Centers for Disease Control
National Institute for Occupational Safety and Health
Advisory Board on Radiation and Worker Health
124th Meeting
Thursday, August 23, 2018

The meeting convened at 8:30 a.m., Eastern Time, at the Hilton Providence, 21 Atwells Avenue, Providence, Rhode Island, Ted Katz, Designated Federal Official, presiding.

Members Present:

Henry Anderson, Chair
Josie Beach, Member
Bradley P. Clawson, Member
R. William Field, Member*
David Kotelchuck, Member
James E. Lockey, Member
Wanda I. Munn, Member
David B. Richardson, Member
Genevieve S. Roessler, Member*
Phillip Schofield, Member
Loretta R. Valerio, Member
Paul L. Ziemer, Member*
Ted Katz, Designated Federal Official

Registered and/or Public Comment Participants:

Adams, Nancy, NIOSH Contractor
Barrie, Terrie
Barton, Bob, SC&A
Blaze, D'Lanie
Calhoun, Grady, DCAS
Domina, Kirk
Fitzgerald, Joe, SC&A
Hammond, Lokie, DOE
Hinnefeld, Stu, DCAS
Hughes, Lara, DCAS
Nelson, Chuck, DCAS
Neton, Jim, DCAS
Rutherford, Lavon, DCAS
Stiver, John, SC&A
Taulbee, Tim, DCAS

Contents

Proceedings

(8:31 a.m.)

Roll Call/Welcome

Mr. Katz: Welcome. This is Day 2, the Advisory Board on Radiation and Worker Health here in Providence. Welcome again, and welcome, everyone on the line as well.

A few preliminaries before we do roll call, for folks on the line who are following along today, we have a half day meeting. We're covering INL Pacific Proving Grounds and De Soto. Two of those are SEC petitions.

The materials for today are posted on a NIOSH website under this program schedule of meetings, today's date. You can go there and pull up all the presentations that are going to be given today as well as background reading related to those presentations.

And you also can pull up the agenda for today, and the agenda has on it Skype information so that people remotely can follow along with the presentation as the slides are being given, if you want to do that. You don't need to. You could also just pull up the presentation itself -- those are PDFs or PowerPoints -- and view the slides on your own at your own pace, whichever you want.

And I'd also just ask everybody who's on the line, please keep your phones muted. There's no public comment session today. So really, Board Members are the only people that should have open lines. And if you don't have a mute button, for the rest of you, please press *6 to mute your phone and *6 to take your phone off of mute.

The only exception to this is petitioners, of course, will have an opportunity to comment for INL. And

they can open their lines when that -- you'll see on the agenda when your opportunity comes up or we'll talk about it during that session.

Okay, roll call. Before I get into roll call, let me just address a conflict of interest because it's easier for me to address that than the Board Members as we go through this. But for the INL session, we have one Board member who's recused, Mr. Clawson. And he's already recused himself although we need him for roll call. It's okay. He's present. And that's it. That's the only recusal we have today.

Okay, then roll call. So we'll do that alphabetically.

(Roll call)

Mr. Katz: Great, welcome. Okay. So we have full attendance. We have our quorum. And with that, just a couple notes about the -- we're beginning with the INL site. And it's a little bit complicated, their presentation scheme.

We have the SEC Petition 219. That's sort of the prime matter for today, and it's sort of evolved into more update -- extensive update than anything. But it'll be helpful for the next Board meeting, given the timing and work that's going on. And you'll hear about that today.

So we have two presentations on that petition, Mr. Bob Barton and Tim Taulbee from NIOSH -- Bob Barton from SC&A. We'll follow that by an opportunity for the petitioners for that petition to comment. And then after that, we'll have a presentation by Mr. Bob Barton giving an update on work that SC&A is doing related to a petition that the Board has already acted on, which is the 83.14 you might recall for its separate period.

So that's how that session will work. And with that, let's get started with INL.

Idaho National Laboratory SEC Petition 219

Presentation from Bob Barton, SC&A

Mr. Barton: Good morning. My name is Bob Barton, and I'm with SC&A. And we're going to be discussing a status update on the Idaho National Laboratory SEC Petition 219.

For just some background to kind of review how we've gotten here, the petition was received on July 8th of 2014. The original requested class and the job titles and/or job duties where all employees who worked in any area for a period of employment from January 1949 through December 31st, 1970. In September 2014, the petition qualifies for evaluation. And then March of 2015, NIOSH releases the first revision of the Petition Evaluation Report.

The original proposed SEC class included all workers with evidence of external dosimetry at the Idaho Chemical Processing Plant for the period from January 1963 through the end of 1974. And I'd add that post-1974 at that time was being held in reserve for a potential 83.14 evaluation.

This original proposed class was discussed by the Advisory Board at the regular meeting that was in March of 2015 of that year. In July of 2015, Revision 1 of the Petition Evaluation Report was completed. The reason for this change was mainly that documentation had been captured that suggests from the period of March 1970 through the end of 1974, a worker could actually enter the Chemical Processing Plant with any INL dosimetry badge as in a CPP-specific badge was not required. You could have a badge from any major area of INL, Central Facilities, Test Area North, and use that badge to enter the Chem Plant.

Well, at that time, the class definition was revised to effectively split it into two time periods which are

labeled Part A and Part B in the actual definition which is up here on the slide. I won't read the whole thing.

But essentially, Part A is from 1963 through February 1970. And that requires a CPP-specific badge. Part B is from March of 1970 through the end of 1974. And that's the period, as I just said, you could use any INL badge to get into the Chem Plant.

More on the Revision 1. This was discussed for the first time in that same month it was released, July 2015, and again in March of 2016. And also, the INL Work Group discussed this in July and November of 2015 and also January and March of 2016.

At that Advisory Board Meeting in March of 2016, the INL Work Group recommended that the Part B of the class definition move forward for expediency to get that class through while Part A, which is the class that still requires a CPP badge from 1963 through the earlier part of 1970, to be further evaluated.

So the primary consideration for Part A is obviously the fact that you require an actual CPP-specific dosimetry badge. So it's a little narrower requirement than Part B that requires simply a badge at INL.

During the course of NIOSH, SC&A, and the Work Group review, it was discovered that temporary or visitor badge records at CPP during this time were not always migrated to the main INL -- and it says, dosimetry system. A better term would be the dosimetry index or radiological exposure index.

As this has been explained to me, essentially, this is an electronic system that sort of gives a roadmap for an individual worker to then go in and pull their scanned pages of dosimetry records, put them together, and then transmit them to NIOSH or DOL as appropriate.

So these temporary badges were not always being included in the files to NIOSH and DOL. And it sort of breaks down like this. If you had a temporary badge with a positive dose, then usually you were transferred into that index and that record would be provided with the Energy employee's file. If a temporary badge had no dose, then they were generally not migrated into that index. And so they were not being included.

So what are the SEC implications of this? Well, because the class definition requires a CPP badge, if you were a worker who were monitored by a temporary or visitor badge and you did not accrue that recorded dose and you were not migrated into the index, then that record would not be included in your file when a request came in from Department of Labor or NIOSH.

So in response to this, DOE and INL conducted a significant coding and indexing effort to assure all these temporary badges, which were available on site in hard copy form essentially, were migrated into this INL dosimetry index and so would be correctly included in the individual's file for SEC adjudication.

Work Group discussions subsequent to this remained concerned that some difficulties might arise related to this coding effort and how effective it would be in getting these, essentially, handwritten records coded and indexed and properly included.

Some of the concerns were name misspellings on the original records. Like I said, they're handwritten generally on small cards about the size of a credit card. Name variations that could be used for the same individual. When these are entered into the indexing system, do we know that that's actually the same individual if there's a slight variation in the name spelling? And finally, human error that might just be associated with such a massive indexing effort.

So at that time, the INL Work Group requested that SC&A develop a verification and validation strategy to evaluate how effective this new coding and indexing effort was and actually identifying workers with their temporary badges during this Part A of the SEC period. And again, that's January 1963 through February of 1970.

So SC&A's initial V&V strategy, essentially a proof of concept, was sent to the Work Group in September of 2016. And at that time, we had identified 32 individual claimants which covered a total of 51 temporary visitor badges that we knew we had as being captured by NIOSH. But when we looked into the dosimetry file for those claims as they were being transmitted to NIOSH, those badges were not permanently included.

So the idea is that then NIOSH could take those individual claimants, re-request those records. And based on that new indexing effort, they should be properly migrated into the Energy employee's permanent file.

So that initial proposal was discussed in a Work Group meeting in May of 2017. At that time, the Work Group requested that SC&A expand from just 32 claimants and 51 badges to a larger group that could be considered for V&V evaluation.

SC&A delivered its revised strategy in August of 2017. We found, from 32, we went up to 228 total claimants and nearly 1,800 associated temporary or visitor badges. Obviously, this is sort of a cumbersome number. We can't do a V&V on all of those. So what we did is we went in and sorted and ranked the claimants we had found.

So there's significance in the V&V activity to really narrow down our focus and hopefully get some meaningful results. And the factors that were included in this sorting was we wanted to include

various subcontract workers in addition to the prime contract workers so that we get a cross section of different employers.

We wanted some cases where we had observed name variations or spelling variations or mistakes. And this last point was the necessity of a future dose reconstruction. This is simply because this cost DOE resources that they could be using for other claims that needed to be processed. So if they still would require a dose reconstruction, then this research would have to be done anyway and the resources wouldn't necessarily be wasted.

So the Work Group discussed this revised V&V approach during the meeting in August 2017. And the Work Group elected to proceed with the records request for the first group of claimants which were 30 in total. It was 30 claimants and about 670 temporary badges.

And the idea at that time in August of 2017 that was once we received the records for the 30 claims and had a look at them, then we would go ahead and send, if it was deemed worthy, the second group and so on. So it would be sort of a stepwise approach.

So what do you have as progress to date? Right after that August meeting, NIOSH requested the external dosimetry records for that first group. There was some communication from the DOE on what we were really looking for. Some wires got crossed. And later that year in the fall of that year and into the winter, we found that the records we were getting back really weren't sending those temporary visitor badges like we'd expect.

So NIOSH was able to clarify the issue with the site, and the records were resubmitted or the requests were resubmitted to INL in March and May of earlier this year. As of last month, we had received -- the dosimetry files are updated -- dosimetry files for '18

of those 30 claims that were in the first group. So SC&A went and reviewed these revised monitoring records to supply some interim results on what we were seeing.

So there were 420 badges among these 18 reviewed claims. And when we went through the external dosimetry files, we found that 332 of those 420 temporary badges had been correctly migrated into the indexing system and were appropriately being included and transmitted to NIOSH and would be transmitted to DOL, if that was the case. And in one of those cases, none of the 31 temporary badges that we had identified had been included in the file.

In addition to the 420 temporary badges that we had attributed to Group 1 claims, we had 32 additional badges that we thought had name variations or misspellings that we wanted to look at and see if those sort of variations that could associated with human error. Again, different people would give their name perhaps at the guard post or different variations in spelling. And only 3 of those 32, or about ten percent, were included in the updated record.

So where does that leave us? These issues were discussed earlier this month with the INL Work Group. And the Work Group at that time voted to continue gathering and evaluating the rest of the records for the remaining 12 in that first group. So we had gotten 18. We took a look at them. These are the 18 interim results. Let's look at the remaining 12.

And in tandem, NIOSH was to work with DOE and INL personnel to really determine the root cause for some of these observed missing badges that were currently being evaluated by SC&A.

And so with that, if anyone has any questions.

Mr. Katz: Why don't we have Tim present and then the two of you can have questions. That, I think, would make more sense.

Presentation from Tim Taulbee, NIOSH

Dr. Taulbee: Good morning. Thank you very much for this opportunity to provide a few thoughts along with this validation and verification.

Before I get started, I do want to acknowledge Mitch Findley. He's been instrumental in helping me pull this information together. And Bob, you did a fantastic job of summarizing everything that has been going on for the last few years. And so thank you very much for that. Okay.

I wanted to try and reemphasize a little bit of our goal of the SEC class definition. If you recall, we designated this class due to exposures to transuranics and plutonium in CPP. That was the exposure that we couldn't estimate. These would be people who would be working in the process cells, working in the sampling aisles, working in the operating corridors as well as the laboratories. Okay. So that's the first part. That was the exposure we could not estimate.

