data so that we can look at who is monitored as well as, you know, what is the volume of data that we have. We just don't know these things yet.

It will be a gross alpha measurement as Bob pointed out. We can then assign it as americium or as thorium on a claimant-favorable basis depending upon the cancer type that is there. We just don't have this data yet and so we need to go get it. We can speculate a lot about it, but we need to get the data.

Member Anderson: That seems to be step number one, right?

Chair Schofield: Yes. So at this point, my feeling is, and this is a question for everybody, is that we really cannot make a recommendation at this point until that data is -- until NIOSH and SC&A actually have an opportunity to look at the data and retrieve some that may -- well, it probably is still hidden in a lot of those boxes.

Member Beach: Yes. Phil, that's absolutely correct. I agree with you. We still have a couple more reports to go through this morning also.

Mr. Barton: Well, if it helps, I think we have at least from SC&A's, at least from the agenda I'm looking at, we have the characterization of the Boeing Incident Data Base to go through and then --

Member Beach: Yes, and -- oh, sorry, Bob. Go ahead.

Mr. Barton: And then after that, it's an SC&A 2020 White Paper tentative. I can give an update on that,

but we're not going to be able to discuss that today although the Work Group does have a copy of it. Since we have not been able to get the proper clearances to get it publicly released, we simply can't discuss the specifics of that.

Member Beach: Are you talking about the October 9th one?

Mr. Barton: Yes. I believe that's the one that (simultaneous speaking).

Member Field: I got the last one we got.

Member Beach: And NIOSH hasn't had a chance to respond on it either so.

Mr. Barton: Correct.

Member Beach: Okay. So I guess one more to go through.

Mr. Barton: Okay. Well, I can certainly do that if it's amenable to everybody.

Chair Schofield: Yes. Okay. I have no problems.

Review of Records from Boeing Incident Data Base

Mr. Barton: Okay. This was a review and characterization of what's known as the Boeing Incident Data Base, which we document in a memo that was released in June of 2019, and it is publicly available on the DCAS website.

So back in December of 2018 CORE Advocacy had provided thumb drives to everybody, including SC&A, that contained the Boeing Incident Data Base, which hadn't been necessarily fully vetted or at least documented of what's contained in these incident files that are related.

So SC&A was really tasked, and we're going back to

SEC-00246, so we're talking about De Soto again, which, again, this would be the period from 1965 up through, oh, geez, what is the end date, I think it might be 1995 or something like that.

Member Beach: Yes. It is '95.

Mr. Barton: '95. But anyway the key start date is in the mid-60s there. So what we found is that the database had 784 incident reports and 486 unusual occurrence reports. That's their terminology that they use.

When SC&A went through, obviously radiological incident reports are very relevant to whether we reconstruct doses. The unusual occurrence reports seems to just be a different category. It was more industrial hygiene accidents. And they didn't actually involve any radiation contamination or spread of radiation.

So we can sort of -- we didn't fully evaluate those other than to go through them and sort of check them off the list as not being relevant in a radiological sense.

We saw that 95, or about 12% of those 784 reports were directly applicable to De Soto during the time frame that we're interested in.

There were also three that we can tell were actually missing it from the database. In other words, we don't have the original incident file. The only thing we really have is a date of when the incident occurred and an abbreviated one-line sentence about what occurred.

So those are sort of limited as to what we know about them. But we can use the information that was available. And they are included in our summary document.

So here's just, you know, a nice graph. I apparently can't spell approximate if you notice in the Y axis. But these were the number of radiological incidents available in that database by year.

As you can see, it kind of varies. There's a bunch in the 60s and then it really tails off in the mid-70s for really unknown reasons. And then, again, you know, sort of a spike in the late 70s and then it tails off again, which is really consistent with cessation of activities in fuel fabrication in the powder room, which was in Building 001 at De Soto.

So what SC&A did is we went through each of the relevant radiological incident reports for De Soto applicable to SEC-00246, and we came up with our own sort of categorization, which is shown on this table.

So the first category was incidents that were strictly related to uranium contamination. And as I said on the previous slide, there are 98 reports. So you can kind of look at the second column where, you know, 43 and say, all right, about 43 percent of them were related strictly to uranium contamination.

The second category, a little less than 10% were related to uranium, but there was no actual spread of contamination. So this would have been potential fires that might have occurred, as we know, uranium is very pyrophoric, but that the contamination was contained within a glove box or another engineering control.

The third category, roughly 6% where other contamination is, in other words they didn't involve uranium at all. They did not specifically involve transuranic material or thorium. These would have been typical mixed fission products like cobalt, cesium, iodine, manganese, that sort of thing.

Roughly 30 percent of the incidents did not involve contamination at all. This would have been things like lost film badges or, you know, they did a lot of work with x-ray diffraction. So really the radiological aspect of it was pretty much restricted to external dose, not any chance of or potential for internal intakes.

Now these last two categories, 5 and 6, are where the action is at. Eight of the reports or roughly 8 percent just identify that there was contamination, and there was no follow-up, you know, radiochemical analysis or spectroscopy to identify what the actual contaminant of concern was. So obviously those are of interest.

