U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

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ADVISORY BOARD ON RADIATION AND WORKER HEALTH

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LOS ALAMOS NATIONAL LABORATORY WORK GROUP

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WEDNESDAY
NOVEMBER 3, 2010

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The Work Group convened, in the Zurich Room of the Cincinnati Airport Marriott, 2395 Progress Drive, Hebron, Kentucky, at 9:00 a.m., Mark Griffon, Chairman, presiding.

PRESENT:

MARK GRIFFON, Chairman
JOSIE BEACH, Member
JAMES E. LOCKEY, Member
WANDA I. MUNN, Member
ROBERT W. PRESLEY, Member*

ALSO PRESENT:

TED KATZ, Designated Federal Official
ISAF AL-NABULSI, DOE*
ELIZABETH BRACKETT, ORAU Team*
ROBERT BURNS, ORAU Team*
ANDREW EVASKOVICH, Petitioner
JOSEPH FITZGERALD, SC&A
EMILY HOWELL, HHS*
JENNY LIN, HHS
GREGORY MACIEVIC, DCAS
CHRIS MILES, ORAU Team
JIM NETON, DCAS
KATHY ROBERTSON-DEMERS, SC&A*
DAN STEMPFLEY, ORAU Team*
DON STEWART, ORAU Team*

*Participating via telephone

C-O-N-T-E-N-T-S

C-O-N-T-E-N-T-S (CONTINUED)

P-R-O-C-E-E-D-I-N-G-S

9:01 a.m.

MR. KATZ: Let's begin, actually, with roll call.

This is the Advisory Board on Radiation and Worker Health, the Los Alamos Working Group. My name is Ted Katz. I'm the Designated Federal Official for the Advisory Board.

Roll call, we will begin with Board Members in the room.

CHAIRMAN GRIFFON: Mark Griffon, Los Alamos Work Group Chair. No conflicts.

MR. KATZ: Right, please note conflicts, right.

MEMBER BEACH: Josie Beach, Board Member. No conflicts with LANL.

MEMBER MUNN: Wanda Munn, Board Member. No conflicts.

MEMBER LOCKEY: Jim Lockey, Board

Member. No conflict.

MEMBER PRESLEY: Bob Presley, Board Member. No conflict.

MR. KATZ: Okay, thank you.

And NIOSH/ORAU team in the room?

MR. MILES: Chris Miles. I'm an ORAU contractor. No conflict.

MR. MACIEVIC: Greg Macievic, NIOSH. No conflict.

DR. NETON: Jim Neton, NIOSH. No conflict.

MR. KATZ: NIOSH/ORAU team on the line?

MR. BURNS: Bob Burns. No conflicts.

MR. KATZ: Welcome, Bob.

MR. BURNS: Good morning.

MR. STEWART: Don Stewart, Dade Moeller. No conflict.

MR. KATZ: All right, SC&A, in the

room?

MR. FITZGERALD: Joe Fitzgerald, SC&A. No conflict.

MR. KATZ: SC&A, on the line?

MS. ROBERTSON-DEMERS: Kathy Robertson-DeMers. No conflicts.

MR. KATZ: Welcome, Kathy.

Is that all, Joe, you are expecting?

MR. FITZGERALD: That should be it.

MR. KATZ: Okay. And HHS or other federal officials or contractors to feds in the room?

MS. LIN: Jenny Lin, HHS.

MR. KATZ: And on the line?

MS. HOWELL: Emily Howell, HHS.

MR. KATZ: Welcome, Emily.

MS. AL-NABULSI: Isaf Al-Nabulsi, DOE.

MR. KATZ: Welcome, Isaf.

MS. AL-NABULSI: Thanks.

MR. KATZ: Okay, members of the public in the room?

MR. EVASKOVICH: Andrew Evaskovich, LANL petitioner.

MR. KATZ: And on the line, any members of the public?

(No response.)

Very good. Then, let me just remind everyone on the line, please mute your phones except when you're addressing the group. Use *6 if you don't have a mute button and *6 again to unmute your phone.

And I have sent out a very barebones agenda which is posted on the web. Most of it, though, is really a matrix that we are following that has been PA-cleared, given to the petitioner, and is available to anyone else that requests it as well.

It's all yours, Mark.

CHAIRMAN GRIFFON: Okay, I did update this matrix. I apologize; I think at the last meeting I said I would update in a couple of weeks. It was more than a couple, a couple of months, several months. And my notes got a little harder to interpret after several months.

(Laughter.)

But, anyway, it is updated now, and I thought we could at least start working from the matrix. I know that NIOSH sent out a response document also that we should get to during this meeting.

And then Andrew put together some comments, which feel free; I think there's several that intertwine with the matrix. So, as they come up, if you want to bring up issues that are in your document, I think they should be brought up during it.