So the goal of a class definition is to identify who are those workers. And so to do this, what we do to ensure we don't miss anyone, we cast the net fairly wide. And so what we identified as the class definition was a single badge at CPP and 250 days of employment. Remember, the 250 days is required from a health endangerment standpoint as part of the SEC class.

So why do we choose a single batch? There is a potential for some administrative personnel to be on annual dosimetry staring in 1966. Thus, 250 days of employment at CPP, they might only have a single badge.

Now, to have that happen, that meant they would have to had started on the first day of the badging cycle and then ended employment basically on that last day which is pretty rare to do. Most likely, they would start somewhere in the middle, go along, and then get a second badge. Okay. But we wanted to make sure that we caught this type of a worker as well.

The other thing I'd say is administrative personnel were the only ones on this annual dosimetry, that everybody else, these operators that we were looking at who are going into the process cells, who are the laboratory folks working with the trans-plutonium materials were all on monthly dosimetry, engineers who were in between and on a quarterly type of dosimetry. So this is why we chose this single badge definition.

So this class definition identifies all the routine CPP workers with some potential for exposure to plutonium and transuranics but eliminates non-CPP workers that don't have a potential for exposure. For example, workers 30 miles away at Test Area North who never went to CPP, people in Central Facilities who never went to CPP.

And we've interviewed people over the past several years out there and asked them, did you work at CPP? And there have been several that said, no, they didn't want to work there. It was a dirty place. It wasn't a place that they wanted to go to.

So the simplified definition does include some workers who may not have 250 days of exposure at CPP. They are temporary workers. Most of them had a few days of work at CPP, up to a week on a single temporary badge. So to get to 250 days, you'd have to have at least 52 temporary badges, typically more because many of these badges were only for a single day. But again, our goal was to cast the net wide to be inclusive of people so that we didn't miss anybody.

One of the benefits of this simplified single badge definition is that routine workers, the people we're really targeting, were on a monthly badge sequence. But these temporary workers, as Bob was pointing out, there is the potential for misidentification due to incorrect name spelling on the temporary badges. These were filled out by security guards.

And I can tell you with the last name of Taulbee, every time I go to a restaurant and you look at how they spell my name, it is all over the board. And so, I mean, this is just along those lines of these people filling this out. So we were expecting to have some of this misspelling names. But again, to enter the class, a single badge.

This also eases the need to identify all the temporary badges. Some of these are illegible. You'd look at them and you just can't read it over time. But we felt there was a low probability in missing 52 badges and missing a worker who was truly exposed at CPP for the 250 days. That was one of the benefits of this single badge definition.

There is potential concern that the single badge definition is too broad. It includes workers who did not routinely work at CPP and who may not have 250 days of exposure. However, it's difficult to sort out the actual dates from the dosimetry. It's not impossible. You can. You can go through and look at their names and match them all together.

And SC&A has done a great job of identifying people who have name misspellings and they're the same worker. But then you got to go to the dates and look at how many days was this badge issued for: was it one day, two days, was it for five days, that type of thing. So if you were to try and make the class more narrow, you would have to increase the criteria for the name spellings as well as making sure you got all of the handwritten badges.

So here's a table of SC&A's results and this is to date. And as Bob pointed out, we are still evaluating this. So from the current class definition, 17 of the 18 CPP temporary workers were identified and would've been entered into the class. One case, Case K, was misidentified by DOE under the current review.

And if you go down this table, we've also added in here the expected number of badges and the actual number of badges. And if you look at the expected number, there's only one worker that has over 52 of them of the 18 that have so far been looked at that would have over 250 days at CPP.

There are other temporary workers that routinely went into the site and so they would have those 250 days. But again, we're requiring a single badge. That's all that we're requiring to be entered into the class.

So let's look at what would happen with this one worker with the missing badges -- or with the missing badge. Without the temporary badge indicating work at CPP, DOL would've determined they were not part of the SEC class. They filed a claim, and so the claim would be referred to NIOSH for dose reconstruction.

During dose reconstruction, the NOCTS file would indicate work at CPP. It would probably catch it during a CATI or one of the computer-assisted telephone interviews. Plus, during the dose reconstruction, an inquiry would be sent back to DOL about the SEC class inclusion with the CPP documentation and DOL would have reevaluated the classification. Thus, due to this follow-up -- checks and balance, if you will -- the worker would likely have been reclassified and included in the SEC.

Now, having said all of that, that one case where they missed all 31 of those badges, DOE erred. We have talked to them about it. They do not know why that they missed those. They should have found at least

one badge. SC&A found 31 badges. When we went back through the records, we found 32 for this worker. Based on the 32 badges for this particular worker, he worked at CPP for 95 days. We went through and added up all of those individual days.

The temporary worker is part of the class. This is a worker that we were casting the net wide. Yes, they don't have 250 days actually at CPP. But this is one of the, I guess, in a sense, outcomes of this simplified class definition to keep from having to go through all of the details. Sorry, this thing is jumping around on me here. But again, like I said, casting the net wide, we wanted to make sure we didn't miss anybody that would have 250 days.

We contacted DOE to find out more about this Case K and why they missed it. An interesting part is the initial response in October of 2017, the dosimetry file they sent had 296 pages of dosimetry. They added the CPP dosimetry information. They did the index, as Bob pointed out. And their June response had 281 pages. So somewhere along the lines, not only do we not get the CPP, but they decreased in the amount of records.

DOE, again, recognized there was an issue with the case. They're not certain as to the reason the temporary badges were missed and why the second response is actually less than the first response. They did commit, though, to resend the full response for Case K and that is currently in process.

Case F is one that I also want to point out here from SC&A's evaluation. Although they would be part of the class, DOE only found 6 of the 48 badges. And we felt they should've found a lot more from that standpoint. And so we questioned DOE about it, and it turns out they only sent a partial response, some of the temporary badges but not the full dosimetry files as requested.

The May response that we got only had 16 pages in it. The response we got last October had 531. And so clearly, they did not send us the full dosimetry file as we had requested. And again, they committed to resend this particular case.

So in summary, as Bob had pointed out, we've had many discussions here about the completeness of the dosimetry badges. The routine dosimetry badges are complete. The construction dosimetry badges are complete. These temporary badges is this remaining issue that is out there, and SC&A's V&V of this, this is the group with the highest vulnerability. All of the others were in IBM system. They were typed into a system. They're easy to read the records, and there shouldn't be any problem with them. This is the highest vulnerability group.

And even with that, 94.4 percent of the temporary workers were accurately placed in the SEC by DOE with the current definition. However, we have notified DOE of their error with that one particular case and they're reviewing their process to improve their current accuracy.

So with that, I'll be happy to answer any questions.

Questions on Presentations

Mr. Katz: Thanks, Tim. So questions for either Bob or Tim? Anderson?

Member Anderson: In your last statement there, you say 94 percent were accurately done. But really, it's only of the 18 cases that were reviewed, 94 percent.

Dr. Taulbee: That is correct.

Member Anderson: So it's not appropriate to claim that all of the temporary workers, 94 percent of them would've been. So it's really a pretty small sample.

Member Richardson: We could go further than that.

Dr. Taulbee: That is correct, yes.

Member Richardson: Because you first requested records for 30 people --

Member Anderson: Yes.

Member Richardson: -- and they responded with zero, and so -- right? I mean, that was the narrative.

Mr. Barton: Maybe I wasn't quite clear on that. When the first requests went out, we got files back from DOE. But it was clear that much smaller percentage of these temporary badges were being included and that's what occurred on those.

Member Richardson: Yes, you'll have to go back and say that because I thought you said there seemed to be the wires were crossed. It was a misunderstanding, and then you directed them that you wanted the temporary badges. But would that be the standard procedure?

Dr. Taulbee: No, no, no. What ended up happening was we captured the temporary badges for CPP in a separate data capture. When they did their indexing, they did it off of a different set of temporary badges and actually missed the CPP ones when they did their indexing.

That's what they went back this past winter and indexed all of those. They actually missed the entire set that we were looking at. And when we started getting those responses back, we recognized they got some of them from the latter time periods but not that early set. And that was when we talked to DOE. That's the wires being crossed that Bob mentioned. DOE went back. They recognized it, and they indexed all of those. And so this V&V is testing the whole system now.

Member Richardson: And why are there 12 -- when you requested 30, why are there 18 that we're

focused on evaluating? Where are the other 12?

Dr. Taulbee: They're still in the process. INL is currently short staffed with regards to response. In fact, they're down to 50 percent of their staff. They had two people responding. One of them has moved to a new job. So they have one person.

And due to this, they requested we only submit ten at a time so that they can maintain their normal claimant response because we are continuing to get claims for INL. And they have 60 days to respond to those claims. So they're working these in with that. And so in batches of ten, they agreed to respond within 60 days for each set of ten.

Member Richardson: Okay, thank you. I'm just trying to figure out what the denominator is for when we're calculating the accuracy or validity of the classification.

Dr. Taulbee: And Dr. Anderson, you are absolutely correct. This is a limited sample at this time, and I recognize that. But I did just want to point out that currently we've got one of the claims that DOE effectively missed. And we have notified them of that.

Mr. Katz: Other Board Members, questions in the room? Dave, again?

Member Richardson: In the similar slide, it was the group with the highest vulnerability where it was the information regarding temporary badges and the other dosimetry information was stored in an IBM system you said; is that correct?

Dr. Taulbee: That is correct. These were printouts, so the names were entered in by a security badge number, Social Security number. And so there was other methods to make sure that that person is there so you don't have the name misspelling issues.

Member Richardson: So for Case K and Case F, between 2017 and 2018 when you did repeated filings for the same person and there was not just temporary badge information missing but other pages, was some of that missing information which would've been in the IBM system?

Dr. Taulbee: Yes, because they did not respond to the full request, especially on Case F, if you go up here.

Member Richardson: Hundreds of pages, right?

Dr. Taulbee: Yes, hundreds of pages.

Member Richardson: So is the assumption that the highest vulnerability information is the temporary badge information versus the IBM information when, in fact, we see two people with IBM information which is missing in an audit of 30 -- or 18?

Dr. Taulbee: Right. What I believe happened in this particular case is that whoever was doing the response thought they were just to respond to the new information and didn't go and print out the other 500 pages and send them to us, but --

Member Richardson: So the person who is doing this in the staff, in fact, knows that they're involved in an audit, that this is a repeated request for information on somebody --

Dr. Taulbee: No, we were trying to make sure they didn't know that they were --

Member Richardson: So how could they --

Dr. Taulbee: -- part of an audit.

Member Richardson: -- have suppressed information thinking that they only wanted the updated information? They would've had to know that there was a prior request.

Dr. Taulbee: I don't know. I really don't know.

Member Richardson: Certainly, the IBM machine shouldn't know that. You would think that someone would ask for the dose records.

Dr. Taulbee: When you take a person's name in, you get a printout of all the pages.

Member Richardson: Yes.

Dr. Taulbee: In all 531. And you're supposed to go to those files, print out that page, collect it all into a single PDF and send it to us. That did not happen. And we've asked DOE, why didn't that happen, and they don't know.

Member Richardson: Could I ask a different question? You described a card like -- and I don't know if you said it was like a baseball card or I can sort of -- the information on the temporary badge was a small card which had handwritten information on it.

Dr. Taulbee: Yes.

Member Richardson: And is the unique subject identifier just the name?

Dr. Taulbee: Yes, but that's not necessarily unique. I mean, you could have the same last name, same contractor. But yes, it is.

Member Richardson: Yes, so that's a daunting linkage process. I mean, because it's a huge site.

Dr. Taulbee: Right. And exactly, that is part of why we chose a single badge is to get one single badge that's tagged to this person to be included into the class.

Member Richardson: And are those cards just in chronological order, or have they already been sorted?

Dr. Taulbee: In this particular time period, they've actually been typed onto a form from the cards. And so there's a temporary badge report for each badge exchange cycle, typically on a weekly basis. And so there'll be a listing of -- it could 30 to 60, 70 people listed on these pages with their dosimetry results off to the side.

Member Richardson: Because somebody went through the effort already for the non-zero temporary badge dosimetry records, I'm imagining of alphabetizing them, reconciling names because they had to associate not just garbage names with workers. But for the nonzero badges, associate those with the worker and put those into the system.