And then six is really where the action is at. It is incidents that mention decladding, which, again, if we go back to the earlier discussions, if you're decladding fuel that has been irradiated, there is a very real chance of exposure to the bad actors, which are really those transuranic elements such as americium.

So first the Category 5 incidents, these are the incidents where there was no information provided in the incident reports as to what the actual contamination was.

I mean, we reviewed them. But, as I said, there just simply isn't evidence there necessarily to indicate what it was. However, there was also no indication that they would have involved americium or thorium, you know.

Just, I guess, the wording and the situations surrounding the incident, which suggested they were more associated with the other typical incidents that we see at De Soto, which mainly involved uranium. I mean, roughly, I think 90 percent of them were directly involved with uranium, which was their

emission. They had fuel fabrication involving fresh fuel so fresh uranium.

Now these two Category 6 incidents, again, these are the decladding incidents. One was in 1965, and it actually described that there was an energy employee cutting and grinding an irradiated fuel element in a clean lab area.

As a result of this, the energy employee did submit bioassay samples and the results were not detectable. So that incident in and of itself is not necessarily an issue because the person was monitored. However, it does beg the question why are they cutting and grinding an irradiated fuel element at De Soto, and that's something that we simply had found no evidence of prior to this incident database. And that, again, occurred in 1965.

The second one was in November of 1975, and this one is described as a tool element, which is xenon tag gas, and it was included in a batch of elements to be used in destructive testing. And it was stripped of its cladding.

The exposure that was evaluated and associated with this event was restricted to really krypton-85. That was what was determined to be the radiological hazard as a result of this November 1975 incident. And it's just not clear from the documentation if the fuel element had actually been irradiated or if they were performing destructive testing and inspection on a fresh fuel rod.

So based on our review of these incidents, none of them really directly references any internal exposure that might have occurred to americium or thorium at De Soto. Of course, we know they did handle thorium at De Soto. And there is, as I mentioned, at least a framework for reconstructing the thorium aspect. It's, again, that really americium is the long pole in

the tent so to speak.

Almost all the incidents involved just uranium operations, which again was to be expected. However, you have that 1965 decladding incident involving cutting and grinding which actually said it was an irradiated fuel rod.

So the questions that SC&A really asked is was this a reportable incident only because it occurred in a clean lab or did this activity possibly occur in other locations at De Soto, other facilities? Was this a normal occurrence? And, again, this one was noted in 1965, which is again the first year after the established SEC for De Soto.

And then in 1975, again, we just don't have further information about that decladding incident and whether it actually involved an irradiated fuel element. So we sort of hit the end of the road with the information we have at hand right now regarding that 1975 incident.

So that's essentially the 10,000 foot view of our review of the Boeing Incident Data Base. There's certainly more specific information available in the report posted on the website. But I would be happy to answer any questions that people might have regarding our review of that.

Chair Schofield: Can you identify the people who were involved in these decladding operations?

Mr. Barton: I believe the names are redacted. However, as noted in the 1965 incident, the individual who was involved in the cutting and grinding of an irradiated fuel rod was bioassayed afterwards and the results were not detectable. But as far as the 1975, I believe the names are redacted. And I don't believe we necessarily have original copies that might include the names.

Chair Schofield: What my concern is is I don't know how many of these -- how often they did this decladding, whether it was almost a daily activity, whether it was just an occasional activity. But do we have some way of putting a circle around those people who were involved in such or around, worked in that general vicinity where this was going on? I mean, from a dose reconstruction standpoint, it seems like we would need those numbers, those identifiers, excuse me.

Mr. Barton: Well, two issues here. Definitely in the 1965 incident, it was an irradiated fuel element. It says that in the incident report. It's not as clear in the 1975 incident. Those were the only two incidents that mentioned something like decladding activities.

And that's exactly the question that SC&A asked, you know, for the 1965 one, I mean, how often were they actually working with spent fuel and decladding it? Because, again, those were materials that would contain transuranics that we don't have proper monitoring data for to be able to construct a co-exposure model.

I mean, was that a one-off activity or did it occur more frequently? I mean, these are excellent questions that our current documentation doesn't answer. And that's really the reason why, as part of the De Soto review, we wanted to go back and interview workers.

Now, unfortunately, none of them recalled decladding of spent fuel as was summarized earlier in SC&A's presentations. Aside from that, I don't know what documentation is available or out there for us to capture that might get a better handle on the extent to which these decladding incidents might have happened.

Now, again, 1965 definitely included a spent fuel rod

or irradiated fuel rod. In 1975, it's not as clear. I know that they were doing destructive testing and experiments of that nature with fresh fuel. They were producing it there, that was their mission. So it's possible that this represented just a fresh fuel rod that was decladded as part of the destructive testing methods, or -- truly we just don't know.

But as far as the Boeing Incident Data Base, these were the two that we identified with De Soto that involve decladding of fuel, which is obviously one of the major concerns because that was really the reason why Area IV has an SEC for it.