For instance, I know you referenced a checklist, use of a checklist, in your document. I know that is in our matrix as well. So, as issues come up, I think that just makes sense to bring them up, from what Andrew commented on as well.

So, with that in mind, I guess we can just start on the matrix. There's only seven or eight items, but they are all very large, all-encompassing kind of items. I think last meeting we made it through the first one up to the lunch break. But let's start at No. 1, which is the capability to monitor and measure mixed-fission and activation products.

I think there are several things that I tried to capture with the actions that were mostly for NIOSH, I believe. I think the one critical one, and I'm not sure the extent to which it was addressed in the NIOSH

response document, was the use of the substitute data, particularly the cesium data, for your coworker model for mixed-activation products and mixed-fission products.

Maybe we can start with whether NIOSH had a chance to look at that. I know, Jim, you had commented that that was something you wanted to go back and look at closer, Jim Neton. I know this is kind of a refresher, too.

MR. MACIEVIC: Let's see, I'm going through. What I am going to try to do is go through, as you said, for Andrew --

CHAIRMAN GRIFFON: Right.

MR. MACIEVIC: I'm going to go to our responses and try to go through there. And I felt I would go with what we have, and if it doesn't address the issue of the matrix, we will end up having to use that as an action item.

CHAIRMAN GRIFFON: That's fine. What I'm going to do, I'm going to keep notes live today, so that I will have this matrix when I leave, and I can just email it. Because if I don't do it that way, it's not likely to get done for several months. So, I am going to do it live.

COURT REPORTER: This is the court reporter. Was that Jim Neton speaking just before the Chair?

CHAIRMAN GRIFFON: No, it was Greg Macievic.

MR. KATZ: It was Greg Macievic. Oh, yes, I'm sorry. I had forgotten, Charles, that you're not in the room. So, folks, he won't able to recognize all of our voices, some of ours maybe, but not all of ours. So, please try to note who you are when you speak for his sake and for the court reporting.

We will also have action items

from SC&A and from NIOSH after this meeting, in addition to whatever you do in the matrix, so that it is very clear what's going to be done next.

CHAIRMAN GRIFFON: Oh, you just want an action listing at the end? Is that what you're saying?

MR. KATZ: That's what we do with all the Work Groups. We get an action listing from SC&A, an action listing from NIOSH, usually within a week or so.

CHAIRMAN GRIFFON: Okay.

MR. KATZ: Then, it's very clear what next steps are.

CHAIRMAN GRIFFON: Right.

MR. MACIEVIC: And then, that will be linked to a matrix like this one, so that we know what the comment is.

MR. KATZ: Mark will keep a matrix. That's what he does, and it's done

well. But, yes, if you would just make the listing descriptive enough so that it is clear to everyone who is here what the item is, that would be great.

MR. MACIEVIC: Okay, in terms of the cesium and how it applies to using cesium for mixed-activation products, we have no page -- does everybody have my document that I sent out?

On page 14, we talk about the cesium that is not necessarily associated with mass for non-reactor facilities, that you can use it for the reactors, but not for the LAMPF facility, which was the main concern of the discussion that we had last time. A lot of these items were for LAMPF.

What we have done is we have looked at the monthly activity reports. I should probably say as a preface to this that our whole philosophy -- what we are doing is

that we are saying that, in general, the program, there is enough data in order to do dose reconstructions and not be an SEC, that we have the checklist and the health physics quarterly reports that show there is a significant amount of data that is included for all the different activities that we are talking about at the different facilities, for example, at LAMPF.

And I'll show that later when we get to looking at the example that I have for checklists and the HP reports. You will see referenced in here, too, the health physics accelerator section of the quarterly reports, and we also have the checklists which talk about, have bioassay involved.

What you have, in using the cesium, it is not apparently going to be able to be used as a coverage for this item, but what we have is that the episodic nature of

the exposures that have the potential to create the mixed-activation products, there is coverage in the routine activities of the site for airborne, for gamma spectroscopy, for bioassay and in vivo, that would allow for the individual and the exposure to be described when it does occur.

And we have, for example, in here that the HP reports include a number of whole-body counts requested for LAMPF personnel, that they do collect urine samples, and they have health physics interviews when there are incidents that occur, if they do occur. And there's very few, and not really many incidents have occurred.

Our program of applying -- well, I'll save that for another question that comes up in here. So, you have the LANL whole-body count database also contains fields that describe the radionuclides, MDA for the

different activities, materials that were involved, the geometry of the detectors.

They also say that the whole-body counts are specifically for LAMPF personnel. So, that is saying that there were counts for specific things. Even when they do come up with non-detectable, there was a whole-body program to count people that were at the facilities when these were in operation and when they had any kind of problems or routine surveys.