Dr. Taulbee: What they did is these were in books of pages, I think in three-ring binders but they weren't. They were the old records with the single metal tab things that pulled over. They went through those, tabbed all of the pages that had a positive dosimetry. So you can scan down the right-hand column. You can see those. They moved them to the top, to the front of that particular folder. And those they scanned and those they typed into the index originally. So they're all at the front. All of the positives are at the front of each of these folders, and they didn't do anything with the back of it.

Member Richardson: But --

Dr. Taulbee: What they've done in this case is they've gone through all of it that was in the back that they didn't do initially.

Member Richardson: But they have some procedure for reconciling names, right?

Dr. Taulbee: Yes, yes, they do.

Member Richardson: So this is where I'm thinking that whether you have one temporary badge or 30 temporary badges, it's only been reconciled to a

single consistent name across those 30. It would seem as though when there's legibility issues or alternate spellings, for the search, there's only one search. I don't think there's -- they don't have a -- we, before, created an AKA file where you could associate a person with 75 different names.

Dr. Taulbee: I don't know all of their searching criteria. I don't know that they just put in the Social Security number. I believe they would also look at --

(Simultaneous speaking.)

Member Richardson: I mean, but --

Dr. Taulbee: I don't know that.

Member Richardson: -- that gets to the question of this assumption of because it's one versus 30, if they've all been reconciled to a single assigned homogenous name, it doesn't increase the probability that you're going to be find the person because there was a spelling mistake. Because somebody had to make a decision to say Jane and James were the same person. Okay, I think. I'm just trying to --

Dr. Taulbee: Again, I don't know what --

Member Richardson: -- understand the process.

Dr. Taulbee: -- DOE's criteria was and how they're going through that whole process.

Member Richardson: Yes, because that's really hard. Because aren't there -- there's 100,000 people or something like that?

Dr. Taulbee: When you include the temporary workers, it's way more than that.

Member Richardson: Yes, yes.

Dr. Taulbee: Many of these are visitors. I mean, they were there for just a few days.

Member Richardson: I have another question.

Member Richardson: I'm sorry. Just because I'm interested in the problem.

Member Richardson: As I understood this, the starting point of the issue was these people didn't appear in an index of the temporary badges. And so I was thinking when you would do the first search of a random sample, you wouldn't take 30 people and see if they appeared in the computer index.

It'd be a very quick thing to take 1,000 people and see if -- or to have the index file and see how much it's grown after they entered the names. But there's no characterization, none of this detailed actual hard copy recovery of the information. But just now, do the people who you believe should be in the index appear in the index?

Dr. Taulbee: The problem would --

Member Richardson: It would be labor intensive for DOE.

Dr. Taulbee: But the index tells them which file to go to which has a number, like 30-15222, and this person is found on page 256. But you get to that page, it could be external dosimetry. It could be a skin contamination report. It could be bioassay. It could be a whole body count. You don't know what that page is. It's that level of details not in the index. It tells them there's a RAD record at that location. And they go there, they print out that page, and that's what they assemble and send to us.

Member Richardson: So when these people didn't appear in the index before, is it that they didn't appear in the index before or that something has been added? I mean, again, I thought the issue was

that there were a group of people who were temporary visitor badge people with zero doses hadn't been added into the index.

Dr. Taulbee: That is correct.

Member Richardson: And so does the --

Dr. Taulbee: If you look --

Member Richardson: -- index include new names, or are you saying that those people already may have been in the index but now they're not tagged to that?

Dr. Taulbee: Both.

Member Richardson: Okay.

Dr. Taulbee: Both. If you take Case K, for example, he's got -- this particular person has, what, 296 pages of dosimetry. They were a routine worker at Test Reactor Area. This was a person who occasionally went into CPP due to their work from TRA. So there are almost 300 pages of dosimetry and exposure information from Test Reactor Area for this particular worker. What we're trying to pick up is when he went into CPP. And again, a single badge, he becomes part of the class.

Member Richardson: All right. Thank you.

Mr. Katz: Other Board Members in the room with questions? How about our Board Members on the line? Do we have quick questions from any of you? Paul?

Member Roessler: No questions here.

Mr. Katz: Gen? Bill? Gen, can you speak up?

Member Ziemer: I have no questions, Ziemer.

Mr. Katz: Paul, sure.

Member Ziemer: No questions, but I appreciate Dave's questions. I thought they were excellent.

Mr. Katz: Okay, thanks. So Paul, you didn't have a question, right?

Member Ziemer: I didn't have a question.

Mr. Katz: Right.

Member Ziemer: I will raise this now, however, but you're probably going to discuss it. What are the next steps on this issue?

Mr. Katz: Oh, okay. No, they weren't, so go ahead, Bob.

Mr. Barton: Yes. Hi, Dr. Ziemer. This is Bob. The next steps are sort of twofold. "A", we're going to get the rest of the 12 dosimetry files for that group of 30 claimants that we originally wanted to take a look at. So that's in progress. And at the same time, NIOSH is inquiring with DOE and INL as to try to find the root cause of the problem. And again, we're going to take another look at some of these cases and I think that's pretty much the path forward as of now.

Mr. Katz: Right. Before we go on then to -- Bob has another presentation on follow-up work that they've been doing on the class that's been added. But first, do we have petitioners for this petition on the line? And if you are on the line, maybe you're muted and we're not hearing you. Okay.

So Bob, you can do part two now.

Update on Evaluation Report 238 and 83.14

Mr. Barton: Okay. So that was Petition 219 which, again, covers the period from 1963 through 1974. And as I said in the last presentation, for the period after 1974, at the time, NIOSH had held that in

reserve so that it could be evaluated for a potential 83.14 process which is where NIOSH determined themselves that there is a potential infeasibility in dose reconstruction beyond the standard petitioner.

So on July 20th, 2017, NIOSH released its Evaluation Report 238 which is part of the 83.14 process. NIOSH recommended an addition to the SEC class for workers at CPP for the period of 1975 to 1980. Similar to the period we were just talking about, this class definition requires a CPP-specific dosimetry badge.

And so this was presented to the Advisory Board in August of 2017 at the meeting in Santa Fe, New Mexico. And the Advisory Board voted to accept the proposed 83.14 class, again, for the period from '75 to 1980. And at that same meeting, SC&A was tasked with performing an evaluation of the dosimetry completeness in a very similar fashion to what was done for the previous 83.13.

So SC&A's approach to this completeness evaluation sort of had four facets that we wanted to look at.

Item No. 1 is let's take a look at the completeness of the routine badges for both the regular CPP workers and those designated as construction workers. They actually kept separate dosimetry lists for each designation. So we can mention that in a previous class review, that was also done. We looked at the routine badges as well.

Item 2 is, again, let's look at the completeness of those temporary visitor badges.

Item 3 is almost identical to the SC&A report that we just presented in that let's see if we can identify claimants who are in those temporary badge records and see if they're correctly coded and identified. Again, a very similar process to what we did for that Part A definition under the 83.13.

And Item 4 was to review a subset of claimants to assess the practice of requiring a separate dosimetry badge for each area entered at INL during a single monitoring cycle. This is often referred to as the multiple badges for multiple areas policy.

And this one is especially important because as you remember the period immediately prior from 1970 to 1974, all you had to have was an INL badge from any area. You didn't have to actually have a CPP badge.

So we wanted to take a look in there and see if it was the actual policy that if you went into CPP, you had to stop and get a CPP badge. If you could get in there with a badge from Test Area North, well, then the narrower definition doesn't really work.

So Item 1, and this was to look at the completeness of the routine records for both your regular CPP workers and the construction workers. SC&A had essentially two observations from this review.

Observation 1, a comparison of the expected number of monitored workers listed in the dosimetry branch activity reports to those tabulated in the available dosimetry logbooks contained in the area and construction exposure reports was only available for 49 of the 72 months of interest, about 68 percent. The largest temporal gap was about 11 months. All others were three months or less.

So what we're really saying in here is you have two sources. You have the logbooks that actually list all of the found badges and what the results of those were, then you have a summary report essentially saying in, for example, July 1980, we monitored 600 people.

So then you go into the actual logbooks and you see how many individuals you actually have there and make a comparison as to whether those records are complete. If they said they monitored 600 people

and we only receive records for 400,that would obviously be a completeness issue.

This observation is noting that that comparison of the number of monitored workers was only available for 49 of the 72 months. So the question is, well, what do you do with the months where you don't have a comparison to make? So what SC&A did is we said, well, it's not quite as good of a comparison. But we also know how many dosimeters were processed in a given period in these summary reports.

So instead of counting the number of monitored people, let's go in and count the number of dosimeters we see in a given month. And this was the subject of Observation 2 which I'll read.

SC&A's analysis of the total number of dosimeters in available records compared to the total number of dosimeters that were reported to have been processed during those observed temporal gaps showed reasonable agreement for both regular badges and construction badges. SC&A found no indication that available dosimetry logbooks for regular and construction badges are incomplete during these periods.

And again, those are the periods where a comparison between the number of monitored workers couldn't be made. So we made a comparison of the total number of badges.

Item 2 resulted in two SC&A findings. Finding 1, SC&A located temporary badge reports during the period of interest; however, it is apparent that the currently available records are incomplete. And by that, I mean the records available that NIOSH has captured and have been uploaded to the SRDB for us to use

Additional temporary badge reports are available at the site but have not been captured due to the focus

of previous data capture efforts. It would be beneficial that such reports be obtained and reviewed to assure completeness of dosimetry records for use in potential SEC adjudication. And again, we're talking about temporary badges now whereas the previous item was looking at regular badging -- routine badging.

Finding 2, based on a review of the limited available temporary badge reports from 1975 and 1980, workers who accrued zero measured dose and did not have a permanent Health Physics badge indicated in the temporary badge report do not appear to be consistently migrated into the official area exposure reports. This is the same problem we had during the '63 to '70 period.

However, it does indicate that determinations of the completeness of records using area exposure reports alone are likely based on incomplete data and information. And again, that's because we simply can't verify the completeness of these temporary badges because we have not captured them all.

So this was, again, discussed earlier this month. And the path forward on these two findings was that NIOSH was to perform the additional data capture at INL to obtain the full set of temporary badges for a completeness evaluation. And this says, SC&A to participate as appropriate as of yesterday. I'll be going along with Tim and Mitch Findley.

Item 3, can we identify V&V cases? Well, as you probably guessed, not really because we simply don't have that many temporary badges to be able to compare against claimants and then pull those temporary badges, check against our actual record to find cases where they may be currently missing.

That resulted in Observation 4. And based on its review of limited temporary badges and also dosimetry entries designated as a "visitor" in the

main reports, SC&A was able to identify just 18 dosimetry entries from the claimant population that could be used for V&V. Now, this is 18 actual temporary badges. That's as compared to the over 400 we had from just the 18 people in the earlier period. So that might give some idea as to how many badges might still be out there to go capture.

The conclusion of this Observation 4 is when the full set of temporary badge reports is captured at INL, the available population of V&V candidates would likely increase markedly. That's Item 3 which was, again, can we find V&V cases to judge the effectiveness of the coding effort and indexing effort?

Item 4, this gets back to, again, where did you have to have a CPP-specific badge during this period to enter the plan, or could you have used a badge from another location?

So what we did is we went into a semi-random set of the claimant population, and it was about 25 percent of the total or 115 claims were reviewed. We wanted to examine a sufficient cross section of job titles and time periods to determine if there were certain jobs that maybe were let into the plant on a regular basis without a CPP-specific badge.

And this resulted in two observations. SC&A Observation 5, with the exception of one job category -- which I cannot name for Privacy Act reasons. But let's just say I'm not surprised that they didn't have multiple badges. All the sample job categories showed evidence of multiple area badges during a single dosimetry cycle.

That means we didn't really find, except for one job which was unique. Every other job, we had examples where they would be badged in multiple areas. So they'd have a CPP badge, a TAN badge, a CFA badge, what have you. And the maximum number of badges we saw for a single dosimetry cycle was six, as in that

person was actually badged in six separate areas at INL during the same monthly time period.

SC&A Observation 6, the practice of multiple area badges during a single dosimetry cycle was observed for at least some of those sampled claims during every month during the period of interest. Furthermore, there does not appear to be a discernible temporal trend in the percentage of claims exhibiting multiple area badges per dosimetry cycle; thus, the use of multiple area badges appears to be a consistent policy during the 83.14 period.

So conclusions and path forward on this. As for conclusions, again, this is going back over the items we just discussed. Evidence strongly suggests that routing badges for both regular CPP workers and the CPP workers designated as construction are complete and available. That was Review Item 1.