They were doing decladding of spent fuel on a regular basis up on the hill in the hot laboratory and the hot cell that was designed for it. Again, that's why we went back, and we tried to interview people to see if we could find more information. Do you recall these activities occurring? And, unfortunately, the interviews did not bear that out. Or maybe fortunately, I don't know.

Member Field: Yes. It just seems like if these happened, I mean, you almost have to assume that the '75 one was irradiated as far as worst case scenarios, right? And if it was, we're talking about a 10 year time period where there's these two ends to this that we know of where they're working with these fuel rods. So it just makes you wonder what's happening in between that we're not catching.

I think your point is well taken. Was it in an incident because it was in a clean lab or was it because of their activity? It's hard to tell.

Dr. Taulbee: This is Tim, Tim Taulbee. Thinking along those lines though, if they were routinely working with irradiated fuel, that work is typically done in hot cells, okay. That was where Area IV was set up to do this.

As Bob mentioned, you know, some of this decladding would be on fresh fuel because you would do destructive type of testing from that standpoint.

We do have the one evidence here of somebody working in a clean lab with irradiated fuel that they weren't supposed to be, I mean obviously from that standpoint. That's noted. And they did follow-up bioassay from that.

So to jump to the conclusion that they were routinely doing this decladding type of operations with irradiated fuel, I just don't see the evidence here. The interviews are all indicating -- or multiple people were saying that this was done in Area IV and not at De Soto. So we actually have some evidence of the opposite here that this was not routinely done at De Soto. And I think that's important to keep in mind here.

We don't have any evidence that this was routinely done at De Soto. And the one, if you go back to our discussions of americium in the drain line of the Mass Spec Lab, if this was routinely done with irradiated fuel throughout De Soto, you would be seeing other contamination that would be popping up from that type of standpoint. And we don't see that.

Member Field: I guess if they had biomonitoring, just because it was performed in the clean lab, and it seems like if it was performed in the hot lab, they would also be biomonitoring. I can't see why you would just do biomonitoring because it was the clean lab unless there was some ventilation issue.

Dr. Taulbee: That's correct. That's correct. I have a feeling that they were not supposed to be working with -- in that lab at that time or in that lab in that area.

Member Field: Right. I think Phil's question about it's

too bad that the worker couldn't actually be identified and see if they would be willing to have an interview. I mean, this is '65. It's hard to know how he or she is doing at this point.

Chair Schofield: The problem is if they're that far back, they're probably getting old like the rest of us.

Member Field: Yes. That's what I was saying. It's hard to tell.

Mr. Barton: It is very difficult to be able to find interviewees. Now the ones that we targeted, and again there were only six so it doesn't seem like an incredible number, but it actually started with many more than that, workers who had been interviewed previously about their work there, not part of the OPA program but interviewed elsewhere. And ATL, the NIOSH contractor, I feel did a very comprehensive job to try to find those people, also the people SC&A had identified in its original review, which essentially what we did was go through the claimant population and read through their CATIs and see, you know, if this person might have something to say.

One of the interviewees as we spoke of was recommended through CORE Advocacy. And they submitted a signed affidavit, I believe, just a day after we interviewed them, essentially.

In addition to that, I believe we did a fairly comprehensive search of the SRDB and the log books that we have available to find additional names. And it's just very difficult. We could only find six to actually sit down and talk with.

Member Field: And, Bob, it is basically -- one other question. I don't have it in front, I should have noted this, but of the people you did interview, what was the earliest start points for some of them? Were they around during these periods?

Mr. Barton: One of them was there in 1965.

Member Field: Okay.

Mr. Barton: So we have pretty fair coverage. But you know what, I can go back. Let's see here. All right. So Worker Number 1 was '65 to '78, '65 to '67, '81 to 2006, '72 to '87 and then 1983 to an unknown end of employment.

Dr. Taulbee: So it looks like to point out, if you go through, I mean, each of them are talking about the decladding and so forth being done in Area IV. I think your first worker there, the 1965 one, Bob, that you pointed out, Worker 2. Oh no, the Worker 1, yes.

Mr. Barton: Worker 1 as well, yes.

Dr. Taulbee: Spent fuel only occurred in Area IV. Spent fuel --

(Simultaneous speaking.)

Dr. Taulbee: -- in Area IV.

Member Field: So that makes it sound like the incident may have been because it was in a clean lab that supports, I guess, that position.

Mr. Rutherford: This is LaVon. Hey, Lara, could we take a look at that 1965 incident? I don't recall.

Dr. Hughes: I have looked at it before, yes. But I can go back to look at it again and see if we can pull any names off it. There are some incident reports that we do have duplicates of that we do have the names. I have not specifically done that, but it's something I can look into.

(Simultaneous speaking.)

Mr. Rutherford: I think we ought to take a look at it again just to make sure we pull the thread as far as

we can pull on that one.

Chair Schofield: How extensive of records are there on the people who, both at De Soto and Area IV that were under the bioassay program?

My thinking is that this decladding and stuff that went on in Area IV because of exposures or because of lack of manpower where some of these people rotated from De Soto up to Area IV to do some of this decladding type work or not is -- I'm wondering if we could identify some of those people through their bioassay records? This may not be something possible. I don't know. That's why I'm asking.