They had nuclides that are found are very short-lived. Most of the material or the dose values that are given that you see in several reports are external doses because many of these are gamma emitters and producing dose through gamma emission, and you have counts given off of swipes and also air-counting filters.

One of the things that we found is

that, well, it should be noted that with all this data, and when we look at the HP checklists and the quarterly reports, there are numbers of samples that have been taken of different types of health physics activities. So, there's a number of them.

We have only taken a small sample of those when we have done our data captures. And from those data captures, we do find a number of charcoal and paper filters that in the LAMPF database, and water samples, where we do have activity measurements where you can perform, develop a ratio application for these different radionuclides, if necessary, and apply them to the whole-body count. Those are available for this facility to cover those types of activities.

So, again, it's an arm-waving thing that we have here because we haven't done the examples, but there is material

available for us to be able to do that kind of activity.

MS. ROBERTSON-DEMERS: This is Kathy Robertson-DeMers.

Can you provide us with the SRDB numbers for those checklists?

MR. MACIEVIC: As a matter of fact, I have a 140-page report where we went just through all the LAHDRA data. Yes, you can get a listing of the SRDB and also the LANL documents and LAHDRA that pertain to checklists and the health physics reports.

Again, these are all samples. So, you are not going to get every report that was ever generated there. You will only be able to get the ones that we captured.

But there are several documents with numbers that we can get that report to you.

MS. ROBERTSON-DEMERS: Thank you.

MR. MACIEVIC: And a little later, I'm going to just give some examples of things in the documentation that we found to further expand on the fact that there were many activities going on in the early years, in the mid-70s and later, that covered these radionuclides, and there's also discussions in the early years that talk about, actually talk about the actinides and some of these exotic radionuclides, that there is documentation.

Of course, these are the titles in the documentation, and every one of these documents hasn't been gone through, but the point being you will have a large mass to go through to get the details of each one of these things.

MEMBER BEACH: And you said that you are going to make that available, Greg?

MR. MACIEVIC: Yes, we can get the SRDB document numbers, and I will also have

this. I won't send the whole 140-page document. What I will do is give the LANL document number in the LAHDRA database for several of these that cover procedures, checklists, and other things that were involved in the data-capturing and from LAHDRA. So, we will have that. There's quite a few.

MEMBER BEACH: And before you move on, do you have another copy of your report that you sent out for the meeting? Andrew doesn't have one and I see that it is cleared, so he should probably have one, shouldn't he?

MR. KATZ: It should have been emailed to him.

MEMBER BEACH: I thought if Greg had --

MR. MACIEVIC: I don't have another one.

MEMBER BEACH: You don't have

another one? Okay.

MR. MACIEVIC: Sorry.

MEMBER BEACH: Thank you.

MS. ROBERTSON-DEMERS: This is Kathy Demers again.

Do you have the actual in vivo counts that are referenced in the checklist?

MR. MACIEVIC: Yes, some of these counts, yes, we do have. That I don't have available here. That is another thing we would have to provide for the actual in vivo counts that are discussed in the checklist or in the HP reports.

MS. ROBERTSON-DEMERS: Okay.

MR. MACIEVIC: I'm not sure the number of them, though.

MS. ROBERTSON-DEMERS: Okay.

CHAIRMAN GRIFFON: This is Mark Griffon.

Right now, you're only talking to

the LAMPF workers? Is that what you're focused on?

MR. MACIEVIC: Well, yes. That was the majority of our meeting last time, was the LAMPF.

As far as using the cesium for the reactors, yes, we would say that does cover it because that is one of the activation or the fission products involved in there, and we would use that material, cesium, to cover.

CHAIRMAN GRIFFON: But you're still saying that that is going to be your model for the reactor?

MR. MACIEVIC: Yes, that will be, for the reactors, yes. Only looking at LAMPF, we think that, yes, for these mixed-activation products which are being produced at LAMPF, you would not, or in a case where you have mixed-activation products, you would not be able to -- you would use the air-sample data

to find, to develop a model for it.

DR. NETON: That was sort of the last thing. We had proposed to use the cesium in vivo measurements to cover mixed-activation products. It wasn't obvious to folks that you could cover the accelerator facilities. From what Greg is saying, that's true, you can't, but there are a number of other pieces of monitoring information that are available to cover places like the LAMPF.

CHAIRMAN GRIFFON: So, in between the hand-waving, I might have missed the actual methodology for those workers. What are you proposing? You don't have anything concrete yet?

MR. MACIEVIC: Not concrete, and that is on page 15 that we are talking about, the small coworker study that would take these filter papers and the charcoal and work up a ratio of the radionuclides that would be

applied to the whole-body counts from that and see how feasible that is as a possibility.