All available temporary and visitor badges have not yet been captured by NIOSH; therefore, determinations related to the completeness of those badges -- as in, are we missing any; not just missing them in the file, but are they still available on site -- can't be made and honestly can't find very many V&V cases at all because of the limited amount available to us at this time.

SC&A's analysis of a significant portion of the INL claimant population concluded that workers were required to obtain area-specific badges when moving among the major site locations. And again, that's one key element of the SEC class that was already voted on because it has the criteria that you need an area-specific badge.

So again, the path forward is NIOSH is going to perform additional data capture at INL to get all those temporary badges so we can do a completeness evaluation for them and perhaps flesh out the V&V population. SC&A will be there working with them on

that.

So if there are any questions.

Questions on Presentation

Member Richardson: I have a question. So taking an example of -- let's take the extreme example you said of somebody who was badged in six areas in a badging cycle. Well, administratively, is the worker assigned to one main health physics area? And then the others are what we're referring to as temporary or visitor, would they have one main badging record in the IBM system and in that same badging cycle, five temporary visitor badges?

Mr. Barton: No, they would actually have a routine badge that would remain at that individual sites that as they move regularly between the different site areas, it'd have a routine badge to pick up at that site area.

Member Richardson: And so the IBM record would show for a quarter badging cycle six lines of badging results?

Mr. Barton: Well, typically, they are separated by site area. So each site area will have a printout.

Member Richardson: Okay.

Mr. Barton: But yes, it's the same exact IBM printout --

Member Richardson: So what we're referring --

Mr. Barton: -- for each area.

Member Richardson: -- to as temporary or visitor badges are something different?

Mr. Barton: Very much so because we have the same problem essentially that those temporary badges weren't being migrated to the indexing system. So

they wouldn't appear necessarily in those printouts.

Member Richardson: So who would be issued a temporary or visitor badge?

Mr. Barton: Well, any number of -- if they were only going to be there temporarily for perhaps a week or a day or two --

Member Richardson: So let's imagine a health physicist who's moving around the site and you're contending that they don't wear a single badge as they move around the site. So health physics staff who move between areas would be on the routine basis or on the temporary basis of having -- where would their dosimetry information appear?

Mr. Barton: Well, like I said, it would depend on the individual situation. But certainly, there were workers who had a -- I don't want to say permanent but a routine badge in each area. As they came out of one area, they would drop their badge, go to the next area, pick up the other badge, and then go into that area. So that's the multiple -- area multiple badge.

Member Richardson: And maintenance, painters, construction, are they all maintaining multiple badges across the site?

Mr. Barton: When we looked at -- which included subcontractors, we saw evidence that some of them were. Now, of course, there are still the temporary badges which we haven't captured a large percentage of them to my knowledge. So --

Member Richardson: So --

Mr. Barton: -- really, the answer is, it's a combination.

Member Richardson: Okay. And if we think in terms of maybe -- I don't know if you have a sense of this.

Well, one, the number of records, nonzero and zero of temporary badges. But more importantly, the collective dose recorded in the temporary badging system, do you have a sense of how large that is?

Mr. Barton: I really don't. That would be part of the completeness analysis because we'd have to do a similar thing of figuring out how many temporary badges were issued for a site area -- in this case, CPP -- in a given month. And then we'd have to see how many we have that month.

Member Richardson: Because really what I'm thinking is we've pointed to the problems of linkage by poor legibility name. And potentially, is it a full name? Is it a full first name and a last name? Or is it an initial?

Mr. Barton: Sometimes, it's a first full name, but usually, it's a first initial, middle initial, and last name.

Member Richardson: And if there's a substantial amount of the collective dose that's recorded in the system like that which is indexed only by name and we've focused on the correct classification of the zero records. But I would be equally concerned about the misclassification of the nonzero records, if that's just -- sometimes we think about these visitor badges as being sort of inconsequential.

But if it's being used and it actually represents a substantial amount of the collective dose which is being distributed, we've got problems of assigning dose to people with very similar names. Somebody is losing it and somebody else is picking it up.

Mr. Barton: I understand your question, and Tim might be able to get into this better than I. But I understand it, if you had a positively accrued dose, then you would essentially be assigned what's known as an S number which is a security number, I guess.

Also, they have HP numbers. But once you're assigned that S number, typically, you've made it into the IBM system.

Now, the question about name spellings and such, I guess that would be --

Member Richardson: Okay.

Mr. Barton: -- separate.

Member Richardson: So they're doing some sort of greater scrutiny on the nonzero badges and they're trying to assign them a unique number which will -- yes.

Mr. Barton: Yes. No, I know.

Member Richardson: It's tricky because they're temporary badges again, right? And they would have to link them back.

Dr. Taulbee: This is Tim Taulbee. That's absolutely correct. Whenever the dosimeter came back as positive, regardless of what it was, they got issued an S number, as Bob pointed out, and then they were entered into the IBM system. So there really isn't a large collective dose missing out there from that standpoint. That's really not the issue. It's the zeros is where the problem is, somebody going into an area.

And if I could just elaborate on your health physics question, a rad tech going around. If you take, say, a health physics technician from TRA and then they needed to do work at CPP as well and they had a badge at both locations. So they might just have two routine badges, but then they got assigned to go down to the burial grounds, then they would be issued a temporary badge if they weren't on the routine badging for that area. So it's a mix.

Member Richardson: Yes.

Dr. Taulbee: It's not just one or the other. It's a mix. If they were routinely going into an area, they had a routine badge. These temporary badges that we're looking at are people who did not routinely go into the area.

Member Richardson: Mm-hmm.

Member Ziemer: This is Ziemer. So am I correct in understanding then that if they had multiple badges, which could be up to six, they would never be wearing more than one of those in a given area; is that correct?

Dr. Taulbee: That is correct.

Member Ziemer: Okay. So the dose of record is always from the dosimeter that's assigned for that particular area then?

Dr. Taulbee: They could have a dose in one area and a dose during the same cycle in another area, and both of those would be included in the record.

Member Ziemer: Yes, okay. I see what you're saying, right.

Mr. Katz: Any other questions?

Member Lockey: Yes, I guess I have one question to Bob. I think I understand your concern, but I'm not sure. So if somebody had a temporary badge and there's actual dose assigned to that badge, then they're issued an S number --

Dr. Taulbee: That's correct.

Member Lockey: -- is that correct?

Dr. Taulbee: Yes.

Member Lockey: And when they're issued an S number, is the demographic information more complete?

Dr. Taulbee: Yes, to be entered into the system, the full name, Social Security number, the S number.

Member Lockey: So does that take care of your question?

Dr. Taulbee: I guess so. But operationally, I'm not quite sure I see how it happens. The information was recorded on an index card. And then how are they following back and getting that? It would seem like --

This is from the procedures that we were able to read about if a positive dose, they were given an S number and they were entered into the dosimetry system. We've talked to the technician who did this. She's actually still alive. But we didn't go into that level of detail. How did they do the follow up? I don't know.

Member Richardson: Because you would have the record, right.

Dr. Taulbee: But it's in the record saying that they did.

Member Richardson: I mean, they've just got a badge at that point, and they're processing at least temporary badges.

Dr. Taulbee: Well, to go into the site, you had to have had a contract or a reason to be there --

Member Richardson: Oh, no.

Dr. Taulbee: -- or reason to --

Member Richardson: Oh, no. I'm saying for how they're reassigning, how's the S number retroactively being assigned to the dosimeter based on information which they don't know whether it's going to be positive or a nonpositive in a reading cycle?

Dr. Taulbee: After they read it, my understanding is they did follow up to make sure that person got

entered into their system.

Member Lockey: I was trying to figure out how they went from a temporary badge where nothing was recorded, that person is lost to a temporary badge where they have a dose. And then they apparently follow up, gather the necessary tracking information. That's what you're saying happened, correct?

Dr. Taulbee: That's correct.

Mr. Barton: That's our understanding.

Member Anderson: So would a worker have, if they went into different areas, multiple S numbers?

Dr. Taulbee: No.

Member Anderson: So how would they know --

Dr. Taulbee: So they have a single security number.

Member Anderson: -- if it's you've got a temporary badge that's positive, it's assigned an S number?

Dr. Taulbee: That person is assigned an S number, that person is. So then they go into another area --

Member Anderson: But if there's an error in the name or something, it would appear as a different person.

Dr. Taulbee: Well, that positive badge, they would do follow up to identify the person and get a Social Security number and get the other information, get the right spelling --

Member Anderson: Okay.

Dr. Taulbee: -- that type of thing. There's not many of these temporary badges that are positive. Okay? And if they are positive, they're actually typically a routine worker, one of the Phillips Petroleum workers who's going from TRA to CPP type of thing to do a

job.

You don't see a lot of the temporary badges, people from subcontractors of subcontractors that are actually positive. Because remember, construction was actually kept separate. So you'll see a few construction in the temporary badges but not many. It would be the odd construction that would come in. The regular construction folks that were allowed to go in those areas were on routine badges.

Member Richardson: So you're getting back to my question. Your sense of the collective dose on the temporary or visitor badges is very small?

Dr. Taulbee: That's correct.

Member Lockey: But it's still recorded?

Dr. Taulbee: Yes.

Member Lockey: Okay. Small but recorded, right?

Dr. Taulbee: It is.

Member Lockey: Is there any evidence of the temporary badge where there was a dose? Or you don't have additional information, you didn't get an S, I guess you wouldn't have that information or maybe you do?

Dr. Taulbee: I don't know the answer to that.

Mr. Katz: Other questions, Board Members? Okay then. Thank you, Bob. Thank you, Tim. More to come. I expect INL will be on the agenda for the next meeting. Because by then, we should have a follow-up on a number of all these matters, I think. Okay.

So we move on to Pacific Proving Grounds. This is a follow-up. We've had more extensive presentation on this. We had an issue raised, and Jim will remind you what the issue was and --

Mr. Hinnefeld: Ted, just one comment. This is also a PDF, and so it's not on this. I can't show it on Skype, but I can show it to the room.

Mr. Katz: Okay. So for folks who are following by Skype, you can pick this material up on the website. But you won't have a page-by-page following of that by Skype.

Dr. Neton: Thanks, Ted.

Mr. Katz: Next we have Jim. Thank you.

Dr. Neton: Just like my presentation yesterday, this is not a new slide deck. This is an excerpt of the presentation that Dr. Lockey gave back at the Santa Fe Board Meeting in August of last year. About a year since this issue has been raised, but it took us a while to get there. But I think we've resolved the issue.

Just to remind everyone, Pacific Proving Grounds, I looked up this morning, was SEC 20. That's quite a while back, back in 2005, I believe, where Pacific Proving Grounds was granted an SEC for the entire covered period of 1946 to '62.

Subsequent to the issuance of that SEC -- establishment of that SEC, SC&A years later was tasked with reviewing the Site Profile for the site, Rev 00, and that was around the 2013 time frame. And the Work Group took that task to heart. And over the next several years -- and these are just some summaries of excerpts of what Dr. Lockey went over. I just want to establish the review cycle we went through here.

We went through a series of Work Group meetings. There were a number of findings issued. All findings -- an agreement was made to resolve all the findings and put in advance until Rev 01 was issued. Rev 01 came out in July of 2016, and SC&A reviewed Rev 01 to make sure that we followed up on those issues and correctly close out the issue of the revision.

And the review came out in December 2016. They concurred with all of the revisions that we made and recommended closure. And in April 2017, the Work Group concurred with SC&A's recommendation and closed all the findings.

This is when Dr. Lockey presented in August last year and said the Work Group concurred with the findings. But at that time, Dr. Melius had a question, and this relates -- and I've highlighted in yellow here the specific issue Dr. Melius raised which specifically refers to Findings 3, 4, 8, and 9. They're all sort of related to the same thing. They're related to issues related to cohort badging, estimation of missed dose, and use of the 50th percentile.

And one thing that caught Dr. Melius' eye was what I highlighted in the first bullet under there that said that these issues are intractable. Well, sort of by definition, that means they can't be solved or not readily solved. And nonetheless, the finding was closed saying the use of 95th percentile was reasonable.

I agreed at that time to go and look at the Site Profile and see what we could do about this sort of incongruity that was apparent. And I did. I went back and looked at the Site Profile.