Mr. Barton: Well, we had a fairly extensive discussion. And I think it's pretty well established and accepted that the two sites, I use the term sister sites, but they did rotate workers between the two. There was no wall keeping one from the other. I think it is assumed that the workers at both De Soto and Area IV essentially worked at both sites.

I think where our hands are tied is that these decisions about where covered employment is are really not -- we don't have much of a say in it. That's really Department of Labor who establishes that. But I think it's clear that workers at De Soto, including your security, your fire protection and your health physicists did rotate.

Ms. Blaze: I can answer so many of these questions when I'm allowed to present. I'm sizzling like an isotope over here.

Chair Schofield: Since we're addressing that question, would you like -- if it's okay with everybody else, would you like to go ahead and address that particular issue?

Ms. Blaze: I would like to --

SC&A 2020 White Paper

Mr. Barton: If I could just give an update on the 2020 White Paper that SC&A produced.

Ms. Blaze: Yes. Let me go after Bob.

Chair Schofield: Okay.

Mr. Barton: Unfortunately, so you all got an official use only copy of that report. And we're still working through the various levels to get it cleared for public release.

In that report, there is a discussion. We took a look, without getting into too much detail because we can't because it's still official use only. We did take a look, and there's a discussion about the movement of workers between the two sites.

There's also a discussion about concerns with the in vivo count program and possibly missing records from that. There's a discussion of the comments made by CORE Advocacy in August concerning the interviews. And then finally there's also a discussion of a case study that was submitted by CORE Advocacy in 2018 that essentially compared the records that a former worker had kept for themselves on their radiation monitoring against FOIA requests for the same records from DOE.

So there's a lot of material there. And, you know, we did our best to try to get it cleared for this meeting. But there's a site specific deal we reviewed that has to happen.

The report was cleared by DOE HQ but there's been some questions about who gets the final redaction on it before it can be released to the public. So I apologize for that.

There is considerable information in which we try to

address some of these things in that report. And we hope to have it out in the next couple of weeks if we can sort of get the procedural hurdles cleared. And that will be made available.

So I just wanted to give an update on that. It does appear on the agenda. But we just weren't able to get a publicly cleared version for this meeting and so we can't really discuss the specifics on that at this time.

Chair Schofield: Well then we better hold off.

Mr. Barton: That was all I had as far as an update on that item.

Chair Schofield: LaVon, you look like you're about ready to go to sleep. Do you got any comments?

Mr. Rutherford: I look like I'm about ready to go to sleep? Actually, I've got two monitors going here. And my video camera is on this one. And so I'm trying to bounce back and forth. No, I'm listening. No comments.

Member Field: Phil, would this be a good time for D'Lanie to present?

Chair Schofield: What was that?

Member Field: I said, would this be a good time for D'Lanie to present?

Chair Schofield: Since we can't discuss the White Paper and due to our limited time today, I would like to have her go ahead and present what she has for us unless somebody else has any objections?

Ms. Blaze: Are we good?

Chair Schofield: I think we're good. Go for it.

Petitioner Comments

Ms. Blaze: Thanks, Phil. So thanks, everybody. It's really good to see all of your faces again and thank you for your continued work on SEC Petitions 235 and 246 for Santa Susana and De Soto.

All of the presentations today were so impressive, but I want to focus my comments squarely on the need to pass the SEC for the De Soto facility.

That petition was prompted by NIOSH's decision to expand the Santa Susana Area IV SEC to 1988. And as we've been discussing today, NIOSH initiated that expansion based on the inability to dose reconstruct americium or thorium with sufficient accuracy.

Now Santa Susana and De Soto share a well-documented joint history. In fact NIOSH has always considered them to represent the same entity, operationally and contractually. We've talked about that today a lot, too. The same site profile is used, the facilities shared workers, materials, recordkeeping. They functioned as one.

Therefore, it was reasonable to expect that a concurrent SEC would be passed for De Soto facility to match the one at Area IV. And that has been done in the past with all of the SECs up to 1964, but this time it just wasn't.

NIOSH explained that that was because americium and thorium were not used at the De Soto facility and so a concurrent SEC Class would therefore not be necessary. But that did not take into account the workers of De Soto facility who were routinely loaned to Santa Susana or who rotated on an as needed and undocumented basis.

NIOSH is well aware of this problem. And they're aware that these workers are just as likely to have

encountered americium and thorium as any employee who may have been administratively affiliated with Area IV, yet NIOSH turned their backs on these workers. And I'm going to tell you how NIOSH has completely changed their position since this SEC petition was first introduced.

NIOSH has always emphasized the similarities between these worksites, most especially the problem of undocumented worker rotation between them. In fact, NIOSH has relied on that very issue to explain their continued delays in resolving numerous open issues regarding the creation of internal and external co-worker models since 2010, and that topic came up today.

For example, in 2015 Dr. Jim Neton, the Associate Director of Science at NIOSH, stated on the record that one major problem in developing the co-worker model was that Santa Susana, quote, had other sites like the De Soto facility and that, quote, NIOSH simply cannot be sure where the bioassay data came from, end quote.