And it turns out in the Site Profile for the Pacific Proving Grounds, there's a number of tests that occurred, about 15 or so, that were covered in the Site Profile. And each one had data that was based on categorical data or summary data bins of exposure categories. We knew how many badges there were and there was a listing in these DOE reports of exposure from 0 to 40 milliroentgen and 40 to 100 and so on, up to about 3 roentgen to whatever.

And so we didn't have a complete data set. We had a summary of the data, and we fit a lot of normal distribution of that. And that's what we used for the

coworker model.

Well, interestingly, when I went back through the Site Profile to review it, a sentence caught my eye which said, this categorical data provides a 50th dose for each operation and can be used as coworker dose until such time as coworker data is available.

So it was intended to be temporary all along. And in discussing this with Tim Taulbee, he informed me that the Department of Energy indeed had all the badges. And we should get them and develop a coworker model from that. And that's, indeed, what we did.

With a little help from -- we had to persuade them a little bit. But when they finally eventually provided us 57,000 individual badge reads for all those sites, those badge reads were coded -- individual badge reads. And log-normal distributions fit to each shot from those badge reads. And we developed the 95th percentile values from them.

A little bit of a glitch here in the sense that these did not exactly -- in some cases, they did not fit a log-normal distribution very well because for the higher dose shots, as you get higher up into the exposure range, it tails off like you would expect when people start approaching the exposure limits. It's a well-known phenomenon in occupational monitoring where that can happen when you get into the higher exposure rates.

So instead of that, we did not end up using the log-normal distribution but we use an empirical fit to the 95th percentile rank order value of the distribution. And so now, indeed, we issued -- in July, I think, a couple of months ago or last month, we issued Rev 02 of the Site Profile which has individual coworker models based on all the data that we obtained from the DOE for the individual badge results.

And I believe that that solves this issue. It gets rid of -- we incorporated missed dose into this model. The cohort badging issue, in my mind, goes away at that point. And use of the 50th percentile didn't make a lot of sense because you really don't know what these people did.

When you go there, a job category is really not that informative of what the potential exposure would've been. So everyone would receive the 95th percentile missed dose if they weren't badged. And if they were badged, I think the Site Profile now says that to compare the two and take the 95th percentile or the collective dose that was reported in the badges and pick the higher of the two. So you're always going to be claiming favorable in that respect.

Member Richardson: So at this point, many people would have individual badging records?

Dr. Neton: Yes. We have individual -- DOE always provided us individual badge results. They wouldn't just parse them out of their database and give them to us. We requested the entire databases, included other cells. And that's how we developed the coworker model. We're no longer relying on those categorical data sets that were extracted from summary reports.

So I think that solves or addresses this issue. And I'll take Dr. Lockey's part here, but the Work Group met last week on August 10th. The Work Group met on August 10th and concurred with our resolution on this issue.

So that's all I have to say.

Mr. Katz: Dr. Lockey, do you want to say anything?

Member Lockey: It's well said. I think we've come to a conclusion with this particular -- with PPG. And I think we can present to the Board that we should accept the NIOSH recommendations and close it.

Mr. Katz: Questions from Board Members?

Member Lockey: It's a great data set.

Mr. Katz: Not hearing any questions on the phone from Board Members?

Member Roessler: None here.

Mr. Katz: Okay. Lacking any questions, we have a --

Member Ziemer: Well, did this result in a PER or what's the overall outcome on this in terms of impact on previous done dose reconstructions?

Dr. Neton: Yes, good question, Dr. Ziemer. This is Jim Neton. Yes, a PER will be initiated on this. Some of the 95th percentiles were actually higher in a number of cases than the categorical 95th percentiles, so yes.

I would say there aren't that many cases. I think I checked this morning, and we have 223 total cases from the Pacific Proving Grounds, three active and it's in SEC already, of course. So it would only involve -- we're doing cases that were not paid by the SEC.

Mr. Katz: Any other questions? Okay then. So we have a recommendation from the Work Group that the Board conclude its review of this Site Profile. And we don't need a second for that. So if everyone is ready, we'll take a vote.

Anderson?

Member Anderson: Yes.

Mr. Katz: Beach?

Member Beach: Yes.

Mr. Katz: Clawson?

Member Clawson: Yes.

Mr. Katz: Field?

Member Field: Yes.

Mr. Katz: Kotelchuck?

Member Kotelchuck: Yes.

Mr. Katz: Lockey?

Member Lockey: Yes.

Mr. Katz: Richardson?

Member Richardson: Yes.

Mr. Katz: Roessler?

Member Roessler: Yes.

Mr. Katz: Schofield?

Member Schofield: Yes.

Mr. Katz: Valerio?

Member Valerio: Yes.

Mr. Katz: And Ziemer?

Member Ziemer: Yes.

Mr. Katz: And it's unanimous. The motion passes, and that Site Profile review is completed. And much thanks to the Chair, the Work Group Members, SC&A, NIOSH for all the work that went into getting this review done. It's great. Okay. Without my glasses, I can't read the time. I think it's 9:47. Thank you. So we finished a little early, and the next up is De Soto. I'm looking for the petitioner.

Okay. So let's take a break. What I'm hoping to do is actually start that session early. Since we have the

petitioner here, I think we could do that. So right now -- I mean, our break is listed to go to 10:30, but we're early.

So why don't we try to -- assuming that I can find the petitioner, we can get started early. Why don't we plan -- it's 9:50. Well, it's pretty close to time. Let's try to start at about 10:05, if we can be back here then. And if the petitioner is ready, we'll do that. Otherwise, we'll wait till 10:15.

Thank you.

(Whereupon, the above-entitled matter went off the record at 9:50 a.m. and resumed at 10:12 a.m.)

Mr. Katz: So we're back after a recess. We're just going to start a little bit early for the De Soto -- barely early for the De Soto session. So let me just check and make sure I have my Board Members on the line. Paul and Gen?

Member Ziemer: Yes, we're here.

Member Roessler: This is Gen. I'm here.

Mr. Katz: And Bill?

Member Field: Yes, I'm here.

Mr. Katz: Super, thanks. Okay then. Off we go. Lara?

De Soto Facility SEC Petition #246

Dr. Hughes: Okay. Thank you, Ted. Good morning, everybody. This is the NIOSH presentation for the De Soto Avenue Facility SEC evaluation.

At this point, I'd like to acknowledge the support from our contractor, Monica Harrison-Maples, who did the majority of the work of bringing the Evaluation Report together.

So the De Soto facility is closely related to Area IV of the Santa Susana Field Laboratory of which you are somewhat familiar with because we've had actually four different SEC petitions in the past -- SEC-93, 156, and 234 -- all recommended classes to be added to the SEC effectively resulting in the entire operational period of Area IV being covered under an SEC.

There was also one prior SEC evaluation for the De Soto facility that was related to issues with internal data or bioassay data. And that goes from 1959 through 1964. The current SEC Petition 246, at this point, NIOSH does not recommend adding a class to the SEC.

This petition was received December 2017, and additional supporting documents were provided in February and March of 2018. The requested class was all workers who worked at the De Soto Avenue Facility from a period from January 1st, 1965 through December 31st, 1995. This is the entire operational period, not including a remediation period in 1998.

This petition qualified on March 1st of this year. We did not modify the petitioner requested class in any way. The Evaluation Report was completed and sent to the Board in July of this year within the 180-day time frame. And NIOSH does not recommend a class to be added to the SEC.

The reasons this petition qualified was that the previous evaluation for Area IV was added to the SEC because of issues with thorium and americium exposures that cannot be reconstructed at Area IV. Now, this sites are closely related. They share health and safety oversight, health physics oversight. They share workers. So naturally, it seems likely that the same issues pertain to the De Soto Facility.

The petition requested us to look into americium and thorium at the De Soto Facility related to the SRE

relations. There are some called the TRUMP-S program and the SNAP reactor, a fuel fabrication. There's some indication of thorium fabrication work.

And NIOSH is also aware of the issues with controls with environment pollution as the bioassay contractor from '92 to '94. This was the subject of a previous evaluation for Area IV. And so we naturally needed to look into that for the De Soto Facility as well.

A little bit of the statistics, the total number of claims that are submitted to NIOSH for dose reconstruction are 292 as of July. The total number of claims for workers who worked during the period under evaluation in this petition evaluation is 255 -- 210 of those are completed, 64 of those had internal dosimetry records for the evaluated period, and 104 had external dosimetry records for the evaluated period.

The site description, the site is located at 8900 De Soto Avenue in Canoga Park, California. There's a little cutout of a map showing the Greater Los Angeles area. Santa Susana Field Laboratory, SSFL, is labeled. And you can see the relative location of the De Soto Facility.

Again, the DOE covered period is 1959 through 1995 with a remediation period in '98. And this is a fairly large facility consisting of several buildings. Two of these buildings were involved in radiological work. Building 001 was used for fuel fabrication, and Building 004 was used for research and development and also has a facility called the Gamma Irradiation Facility and the Helium Mass Spectrometry Lab.

This is a blueprint of the De Soto Facility. You can see the two highlighted buildings, Buildings 001 and 004, along with other buildings that were not involved in the DOE contracted radiological work.

The facility was constructed in 1959 and became the headquarters of Atomics International. It was moved from the Canoga Avenue Facility which is also a related site in the area.

DOE operations from 1959 through 1995 consisted of engineering design and construction of operations supporting DOE operations at Area IV and De Soto Facility, they did nuclear fuel fabrication until 1983. They housed the L-77 research reactor until October 1974 when it was decommissioned and the fuel removed in 1976. The Gamma Irradiation Facility operated from 1966 through 1994. The Helium Mass Spec Lab, they did radiochemistry support for operations at De Soto and Area IV and they did fuel fabrication for the SNAP program from 1955 through 1973.

So as operations wound down in the 1980s for most of the nuclear activities except Gamma Irradiation and Mass Spec Lab, those nuclear areas that supported fuel fabrication were decommissioned around the 1984 time frame. The Gamma Irradiation Facility operated up until '94 and the Mass Spec Lab until 1995. These two facilities, the Gamma Irradiation Facility and the Mass Spec Lab, were decommissioned in 1998. That's what is this one year remediation period.

So to evaluate this petition, we looked at our typical information researches, the Site Profile, coworkers studies. We researched the NIOSH Site Research Database where we have accumulated over 3,000 documents that are related to Santa Susana Field Laboratory, Area IV, and all related sites.

We looked at the existing claimant files. We looked at the database that contains all of the work force that were monitored for radiation. We have those scans so we can look at those for information. We looked at the documentation provided by the petitioner, and we had some interviews that were

previously done. And we conducted a few more interviews of former workers of the De Soto Avenue Facility and Santa Susana Field Laboratory.

So we looked into the two main focus points of this petition was americium and thorium. We looked into any operation with americium. There are some instances of americium storage and shipping operations from the vault at the De Soto Facility. The facility also had a license to fabricate Americium sources. But we found no information or indication that the source fabrication or any other operation involving americium took place at the site. Interviews confirmed that.

We also found no occupational exposure data for americium. We would kind of expect to see some indication in the documentation if there was hands-on activity operation with americium that there would be some kind of indication of that in the health and safety health physics files. The only use of americium we found was in commercial products such as in smoke detectors.

Now, for the thorium, it's a little different. There's a brief campaign in May and June of 1970 where they produced a fuel simulant containing thorium oxide. This was a simulated fuel. It was not to be used in an actual reactor, but they were using it for stress testing, what would happen to it if it was basically blown up in one of these space reactors -- the SNAP reactors.

Now, the testing was not done at De Soto. It was done at Sandia. So the only thing that was done at De Soto for this campaign was that they produced -- they pressed it into discs. And then after it has been tested, they took it back apart and disposed or processed the product after the campaign was complete.

There was an application for a use of thorium oxide

in 1971, but we found no indication that this was actually done at the site. There was no -- this was something that was apparently planned but didn't pan out. And so in 1979 was another campaign consisting of machining thorium metal plates. That was a much larger operation that was out in the open.

I should say that the operation in 1970 was done in enclosures in glove boxes and that type of thing. The 1979 machining operation has same safeguards, but it was out in the open.

For both of these campaigns, we have bioassay and air data. And both of these were relatively small scale processes. They were well documented down to the names of the operators that were involved. There are logs of who did what when, and we actually have these workers' files.