So here we are today, and NIOSH has totally changed its position, now insisting De Soto facility has an entirely separate burden of proof when it comes to establishing this SEC Class.

NIOSH expects us to prove that americium and thorium were present at De Soto before it will acknowledge that the workers were at risk of exposure. And NIOSH has passionately represented these facilities as separate work sites even while evaluating their petitions together as we've been doing all day.

Well, we did as NIOSH requested, and we focused efforts on establishing that americium and thorium were used at De Soto facility. Even NIOSH's own 1995 stack emissions data confirm the presence of

these materials in the ventilation samples.

We've supplied log books, documentation, incident reports, worker affidavits, evidence of previously unconsidered programs, et cetera. There's been so much good work done and NIOSH's expectations have been met, and yet they continue to move the goalpost.

I keep coming back to one question, and Bob asked that question today. I think that since it's NIOSH's responsibility to conduct dose reconstruction with sufficient accuracy, the question that we must answer is this.

Were De Soto workers at risk of americium and thorium exposure, like Santa Susana employees were? And the answer is yes. NIOSH is well aware of established site practices and undocumented rotation between this shared workforce.

And I think that Dr. Kotelchuck brought this up at the Providence, Rhode Island Work Group meetings. NIOSH immediately put it back onto Department of Labor stating that DOL will tell NIOSH which facility an employee was affiliated with and then NIOSH will simply conduct the dose reconstruction accordingly.

That's only partially true. Dr. Hughes, at that same meeting and on the record, stated that all radiation data for Santa Susana and De Soto employees is, quote, the same. That is, regardless of any administrative affiliation with a particular site, Santa Susana or De Soto, NIOSH knows that that radiation data applies to workers in both sites and that the majority of monitored workers had occasions to perform duties at both sites interchangeably and without documentation. And NIOSH also knows that oftentimes these very workers would go back and forth between the sites several times in the span of a single work shift.

So DOL's interpretation of a simple administrative affiliation has no bearing on NIOSH's interpretation or understanding of worker radiation exposures at Santa Susana and De Soto facility.

It's NIOSH's responsibility to interpret that radiation data and to acknowledge site practices and data limitations that might prevent or compromise accuracy in dose reconstruction outcome. Being unable to tell which work site workers were at while they were monitored or exposed, that presents a challenge that should be acknowledged, and it supports passage of an SEC all by itself.

Today Dr. Hughes mentioned that the idea of outdated Site Profile documents is subjective since some of these claims are about work that was performed in 1954. But that, too, is misleading because there's a difference between the terms outdated and incomplete.

And the Site Profile and Technical Basis Documents are still missing information and relevant data that pertains to all eras of site operations from the 50s onward. They have never provided a complete or accurate depiction for all of the years that these sites have operated jointly with the shared workforce.

The bottom line here is that if NIOSH could have used De Soto worker data to reconstruct americium and thorium for Area IV employees, they would have done it instead of expanding that Area IV SEC by 24 years.

But as Dr. Neton has said, one major problem is that NIOSH simply cannot be sure where the bioassay data came from. And as Bob Barton of SC&A reiterated today, there simply is not monitoring data available, and this statement applies to workers regardless of their administrative affiliation.

We cannot have it both ways. Clearly, it does not matter if americium and thorium were present at both work sites because the workers were present at both of the work sites.

NIOSH's realization that they could not perform dose reconstruction with sufficient accuracy for the workers at Santa Susana means that they cannot do it for the workers at De Soto either. They are one and the same, the workers moved between these work sites. Americium and thorium didn't have to.

Still yet we have provided evidence that establishes the presence of materials at De Soto. We also still have a lot of mysteries as we've discussed today, and we've established the practice of undocumented worker rotation between Area IV and De Soto among those who were administratively affiliated with both of the work sites.

I respectfully urge the Board to recognize the plight of the De Soto employees routinely present in Area IV without documentation and summarily disqualified from the SEC to date.

Their exposures were no less deadly. Their cancers are no less worthy. It is not their fault that NIOSH cannot tell the workers apart or track worker movements from site to site. In fact, this has been made even more challenging since DOE stopped holding Boeing accountable for providing complete and timely worker records and radiation data.

Inability to obtain comprehensive worker data is, in and of itself, a reason to establish an SEC class.

Currently, Santa Susana and De Soto workers are unable to obtain employment verification, personnel records or complete radiation records. And we continue to seek involvement and explanation from DOE to no avail. It has become routine practice for

Boeing to indicate that hard copy personnel records are available for the employees of Area IV and for De Soto. But for some reason, those records are not being provided to Department of Labor.

The Department of Energy has not provided an explanation for the location of those worker records in case after case. These very records could be used to establish worker rotation and work locations. And we're now unable to get them from DOE and the contractor.

NIOSH has yet to respond to the revelations involving incomplete radiation data and radiation dose discrepancies for the workers who rotated between Area IV and De Soto hot labs.

Boeing provided no whole body counting data for an employee who was there over the course of 40 years. But the employee provided numerous records of whole body counts and a letter from his employer file indicating that the contractor typically did not report whole body count data for the workers at Area IV or De Soto.

This calls into question the completeness and accuracy of all radiation data supplied by Boeing for the workers of Santa Susana and De Soto facility.

Enough. The SEC for De Soto facility is the only way that we can assure that EEOICPA functions as Congress intended.

I respectfully encourage the Advisory Board to recommend acceptance of this SEC based on the long established, repeatedly acknowledged shared operations, shared data limitations and shared workforce with Area IV.

In fact, based on the information in DOE operations at these sites, so much of which we went over today,

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including the site remediation period, both SECs should be concurrent until at least 1995.

As always, it's a privilege to address the Board. And I thank you for your continued efforts on these SEC petitions and for the workers at these sites.

Chair Schofield: Okay. Thank you.

Ms. Blaze: Thanks, Phil.

Chair Schofield: Yes. We're still fighting with that problem about the Department of Labor wanting to label people at one area or the other. I don't know exactly where we're going to be able to go on that one yet. I got a question for --

Ms. Blaze: To clarify, I'm not talking about areas. I'm talking about the difference between Area IV and De Soto facility.

Chair Schofield: Right. But some people, according to the Department of Labor, are labeled as only having ever been at De Soto even though we do have, you know, a great deal of testimony that shows people did move back and forth.

Ms. Blaze: That's what matters.

Chair Schofield: They could be at both facilities in one day.

Ms. Blaze: Yes. And we have to give them the benefit of the doubt when there's an absence of data. That's the whole premise behind the program. It's the whole purpose of claimant favorability in dose reconstruction.

Member Beach: This is Josie. How many workers are we talking about that are not covered in the De Soto facility? Do we have a count or any idea?

Mr. Rutherford: Lara, do you have an idea? I don't know what we would have presented in the Evaluation Report. We would have identified the number of potential claims affected by the entire Class and then we would have separated out for the given Class that we were recommending for, so I don't know if we --

Member Beach: Yes. I'll go back and look.

Dr. Hughes: Yes. I don't have that in front of me. We have about 300 claims at NIOSH for De Soto. But that is not -- I don't have the number that has co-employment with Santa Susana or which of those claims would fall into a potential SEC. I don't have that.

Chair Schofield: I don't remember, somebody will have to correct me on this, but if I remember right, there were at least -- whether it was a job description on their personnel files or it was on their badge that a lot of people even though they worked in Area IV had identifiers that showed them in other areas.

I don't know if this also was true for those people who were labeled as working at De Soto or not. Maybe somebody can remember these documents and has seen it for De Soto, too.

Ms. Blaze: I'd like to go on the record, if I may. During the time that it was my time to speak on the agenda, and I've patiently waited since 7:30 this morning Pacific Standard Time to do so, Boeing representatives have been sending everyone text messages on the Zoom chat, which is highly distracting and very inconsiderate to the petitioner. And I'd just like to point that out. I would ask that it not continue.

Chair Schofield: Okay. Has anybody else seen that document? I remember there were some people who

were labeled as Area IV, but like I said, their badges, their personnel file, I don't remember which it was, would show them being out of another -- working in other buildings outside of Area IV, but they were assigned to Area IV? I mean, I don't remember how long ago I saw that. What was this?

Ms. Blaze: It was a widely known document. We had workers assigned to time clock locations outside of the covered area, provided with radiation badges assigned to Area IV work locations. We can't track worker movements between Areas I, II, III or IV. And we also cannot track worker movements between De Soto facility and Santa Susana.

And so if we're just looking at Area IV workers, and we're talking about Area IV and we're talking about De Soto, we can't tell where the workers were. Areas I, II and III were completely irrelevant, and we still can't tell.

Although I have obtained a memo from the Department of Labor just last week acknowledging DOE facilities in Area I. And so we're going to be looking at that more deeply as well.

Chair Schofield: Do you have any documents or documentation with personnel who were assigned to De Soto but have these identifiers that would say they also worked -- I mean, their film badge or whatever it is that may also have -- or be scheduled to work in Area IV --

Ms. Blaze: Yes. And I submitted it.

Chair Schofield: -- or vice versa?

Ms. Blaze: Yes. We've been talking about that document. There was an entire list of workers that were on loan that went back and forth between Area IV and De Soto for specific hot lab related activities.

That was one of the documents submitted a month or two ago.

Chair Schofield: Yes. I apologize. I remember seeing that, but I don't have it in front of me. I'll have to look for it again. Thank you.

Ms. Blaze: Sure.

Chair Schofield: Okay. And so does anybody have any questions?

Mr. Barton: As I indicated, and hopefully you can hear me, you should have an official use copy of SC&A's White Paper that does discuss sort of the issue with information available to place workers, where it's lacking, and also the document that Ms. Blaze is referring to. There's a lot of information in there.

We tried to put a lot of it together, especially the more recent submissions including what was submitted in June, in August and as far back as the case study that was also alluded to by Ms. Blaze.

Unfortunately, as I said, I think by rule I have to hold my tongue because it's not publicly available and so we're not allowed to discuss it in a public setting until that happens. But like I said we're working through the procedural hurdles to make sure that document does get released and is available for the petitioners.