So we looked into the petition concerns. One of the petition concerns was that the SRE fuel, the SRE, the sodium reactor experiment. That was run at Area IV, this reactor used several cores, different core configurations. And one of them contained thorium in the fuel. They're all indications that this thorium fuel was fabricated and stored at Area IV. It was not produced or handled at De Soto.

There are some indications that the fuel for the Core 3 might have been stored or some fuel elements, fuel slugs maybe that were for Core 3 for the SRE might've passed through De Soto, but those were uranium containing.

The SNAP fuel production operations only consisted of uranium. There was also no used fuel handling at De Soto. This was done at Area IV. The fuel handling was done before, it was put in the reactor, essentially not after.

This TRUMP-S program, there's no indication this was

ever operational. This was some kind of small scale research program that tried to investigate the -- it was like a waste processing experiment that was not actually ever -- that didn't actually take off, neither at Area IV or De Soto.

So as for the CEP issues as the primary vendor for urine bioassay samples from '92 to '94. That time period at the De Soto Facilities, all nuclear facilities had been D&D'd except for the Gamma Irradiation Facility and the Mass Spec Lab. And as was the conclusion for SEC-00235, for Area IV, we found no impact on the feasibility to do dose reconstruction due to disregarding the CEP associated data from '92 to '94.

So the internal exposure potential at the De Soto Facility was inhalation ingestion of radioactive contamination from unsealed materials from fuel production and radiochemistry operations. The De Soto internal exposure potential is a little different from Area IV. It's mostly uranium from fuel production. There was this -- they had this facility that did the Uranium-Aluminide fuel for the advanced test reactor that was run at Area IV.

This is the potentially limiting exposure scenario at the De Soto Facility, and it has been realized in the past. And NIOSH has developed a special DR methodology for these Uranium-Aluminide workers. And this is currently in the Technical Basis Document. The thorium work again was only episodic in 1970 and 1979. And there's no indication of americium exposure potential.

We have internal monitoring data available for radiation workers that worked in high contamination areas. Workers that handled unencapsulated radiological materials were generally monitored for internal exposure.

There was also some called special samples that were

typically triggered by high air sample results. So these are in vitro and in vivo routine monitoring data that are available. They had a radiological controls manual in place, and this was an event-condition driven special sampling program that was available. Again, that was mostly triggered by air sample data.

So how do we propose to reconstruct thorium doses? So the 1970 operation was this production and post-test analysis of simulated fuel disks. And the 1979 machining operation of thorium metal discs, we consider as a dose bounding operation. This was an operation that was a much larger quantity. It involved machining, and it had limited containment. It was an eight-day operation.

We have the operational detail and worker rosters. The main operator had a baseline and a post-work analyses for thorium. We also have lapel air sample results. We can take those bioassay data and develop a chronic intake for natural thorium using this MDA level that is available and assign doses based on those intakes.

So in conclusion, the fuel fabrication operations at the De Soto Facility present no dose reconstruction infeasibility. Bioassay is generally available after 1965. The coworker model is available for potential unmonitored internal exposures. We have identified no exposures to americium. And the thorium campaigns in 1970 and 1979 have thorium-specific personnel and workplace monitoring. And does can be bounded. Also, the lack of the CEP data does not affect NIOSH's ability to perform sufficiently accurate internal dose reconstructions.

So this is our summary slide. And with that, I am finished and welcome questions.

Questions on Presentation

Mr. Katz: Thank you, Lara. We do have questions

from Board Members in the room. Dave?

Member Kotelchuck: The folks at the Santa Susana Field Laboratory, they're covered in an SEC through 1988. But you're suggesting that in the -- you were proposing that in the De Soto Facility, you can determine the radiation levels with reasonable accuracy. And therefore, you request denying this petition.

Tell us a little bit about how the personnel -- how you dealt with personnel moving between the different facilities, which we've heard about from the folks there in the past. How separate were the workers, or how much did they go back and forth between the two places?

Dr. Hughes: They can go back and forth as they are assigned. It's my understanding they are employed by the same employer, the De Soto Facility and Area IV. So they could assign any worker. I mean, I don't know how much input they have. But yes, they could assign a worker to the De Soto Facility from Area IV.

Member Kotelchuck: But that's what we've heard. But you don't know what kind of exposure they've had. We cannot determine what kind of exposure they had during this period in the SSFL facility. Therefore, people are going back and forth and getting exposed in both facilities. And how can you -- I'm a little confused as to how you feel like that you can determine the exposure in the De Soto Facility only.

Mr. Hinnefeld: If I could offer something. This is Stu Hinnefeld. The SEC determination has to be a site-specific determination -- covered site specific. And so what we've reached -- the conclusion we reached on SEC is for the exposures that occurred at the De Soto facility, we have sufficient information to do sufficiently accurate dose reconstruction.

We recognize that people would be -- may move back and forth, but that would be an issue for the Department of Labor to verify that they had 250 days of employment at Santa Susana. So Department of Energy determines where people were and how long they spent at the covered facility. So in that case, it would be up to them to determine whether a person spent 250 days at Santa Susana during this time.

Member Kotelchuck: Oh, so it's the site specificity?

Mr. Hinnefeld: An SEC determination is a site-specific determination.

Member Kotelchuck: Okay. Thank you.

Member Lockey: So can I follow up on that?

Mr. Katz: Of course.

Member Lockey: So if somebody is at SSFL or somebody is at De Soto and went to SSFL for a week and then came back to De Soto, they would be -- their exposures at SSFL would not be considered in relationship to whether they --

Mr. Hinnefeld: Depending on what their exposures were at SSFL. There are certain kinds of exposures at SSFL we can't reconstruct.

Member Lockey: That's right.

Mr. Hinnefeld: And so those would not be included in the dose reconstruction. If we had that kind of granularity in their exposure record, yes.

Member Lockey: But they would not be considered as part of the SEC then?

Mr. Hinnefeld: Well, it would be up to the Department of Labor to determine whether they spent enough time at SSFL to be in the SEC at SSFL. They would need 250 days there.

Member Lockey: Oh, I see. So DOL would have to say they spent 250 days at that facility?

Mr. Hinnefeld: Yes.

Member Lockey: Okay. That's what I was asking. Okay.

Mr. Hinnefeld: Yes.

Member Roessler: This is Gen. I have a question --

Mr. Katz: Yes, Gen. Go ahead.

Member Roessler: -- with regard to Work Group. Is the Work Group for this facility the same as the one for Santa Susana?

Mr. Katz: Yes.

Member Roessler: Okay. I thought it was, but I just wanted to verify. Thanks. I guess, then, has the Work Group met on this --

Mr. Katz: No, this is being newly presented, Gen --

Member Roessler: Okay.

Mr. Katz: -- at this Board meeting.

Member Roessler: Okay.

Member Beach: My question --

Mr. Katz: Go ahead, Josie.

Member Beach: -- is on the badging. How are the employees -- I know they're going back and forth between the two facilities. How are we tracking the badging between the two facilities? Are they badged independently or one badge and it can go either direction? Do you have any comments on that?

Dr. Hughes: I'm not sure. We focus so much on the internal. I believe they don't. They're not

individually badged at each site. I have not seen concurrent. Like, they don't have one badge at De Soto and one at Area IV. I think it's -- I mean, the -- I'm not sure they go back and forth.

If you have an individual that would go back and forth a lot, I would think they would carry their badge with them. But that's really something I would have to verify. They also work a fair amount with visitor badges, so it could very well be that a worker at Area IV who was regularly badged would go to De Soto temporarily and would receive a visitor badge.

I'm not sure. We have to verify that because we haven't looked a whole lot into the badging issue. We know it's generally available. We were able to do an external coworker model. I mean, there's not really been an issue. But it's a good question.

Member Beach: And then bioassay data, is that tracked through De Soto or SSFL?

Dr. Hughes: It's all one -- it's one operation. It's one corporate entity, so it's all -- it's one. If you pull up any given worker's record, you cannot tell necessarily where they worked. We only know they were monitored, when you see the bioassay data, whatever was sent back from the -- whoever was the vendor at the time, that sort of thing.

So who worked where when is really -- it's a job for DOL to parse out, and it's not an easy one, I understand.

Member Richardson: Just to follow up on Josie and David's question, so it's not the badge which DOL would be able to turn to, to say that that person worked 250 days at Area IV?

Dr. Hughes: It's my understanding DOL goes by the human resource records they receive from Boeing which often are related to where the person stamped their timecard which may or may not be the location

where they worked. It's been a problem with DOL being able to verify for the entire --

Member Richardson: Oh, I can imagine.

Dr. Hughes: Yes.

Mr. Katz: Phil?

Member Schofield: Do you have access to incident reports like nasal swipes or smears --

Dr. Hughes: We do have --

Member Schofield: -- and what their analysis was and levels?

Dr. Hughes: Yes, we do. We do have incident report access. There's a database that contains incident reports that were logged. They typically contain the names, what happened, what kind of follow up was done. We have not specifically looked for nasal swipe data. I know we have breathing zone data for this particular thorium operation. I'm not sure about the nasal swipes.

Member Schofield: Okay.

Member Richardson: Turning to the issues of americium and thorium, you described two activities that you identified involving thorium, one of them fabrication of thorium fuels and the other one grinding of substantial quantities. I guess they were working with thorium in the late '70s. It's somewhere around 200 kilograms of thorium.

Dr. Hughes: Yes, they did this for some -- I think it was a Japanese entity. So they didn't actually use the thorium after it was done which is something they did for -- it was a contract operation of some sort.

Member Richardson: And I understood you to say that the latter activity -- could you describe again? I thought --

Dr. Hughes: Yes.

Member Richardson: -- you had said it was outdoor, open --

Dr. Hughes: No, it was -- well, it was in the lab but it was out in the open. It was a machining operation, so there was a lathe involved, I guess. And there was a higher potential for creating airborne compared to this 1970 operation which was done in a glove box enclosure.

Member Richardson: Right. And so for reconstructing thorium -- a dose from an intake of thorium, in the latter situation, you had pointed to a roster of people involved in that list. But was there control over movement through that area? Or are you relying on records which would say that somebody spent some time or passed through there?

Dr. Hughes: Yes, it was one room in the facility. And so there was a list of this, basically a name -- one name. Like, this is the main operator and this is his helper. And he did this operation on this-and-this date from this-and-this time period, that sort of thing.

Member Richardson: And I understand that in terms of sort of the primary person who's involved in the activity. But what is NIOSH imagining for reconstruction of exposures to thorium in that situation in terms of other people who may have been in the room, who may have moved through the room. Was the room completely -- assumed to be completely clear after we were done?

Dr. Hughes: It was cleaned up after it was done. As for the person passing through, we have really no way of --

Member Richardson: But again --

Dr. Hughes: -- determining that.

Member Richardson: -- what's NIOSH proposing to do?

Dr. Hughes: We could bound the dose using the operator data.

Member Richardson: For everybody at that site?

Dr. Hughes: No, probably people that would have been involved in the thorium operation.

Member Richardson: So you're imagining bounding dose for the short list of people who are on the roster of specifically conducting the activity but for nobody else?

Dr. Hughes: I would think so, unless there's indication that they happen to, you know, be in this room for some reason.

Member Richardson: And what would that indication be? Because we can't even place them in Area IV versus De Soto in terms of placing them in that room.

Dr. Hughes: Well, it would come out of the -- like, an interview or personal information that somehow relate.

Member Richardson: So you're asking them to recollect in 1979 whether they were in a room or not?

Dr. Hughes: Well --

Member Richardson: I'm just asking.

Dr. Hughes: Yes, I mean --

Member Richardson: I mean, because the proposal is that it is feasible to reconstruct this.

Dr. Hughes: It is feasible.

Dr. Neton: This is Jim. I think this is a situation we face all the time where we can't clearly identify who

may have been in and about the room. And this is a fairly short duration operation?

Dr. Hughes: Eight days.

Dr. Neton: Eight day operation? I don't see why wouldn't, at this point, say anybody who had the potential to be in that area we would assign the full exposure to maybe the 50th percentile. I'm not sure. We haven't clearly got all the details worked out. But I don't see how we could limit it. I agree with you that it's very difficult in these situations to say it's only the operators. There are other maintenance staff and such that would've been there involved. So I think we would expand that list to include certainly people that had potential to be in that area, operators, that sort of thing.

Member Richardson: But right now, it's -- how this is actually going to work isn't quite figured out.

Dr. Neton: I thought we had done that, but I'm not recollecting right now.