But you should also have an official use only copy. And if you do not, I will make sure that you get one as quickly as possible. But, again, we hope to have the publicly available version and a non-PA cleared version that sheds the official use only title so that it's a lot easier and accessible in the coming weeks.

Chair Schofield: Okay. I'll go back and look at that again.

Dr. Taulbee: Yes. Phil, this is Tim. The SC&A document is dated October 9 so it was just a few days ago. But I would encourage you to read from that one that is not redacted. It contains all of the information. And what will end up going out to the public will potentially be redacted. So I would encourage you to read the unredacted version that has been sent to you.

Chair Schofield: Okay. I'll do that. Hey, by the way, Tim, are you really where that picture is?

Dr. Taulbee: No, I'm not.

Chair Schofield: You better not be.

Member Beach: I have a question for NIOSH. I know that NIOSH typically reaches out to DOL when there's an issue on the workers as there is between De Soto and Area IV. And I think I read through all of these documents that you had reached out to DOL. Is that correct or?

Mr. Rutherford: I can answer that one. We have back early on when this whole issue came up, Stu Hinnefeld, who was director at the time, actually corresponded with the Department of Labor over this issue.

And I don't remember the specifics on it, but we've also ever since their petition was submitted and since we've been going through this process when we see issues or information that's provided to us that we feel is appropriate to provide to the Department of Labor, we have done that. Like, the Department of Labor's position hasn't changed on this.

Chair Schofield: I remember Stu's discussion on that at one of our meetings.

Mr. Rutherford: I also wanted to give Josie the information she asked for earlier. I did pull up our

evaluation report. And this data was from May 21 of 2018, and there were 255 claims that were submitted during the -- that covered the 1965 through 1995 period, which is the entire period of that Area IV that was part of the petition.

Now that doesn't mean that all of those claims would be compensated if the SEC was extended through that period. It just means that they did have covered employment. It doesn't mean that they had the 250 days. It doesn't mean, you know, and so -- and if you extended it, the SEC period as you mentioned, up to where the current SEC period is for Area IV that number would drop because this is up through 1995.

Ms. Blaze: Ted Katz had agreed to involve the Department of Labor in a roundtable about the eligibility issues and undocumented worker rotation like a year and a half ago, two years. I think we were at a Work Group meeting on the record, and I asked for it. And Ted said, yes, let's do it. It just hasn't happened.

But I think, really, given these issues and given the precedent at other sites, I would very much like to have NIOSH and the Department of Labor weigh in together with the Advisory Board as to why these sites were not considered to be the same.

If NIOSH considers these sites the same operational and contractual entity and we're discussing them together today as if they're the same, then why are they held to such separate burdens of proof for passing an SEC when clearly we have workers at both sites that are moving back and forth and we can't tell which ones they were.

Member Field: LaVon, earlier you said that DOL's position hasn't changed. What position were you talking about specifically?

Mr. Rutherford: Well, that they are separate covered facilities.

Member Field: I just wanted to make sure. Okay.

Chair Schofield: That particular subject goes back several years, LaVon. Somebody said Stu had kind of addressed this issue at one of the Board meetings we had because it had come up. And we asked him about it that, you know, well, wait a minute. We got these people we know.

Well, just for instance, like, some of the fire department guards and we know for a fact were going back and forth but at least, like some of the fire department was listed out of De Soto even though they responded to Area IV.

So this is not, unfortunately, a new issue. It's something that has been going on for a number of years now, the question on coverage for people from De Soto. Maybe Tim could elaborate on that a little more to LaVon.

Mr. Rutherford: No, I can't.

Chair Schofield: Okay.

Dr. Taulbee: I can't either. I mean, this is something that the Department of Labor -- I was not aware that Ted had indicated of meeting with the Department of Labor and getting people together. I'll certainly go back -- or we'll go back to the transcripts and try and see what it was that he had committed to and try and go forward from there.

Chair Schofield: Okay. I don't remember that either, so. Do you, Josie, remember when that was?

Member Beach: I sort of remember the discussion on it. But, no, not without looking at the transcripts. And it's unusual. It would be the first time that I know of

it occurring. But it makes sense if we could do it.

Chair Schofield: Yes, it would.

Member Beach: It seems like there should be a way to prove those De Soto workers -- I mean, we know they went back and forth, to put them in Area IV at the time of the SEC that just seems -- it just seems like we should be able to do that even without regarding De Soto as a covered facility. It's the workers that --

Ms. Blaze: And if we don't have --

(Simultaneous speaking.)

Ms. Blaze: If we can't get their records from Boeing, we have to give them the benefit of the doubt.

Member Beach: I agree, but that --

Chair Schofield: No. There's no disagreement, I don't think, on anybody's part there. It's a nut we've got to still crack. Anybody else want to address that particular issue at this point?

Mr. Barton: Well, I apologize. I got dropped off the call there. So I don't know if any questions were asked directly to me. However, again, I would encourage the Work Group to read through SC&A's unredacted report, which does delve into some of what information we have about how to place workers and how they are currently -- their covered employment appears to be established. And it goes into a lot of those details. So I'm not saying that will fully satisfy your concerns, or even partially. But I encourage you to read it for the information contained therein.

Chair Schofield: Okay. If you could re-send that to me, I must have missed it. I don't know how. But I would appreciate it.

Mr. Barton: Sure thing. Do you have CDC access still?
I know these things --

(Simultaneous speaking.)

Chair Schofield: I do on my -- I can on my CDC email.
But --

Mr. Barton: So you do have access to CDC email?
Because I believe --

Chair Schofield: Yes, I do.

Mr. Barton: Okay, great. Then yes, we'll make sure
you get a copy of that.

Chair Schofield: Okay. I appreciate it. Okay. At this
point, anybody have any ideas about how we're going
to move forward at this point? Until NIOSH and SC&A
have a chance to look at a lot of these documents
and do searches, I think we're kind of at a standstill
until they have that opportunity which,
unfortunately, nobody has any idea when that's
going to happen.

Member Beach: Well, there's a couple of things like
pulling out the names of workers involved in the
decladding incidents. That's something that can be
done -- isn't that correct, Lara, that you can look for
that now?

Dr. Hughes: Yes, that's correct.

Chair Schofield: Okay. I think you committed to that
already.

Dr. Hughes: Yes.

Ms. Blaze: These workers, when they rotated back
and forth between De Soto and Area IV, they often
did so with no documentation showing that they
entered Area IV or De Soto. They may have been

administratively affiliated and badged with one or the other facility.

They may have gone to the other site to use a lathe or a tool or an instrument or to pick something up or to drop something off. They may have done it several times during shifts. There just wasn't sufficient documentation.

The majority of monitored workers that we have found had an occasion to go back and forth between the work sites. And the Department of Labor has no idea when they did it or where they were when they were wearing their particular work badge.

So when we look at these sites and when we look at the radiation data, it's the same for the workers of Area IV and of De Soto. And we cannot tell without specific information, like perhaps if there was an incident report, where the worker necessarily was. And we can't rule out whether or not he or she was badged at the other site, if they wore that work badge and they went to De Soto, that film badge. I just wanted to provide that clarification in case there's any idea that we can really make the distinction. We can't do it.

Chair Schofield: I don't think there's any disagreement on that at all, so.

Ms. Blaze: Thanks, Phil.

Chair Schofield: So, Lara, you're going to see what you can find on that decladding incident and get back to us.

Dr. Hughes: Yes, that's correct. We will try to answer some of these leftover questions from the discussion and present to the Work Group or report back to the Work Group.

Member Beach: And, D'Lanie, did you say what

meeting you thought that agreement with Ted was made? Was that the --

Ms. Blaze: I almost want to say it was Providence. It was one where we had kind of a hot topic back and forth dialogue that was a little bit flustered because of the confusion and the frustration that these two sites bring to all of us.

Member Beach: But --

Ms. Blaze: I want to say it was the Providence, Rhode Island 2018 meeting.

Member Beach: Well, I know we tabled the discussion on this site twice at two different meetings. So I was wondering -- and I don't think that was at Providence, was it? Correct me if I'm wrong. I don't remember.

Ms. Blaze: No. I think the tabling happened, like, way later.

Member Beach: Okay.

Dr. Taulbee: I believe the tabling happened in Pittsburgh.

Member Beach: Yes. And --

Dr. Taulbee: Because when that occurred --

Member Beach: I thought Arizona, anyway, okay, or New Mexico --

(Simultaneous speaking.)

Ms. Blaze: -- I can't wait to travel again.

Member Beach: Yes.

Member Field: So, Bob, it sounds like it may be worthwhile for us -- I haven't read the non-redacted

version yet. It sounds like it would be worthwhile to review that and then maybe discuss -- it sounds like there's discussion maybe of some sort of meeting with DOL to explore this further. That seems like the path forward for that.

Dr. Taulbee: We need to read the transcripts to see what the context was --

Member Field: Right.

Dr. Taulbee: -- with regard to that.

Member Field: Okay.

Member Beach: Well, and I'm sure NIOSH will have an answer or some document on the October 9th report as well. I know there was a couple of items in there that they may want to answer.

Mr. Rutherford: Yes. I would suspect we want to respond to that. I haven't looked at that report at all. As Tim had just mentioned, it just came out. And I know Lara probably hasn't had a chance to review it completely as well, so.

Dr. Hughes: Yes. I have looked at it, but I have not digested it. And we don't have any responses.

Member Beach: No. We wouldn't expect any.

Dr. Hughes: Yes. It would take some time.

Chair Schofield: That would be a good discussion to have, but we'll wait until everybody has a chance to review it. And I think we'll have to go through it with Rashaun also on this as far as Board members go. I may be wrong. Unless there's something else, I think we will call that a meeting for the day.

Ms. Blaze: Thanks again, everyone.

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Adjourn

Chair Schofield: Thank you. Okay. Anybody else got anything else before we hang up?

Member Beach: No. I guess we're signing out.

Chair Schofield: Okay. Thanks a lot, everybody. Appreciate it. Be safe. Okay. Bye.

(Whereupon, the above-entitled matter went off the record at 2:19 p.m.)