Dr. Hughes: We've done some dose assessments based on the operator data, but we haven't done -- we could certainly provide, like, sample dose reconstructions for various --

Dr. Neton: We focus mainly on the bounding issue and then how you attribute it to the other classes. It's pretty standard procedure, though, in this case that anyone who would've, could've been an operator working in that area would've been -- received the 95th percentile, and administrative type folks who could've passed through probably would be the 50th percentile. It's a fairly standard approach that we use for these types of situations.

Member Richardson: Yes, I mean, I get that for the people who are conducting the activity. But I was just trying to clarify what's going to happen with -- you know, maybe I'm naive. I'm imaging 200

kilograms of thorium as being something substantial.

Dr. Neton: It's not as much as you think. Thorium is a pretty dense metal, and I think there was some limited operations. I think it was trimming these plates. I forget. It was --

Dr. Hughes: They grind the corners off.

Dr. Neton: Cut the corners off of these plates. I mean, and we have lapel air sample data. It was pretty low values. I mean, these were not extreme situations.

Member Richardson: And the other activity, the -- the manufacture of fuel?

Dr. Neton: Oh, the fuel in the -- as a glove box operation? Lara?

Dr. Hughes: Yes, it was a glove box operation that consists of milling some thorium oxide, coating it with molybdenum, and then pressing it into these fuel plates, I believe.

Mr. Katz: Other questions from Board Members? Brad?

Member Clawson: Yes, Lara, we're talking about a hot shop down there at De Soto. So they built this fuel. They took it up. They ran it, and then they brought it back to the hot shop to disassemble it and research it?

Dr. Hughes: No, the -- well, the hot cell facility was at Area IV. So they did not use -- they didn't take spent nuclear fuel from a reactor into the De Soto facility. There are no indications. They didn't have the facilities to do that.

Member Clawson: Okay. So that was up in Area IV?

Dr. Hughes: Yes.

Member Clawson: Okay.

Mr. Katz: Do we have questions from any of the Board Members on the line?

Member Ziemer: No questions.

Member Field: No questions here.

Member Roessler: No further questions.

Mr. Katz: Thanks. Loretta?

Member Valerio: So if a DeSoto employee was at Area IV and involved in an incident, would that -- number one, I would assume that the duration of that incident, the follow-up would all be documented in the records. Is that going to be in the Area IV records or in the De Soto records?

Dr. Hughes: There is no differentiation. If we receive a claim and we request the claim data, we get one single packet of radiation dose records from Boeing, I guess. And there is no differentiation. From solely looking at those records, we cannot tell where this person worked. It was all one company, one oversight, one health physics program.

Member Valerio: But it would document the date of the incident if there was an --

Dr. Hughes: Yes.

Member Valerio: -- incident --

Dr. Hughes: Yes, so you can --

Member Valerio: -- situation --

Dr. Hughes: Based on -- yes, you could potentially place a worker based on this type of evidence. So if they say, well, there was an incident at, you know, the SNAP fuel production involving uranium aluminide, that would place him at De Soto. If there

was an incident at, let's say, the SRE, that would clearly place them at Area IV.

So, yes, we can use that type of information that was in there. But there's no clear-cut information saying, you know, Joe Smith worked at De Soto from this-and-this period to this-and-this period. This is something DOL works out or tries to work out with Boeing, as I understand.

Mr. Katz: Dave?

Member Kotelchuck: Well, I appreciate that the SEC has to be determined at a site. But I am troubled by the suggestion here that there seems to be an apparent unfairness to individual workers because let's talk about the americium and thorium.

A person working for two years, let's say '80 to '82 for a couple of years, we would be able -- they would be -- if we accept the recommendations, they would be individually assessed. We have to say we don't know what -- we know what their thorium and americium exposures are at De Soto. I accept that. The De Soto facility, if a person worked full time -- I'll back off.

If the person worked full time at the De Soto Facility, we can assess their exposure to thorium or americium. But if they worked at both for a couple of years, then we can't determine it at one place but we can determine it at the other. And we're going to make an individual assessment.

So we're going to -- part of their exposure cannot be assessed and other part can be. It just seems to me that it is a troubling thing if I were a worker and trying to -- and for us to make an assessment about the worker's exposure.

May I ask, does the -- the Working Group discussed this issue of De Soto and --

Mr. Katz: No, this hasn't been presented to --

(Simultaneous speaking.)

Mr. Katz: -- the Working Group because this is being presented newly right now.

Member Kotelchuck: But we have a Working Group.

Mr. Katz: We have a Working Group, right.

Member Schofield: This has not been before us yet.

Member Kotelchuck: Oh, okay. So we're not looking to vote on this recommendation today but to consider it and then go to the Working Group. And then the Working Group will present it.

Mr. Katz: It's entirely up to this Board whether it goes to a Working Group or not and whether we do any tasking or not and so on.

Member Lockey: So let me make sure I understand your question, though. What I understood before is that the SSFL is already an SEC. So if somebody worked at De Soto and spent more than 250 days at SSFL, they're in the SEC?

Member Kotelchuck: That's correct.

Member Lockey: That's the end of it. So you don't have to worry about it at that point because if they spend 250 days there, they're already in the SEC. Because even though they are assigned to De Soto, if they spent more than 250 days at SSFL, they're automatically in the SEC?

Member Kotelchuck: Right. And if they worked less than that, than 250 days --

Member Lockey: Then they wouldn't --

Member Kotelchuck: -- at the SSFL --

Member Lockey: -- DOL would not qualify them.

Member Kotelchuck: -- then you will make an individual assessment of their exposure if we --

Member Lockey: That's correct.

Member Kotelchuck: Yes, to me, that's still troubling. But I would think that we -- I would like to hear from a Working Group about this and their assessment. Is there some way to resolve a potential problem?

Member Schofield: Did you have any -- find any indication? Say, a person is badged out of De Soto. If they go back and forth, maybe they're spending half their time up at Area IV but yet they're badged out of De Soto. So it doesn't necessarily -- you said it's all under Boeing. How can you determine how much time they spent up at Area IV and how much time did they spend at De Soto?

I mean, is there -- as far as I know from what we've gone through in the past, there is not any way, like, a login book or something when people came into Area IV. I may be wrong on that, but my understanding, if you had a badge that covered both areas or allowed you to go back and forth, you weren't logged in. You didn't get a visitor badge.

Mr. Katz: Phil, I mean, this is just -- this is well trod turf you're talking about now. This has been discussed many times, and it is not the provenance of the Board or NIOSH to make these determinations as to how many days you have at a facility. That lands with DOL. It's stuck with DOL. It's not for us.

We may not like the situation there and so on. It doesn't really matter. It's not our provenance, and we can't resolve it. We can't act on it in any way. That's DOL's business. So I know there's been lots of communication about issues related to this, of course. It's understandable.

But that's really not something for the Board to spend its time on or its Work Groups to spend its time on. And frankly, NIOSH can only provide information related to that and it does when it has issues with that. But that's as far as it goes. It's not for us to make any determinations on an individual's basis or what have you.

Member Clawson: But that being said, the Work Group has not been able to look at this yet.

Member Schofield: No, we have not.

Member Clawson: So we could move to have this Work Group evaluate this and then get back to the Board.

Mr. Katz: Right. Just not the DOL issue --

Member Clawson: Right.

Mr. Katz: -- because that's not for the Work Group to --

(Simultaneous speaking.)

Member Richardson: Can I --

Mr. Katz: Dave?

Member Richardson: -- move from the time issue to back to Brad's previous question. The characterization of the De Soto Facility, as I understood it, Brad posed the question, was fuel fabricated, run through a reactor, sent back to De Soto. And you said De Soto didn't have the capacity to do that work. That was Area IV work. Was that --

Dr. Hughes: That is correct. They had the hot laboratory that would've had hot cells.

Member Richardson: But the description of the activity is there's an internal letter describes

disassembly work in De Soto Avenue Hot Shop Building 04 involving a Hot Shop Department 789 with 160 hours of work. So there's quite a detailed description of what sounds like the work that Brad was asking about happening at the De Soto --

Dr. Hughes: Yes, they had what they call a hot shop, but it wasn't a hot cell where they disassembled used reactor fuel to my understanding.

Member Richardson: It describes disassembly work in the facility.

Dr. Hughes: Yes, they had -- I mean, they had all kinds of materials. So there should be --

Member Richardson: Can you help me understand the nuance of what was and what was not happening there?

Dr. Hughes: We try our best to understand the nuances. It's very -- I mean, we've looked extensively at the records. And from what we can tell is that the fuel that came out of a reactor at Area IV was dealt with at the hot laboratory facility that was equipped for that purpose.

Member Clawson: I was under the impression that there was a hot shop down in De Soto and when I was reading that. And that's why -- but guess what? This comes down to the Work Group. It's going to have to sit down and look at this one. I don't know what we need to go through, but I move that we send to this to the Work Group to evaluate this or whatever.

Mr. Katz: Before we get to moving we want to complete questions, and then we want to hear from the petitioner. And then we will go back to any kind of Board actions that we want. So --

Member Richardson: Could I ask one more question?

Mr. Katz: Yes, of course you can.

Member Richardson: And this is just a total technical question.

Mr. Katz: Ask as many questions as you wish.

Member Richardson: I don't know that much about a bioassay program for thorium. Could you describe in a little bit of detail about what that involves?

Dr. Hughes: It was urine samples that were analyzed by mass. The result was in microgram, and at this point I don't recall who the vendor was at the time. But I can certainly get back to you with that information.

Member Richardson: Thank you.

Member Schofield: Were those urinalysis -- were those done on an annual basis, semiannual basis? Do you have any data that tells how often they were actually had to give urine samples?

Dr. Hughes: I think it depends on the -- for De Soto in general, it would depend on the worker and what he or she was involved in for the thorium. This particular thorium operation, the machining operation, they did a sample before the operation started and then one afterwards. So we have the dates, and they bracket the operation.

Member Richardson: And do you have a sense -- like, for thorium oxide where you've got this fuel. And urinalysis, is that -- what would the limit of detection be there?

Dr. Hughes: It's fairly high. We discussed it with our internal dosimetrists, and we're able to come up with an intake that's fairly high.

Member Richardson: Yes.

Dr. Hughes: Yes, and the doses are -- like, the lung

dose, you look at the considerable amount. But it's still bounding. I mean, it's -- but, yes, there's a high missed dose component.

Member Richardson: And were there -- I mean, is it so high that the bioassay program actually never found anything because the limit of detection for thorium oxide through urine sampling would be?

Dr. Hughes: I'm not sure. That's why we assign missed dose to account for that.

Member Richardson: Or the other way is that the bioassay program is basically not informative or in its --

Dr. Hughes: I don't know. We ran it past the internal dosimetrist, and she felt like this was appropriate.

Member Richardson: Do you remember what the lung dose was before you would get a positive bioassay?

Dr. Hughes: No, but I have the numbers. I can provide it to --

Member Richardson: Yes, I'd be curious.

Dr. Hughes: -- the Work Group. At the time, I don't have it with me right now.

Dr. Neton: One thing I would mention is this is not a routine sampling program. This was taken directly after the end of the operation. So it buys you some improvement in the detectability of dose.

Member Richardson: Because the excretion time is so short that --

Dr. Neton: Yes, yes. If you take a sample, at the very end -- at exactly the end of the excretion time, then the amount being excreted in the urine is a much larger percentage than if you took a monthly or an annual check.

Member Richardson: Yes, I understand that. But it's inhalation thorium oxide and then it's going to -- you're thinking that there's --

Dr. Neton: Yes, thorium has a fairly high detection for urine bioassay, we agree with that.

Member Richardson: Yes.

Dr. Neton: But we also had some lapel samples, if I'm not mistaken, did we not?

Dr. Hughes: Yes, we do.

Dr. Neton: Yes, and so there's more than just the bioassay, the urine samples.

Member Richardson: No, I was just curious about --

Dr. Neton: But you're absolutely right. Thorium --

Member Richardson: -- the utility.

Dr. Neton: -- in general, urine bioassay is fairly insensitive. In this case, it's incident -- it's not incident, they had a routine sample taken at the exact end of operations which does buy you some improvement in detectability. And oftentimes, when you're doing a thorium calculation, you're talking about an annual sample or a monthly sample. And the clearance curve is exponential, and it's pretty rapid shortly after intake. And so we could certainly provide you with the missed dose calculations.

Mr. Katz: Is that something maybe that would get dealt with in the sample dose reconstructions anyway? So, what? Because we usually -- sample dose reconstructions with these anyway. Any other questions, Board Members? Loretta?

Member Valerio: The two buildings, the De Soto Building 001 and 004 were decontaminated and decommissioned, correct?

Dr. Hughes: That's correct.

Member Valerio: What time frame did that operation happen, and who did the work?

Dr. Hughes: So it wasn't so much per building. It was more like operation. So the fuel fabrication areas were D&D'd in the 1980s to my understanding. There were two facilities, the Mass Spec Lab, what they referred to as the Mass Spec Lab, and the Gamma Irradiation Facility that were decommissioned in 1998.

And the work was done by the employees as far as I know. I mean, we have no indication that -- there was not an outside contractor coming in. This was done by the workers who were employed at the site at the time.

Mr. Katz: Other questions, Board Members?

Okay then, hearing none, we have D'Lanie here. Welcome. She's a petitioner for the facility. D'Lanie Blaze.

Ms. Blaze: Thank you. I'd like to thank everyone for all their hard work on this and their really good questions, too.

I'm D'Lanie Blaze, SEC-246 petitioner. I'm going to talk about why it is imperative to pass SEC-246 to act in concert with SEC-234 at Santa Susana.

Let's look at what we already know about the relationship between Santa Susana and De Soto. NIOSH says SECs have to be site specific. We know NIOSH considers Santa Susana and De Soto to be the same entity, operationally and contractually.

In fact, based on the established relationship between these work sites, SECs covering 1955 to '59 and 1960 to '64 were passed together at both facilities because it is understood that Santa Susana

and De Soto were intimately intertwined. They operated in conjunction with and in support of one another.

To be clear, it has been established that Santa Susana and De Soto shared the same DOE contractor during the same time periods, the same DOE projects, radioactive materials. The record keeping program was the same. The health physics department was the same. They shared environmental and worker monitoring practices, health and safety staff, and, most importantly, Santa Susana and De Soto shared the same employees.

Let's take a look at the situation involving the workers. We've established that these employees routinely rotated between both locations without changes in their administrative affiliation, job title, work location assignments, and without changing their radiation badges. Many times, they rotated with no documentation whatsoever.

In addition, radiation badges were issued at both locations. And in some cases, workers wore more than one badge at a time. Sometimes, they wore badges issued from both sites.

Adding to this complexity, we recently validated a visitor badge location code key which confirms that the dosimeter badges assigned to De Soto and Santa Susana often use the same numbers, making it impossible to make a distinction between which facilities that particular badge numbers may have been issued. And these were badges that were worn on monthly to quarterly occasions.

So NIOSH acknowledged that it is not possible to accurately or reliably track a worker's movements between areas of Santa Susana or between Santa Susana and the De Soto facility. NIOSH relies on the same Site Profile and the same Technical Basis Documents to reconstruct radiation dose for workers

at both sites. And given what we know about the relationship between these sites and the challenges we have in identifying work locations, it's logical that the same data limitations are going to apply.

So I question NIOSH's assertion that it can reconstruct dose to americium and thorium with sufficient accuracy for a De Soto worker but not for a Santa Susana worker because these guys are one and the same. NIOSH has not demonstrated how it makes the distinction between where workers were, when they were exposed to americium and thorium, nor has NIOSH demonstrated how accuracy and dose reconstruction is miraculously improved by virtue of a mere administrative affiliation.

I'd like to talk about materials at the work sites. The ER indicates that the materials were shipped to De Soto from outside sources and that they did not contain americium or thorium until the materials were shipped to Santa Susana and underwent certain processes.

And this explanation seems to have been provided to support the theory that americium and thorium could be present at Santa Susana but not at the De Soto Facility. But it also implies that shipping only went in one direction, from De Soto to Santa Susana, and that De Soto only ever received unprocessed materials. But facility records quickly disprove that theory.

Here are some of the documents that I supplied. Records show that materials containing americium and thorium were shipped and stored between the sites interchangeably, reused shipping containers contaminated with uranium thorium dust presented a documented concern of cross-contamination of both sites.

Records of fuel inventory show storage of spent fuel at the De Soto Facility. Log books from the De Soto

Facility clearly document ongoing operations with americium, contamination of the work area, and inhalation by workers who were present. The log books also describe cutting and reprocessing of spent uranium thorium fuel from the SRE after 1964 and the presence of transuranics like americium.

In its OTIB document, NIOSH identified americium and thorium in the stacks at De Soto in 1995. Radiological use authorizations do not specify any limitation for the use of americium or thorium at De Soto facility. These license were relevant to Santa Susana, Canoga, and De Soto without exception.

Special nuclear material licenses for De Soto show that up to 1,000 pounds of thorium were permitted as a Schedule 1 material used for research and development while americium-241 was indicated as both a Schedule 2 and Schedule 3 material. And that referenced sealed sources as well as production and fabrication which translates to operations. No limitations at De Soto facility were specified in the licenses.

Renewal of the broad scope radioactive materials licenses included americium and thorium for the express purpose of accommodating site remediation at Santa Susana. They needed to store and ship the materials from Santa Susana to the De Soto and Canoga facilities, and they did so until 1995. These materials generated at Santa Susana were likely to contain americium and thorium. And it should be noted that the Site Exposure Matrix, or the SEM, identifies a thorium storage warehouse at the De Soto facility.

I interviewed a site health physicist who was present at Santa Susana and De Soto during the proposed SEC period. He confirms that radioactive materials containing americium and thorium were routinely shipped from Santa Susana to De Soto for further processing, storage, or shipment.

His information is consistent with facility records that were supplied in support of this petition. He states that the materials were not analyzed to separate radioisotopes or to identify americium and thorium specifically. There was no time to conduct such a detailed analysis.

He and the other HPs were simply instructed to mark the materials as mixed fission products in an effort to be all-inclusive. It was understood that a container marked with MFP likely held any number of radionuclides that were generated at Santa Susana, and there would be no logical reason to assume americium or thorium would not be among them. This HP is prepared to provide a signed affidavit.

We talked about worker records and radiation data yesterday which specifically addressed an employee that had transferred and rotated between the Santa Susana hot lab to the powder room at De Soto for 45 years. His radiation data was incomplete.

There's no way we can tell which of his americium or thorium exposures occurred at Santa Susana versus the powder room at the De Soto facility. And that's if we weren't lucky enough to have his records that he collected himself because Boeing omitted his radiation data from the file.

In the ER, NIOSH appears to have discarded historical facility records in favor of conducting an interview with Boeing, although Boeing's presence at the work site did not begin until 1996, a year after the proposed SEC class ends and nearly 50 years after facility operations began.

And it was my understanding yesterday that ATL was supposed to kind of be a liaison for worker interviews, not necessarily the contractor. So I'm kind of confused why NIOSH contacted Boeing. But the hazards of relying on Boeing's information over easily accessible historical records have been well

established. There's no shortage of examples where relying on Boeing's information over documented site history has proven to be catastrophic for workers of Santa Susana and its related work sites.

Coming easily to mind is the deficient Site Profile that's still missing 50 radiological facilities and all associated operations and environmental data which were never reported by Boeing. The misleading and inaccurate employment verification information that is created by Boeing that routinely mischaracterizes eligible workers as people who do not qualify for EEOICPA.

And employment records responses that are consistently incomplete, lacking in personnel records, that can identify work locations and radiation data. So in asking for Boeing's input on operations at De Soto facility, what could possibly go wrong?

Alliance of Nuclear Worker Advocacy Groups sent a FOIA for records of communication between NIOSH and Boeing on this issue. And in response, NIOSH did not provide the questions that were asked of Boeing or the answers that Boeing provided to their questions. All we can determine from the response of documents is that Boeing was provided advance notice of the questions that would be asked by NIOSH and allowed to choose which employees would be interviewed.

We have no indication of whether NIOSH addressed specific concerns raised in this SEC petition or whether they countered with historical documentation that was supplied or whether the interviewees had verified knowledge of historical site operations. All we know is that based on the NIOSH ER, it seems this is another instance where Boeing has been allowed to call the shots.

So we've established that Santa Susana and De Soto represent the same entity operationally and

contractually. NIOSH is aware of this and states as much, that the work site shared the same DOE programs, radiological materials, practices, and workers for nearly 50 years before Boeing ever even showed and that based on these shared operations, we cannot determine with reliability which workers were at De Soto or Santa Susana during various time periods.

We've also established the presence and use of americium and thorium at De Soto facility. NIOSH referenced the presence of these radioisotopes at De Soto in 1995.

It's reasonable to acknowledge that shared limitations in the data exist, and we have undeniable evidence of attempts by the contractor to undermine eligibility and to omit or even alter employment records. And evidence that these efforts have led to erroneous disqualification of eligible workers and inaccurate or incomplete dose reconstructions. It's pretty clear that De Soto facility meets several of the established criteria to be considered an SEC facility under EEOICPA.

I urge the Board to recognize the importance of this SEC. Santa Susana and De Soto operated in concert. So too should their SECs. I'll submit a detailed written response to the ER with an affidavit from the HP.

It's a privilege to address the Board. And thanks again, everybody, for your hard work.

Mr. Katz: Thank you, D'Lanie. Do we have any questions for D'Lanie before she sits down? Or on the phone? Thank you again, D'Lanie.

Ms. Blaze: Thank you, guys.

Mr. Katz: Okay. Back to the Board for discussion as to path forward.

Member Clawson: I move that we move it to the Work Group to evaluate this.

Member Kotelchuck: Second.

Mr. Katz: Okay. And just to elaborate on that, do we want to have SC&A have a look at ER?

(Chorus of yes.)

Mr. Katz: Just to be explicit about that. Very good. And is there any focus that you want to be given to this ER evaluation?

Member Clawson: Well, everything that's been said up here, I understand where NIOSH's point at. But I really want to be able to take a look at what their feasibility really is. That's what I'd like. But I'm up to -- it's the Work Group's decision, the path forward. I just want to see -- I don't think it's that feasible, but --

Mr. Katz: Okay. So we have a --

Member Anderson: I mean, I would just add I think that the point that the workers were one and the same in both groups and the determination can't be made at Santa Susana but can here. I think we really need to look at what is the difference between those two evaluations, especially for the americium and the other compounds.

Member Schofield: I think Brad's comment about we need clarification on whether there actually was some form of hot cell or something, even if it was a very small one, were any of these targets irradiated and then brought back for analysis. I mean, true, they're small. But there was a lot of dosage there, even in a small target that's been irradiated.

Member Ziemer: Ted, could you clarify? Do we actually have a motion before us, and what is the motion?

Mr. Katz: Right. So we have a motion before us and a second on it to have Work Group evaluate this ER -- the petition and the ER with SC&A tasked to do its evaluation. And so that's what's before us.

Member Ziemer: And it's safe to assume that we haven't put any restrictions on what they would look at in this regard. So it seems to me we don't need to detail every step that they should take. They have broad freedom to address both the ER and whatever SC&A comes up with in terms of their evaluation.

Mr. Katz: Sure, sure. I had asked the question as to whether they wanted a focused approach to this ER, that's all. So that's what I think engendered those comments that followed. So I think the answer to that question is no, that there's no specific focus on this ER evaluation by SC&A.

I would just then also -- so anyway, we have the motion on the floor. We have a second. If we don't have any other discussion, we don't need to do a person-by-person vote. But all in favor of going forward with this evaluation by the Work Group and SC&A, say aye, please.

(Chorus of aye.)

Mr. Katz: Any opposed?

Okay. The motion passes. That's the course forward. I would just also ask considering we're going to go to LA in December, I would hope that SC&A would put a priority on this and try to get their work done as quickly as possible.

Well, we can hear an update in October, just not an update of substance but about where you are in the process. But it would be great to get this work done quickly if it can be done quickly. Obviously, that's not putting any restrainers on whatever deep dive you may have to do.

Okay. So if there is a -- that's the last item on our agenda. I think if there's nothing else for the good of the order, have a motion to adjourn.

Adjourn

Member Clawson: Adjourn.

Mr. Katz: And a second?

Member Beach: Second.

Mr. Katz: Okay. So we are adjourned. Thank you, everybody. Thank you, everybody on the line, as well. And good work these last couple days. Have a good trip. Bye-bye.

(Whereupon, the above-entitled matter went off the record at 11:16 a.m.)