MR. FITZGERALD: I guess a couple of questions. On the accelerator side, I think it was concluded, at least in the ER, that there wasn't much in the way of -- and I think it was the word "sparse" or "lacking" in terms of actual bioassay results.

But when you are trying to marry up the air sampling just to come up with some actual ratios, is there enough to work with?

MR. MACIEVIC: Well, that's the thing to see because what we have are samples, and then see if there's going to be any more or whether we have the capability -- and that would be a way to go forward on it.

MR. FITZGERALD: I think that might be a central question because, again, the fact is there just wasn't much in the way of data --

MR. MACIEVIC: Right.

MR. FITZGERALD: That could be used on the bioassay side. So, even in a comparison, you're going to get into some, I guess, how much is enough to give you some confidence?

MR. MACIEVIC: Exactly.

MR. FITZGERALD: On the reactor side, I don't have any problem certainly with the -- and I think we said this last time -- with the cesium for a reactor environment, using the OTIB.

But, as I recall operations at LANL, as far as mixed-fission products, that's not the only place you're going to find them. CMR, which, of course, handled residues and materials from the reactors, chem processing facilities -- actually, most of the DOE sites had something like that. LANL with CMR.

You are going to have mixed-

fission products, some of those processes being handled. I guess my question would be, you wouldn't have the same ratio as you would in a reactor environment. How would you apply cesium-137 using the OTIB basis for that?

You're going to have a reactor environment which would enable you to use those ratios and apply cesium that way, but I'm not sure that would follow through if you are talking about a different --

MR. MACIEVIC: Let me ask Don Stewart --

MR. STEWART: Yes, Greg?

MR. MACIEVIC: In doing the DRs, on that question, the cesium question for the non-accelerator cesium, non-accelerator products, but how are you using cesium involved with the reactor materials that get sent to other parts of the facility but are not straight from the reactor, but have been

mixed with other things? Do you have a feel for that?

MR. STEWART: What we go on, typically, is the material we see in the bioassay records. If we see a radionuclide there, we assume a presumptive exposure.

So, if there's cesium in the records, we look at it. You know, if there's something in the history that says they were exposed to a certain radionuclide, we will go and look at it.

MR. FITZGERALD: I guess my question is, when you have mixed --

CHAIRMAN GRIFFON: Joe Fitzgerald.

MR. FITZGERALD: I'm sorry, I keep forgetting. Joe Fitzgerald.

If you're talking about mixed-fission products, maybe not with a clear identification, I mean I think that's how we backed into a lot of this, and it's not easy

to distinguish.

The approach to using cesium-137 as essentially a substitute, how would you apply that substitute in a non-reactor environment which you're going to have? And CMR is going to come to mind, but there may be some other facilities at LANL that processed. How are you going to handle that, because there might not be a clear marker? It may just be listed as mixed-fission.

MR. STEWART: Well, typically, what we will do when we are presented a set of possibilities is put together some sort of a chooser. What that will do is go through and look at all the possible radionuclides and assign the one with the highest dose.

My example is the one that we have for Savannah River Site. When we had a whole-body count on record, we would go and we had a spreadsheet that would put together, you know,

sort of it would tell us for each organ and each potential period of exposure which radionuclide would result in the highest dose.

Again, I've been away from Los Alamos for some time. So, I'm not really sure what's going on in the DR right now. But if we had a suite of radionuclides, they would expect us to typically select that radionuclide resulting in the highest dose for that cancer organ and for that potential period of exposure. We look at those two parameters when we assign the actual radionuclide.

MR. FITZGERALD: Yes, I guess I'm familiar with that approach. But what I'm looking for is, when we go from 1975 or 1970, if you accept the thesis that the advent of --

CHAIRMAN GRIFFON: This is Mark Griffon.

I just wanted to step in one

second because the approach you described, is that the approach being described in the response here? It seems to be saying cesium. I think that approach I've seen in the procedures review and the DR reviews, where you have a selector, but this one is not saying that, is it?

I mean in the ER I see cesium, not selecting the nuclide that gives the highest dose. It's not saying that.

MR. STEWART: I'm going to have to defer to Chris on that one. I have been away from Los Alamos dose reconstruction for several months.

CHAIRMAN GRIFFON: I mean that would be a particular OTIB that does that, that fission products, right?

DR. NETON: It is some scaling of the other radionuclides in the possible mix. I mean that's standard.

CHAIRMAN GRIFFON: Okay. So, it's that same -- all right. All right.

DR. NETON: It would be unusual that someone would just be exposed to cesium.

CHAIRMAN GRIFFON: Right, right. Well, I agree. But the way it was written in the --

DR. NETON: Yes, maybe that needs to be clarified.

CHAIRMAN GRIFFON: Yes.

DR. NETON: This is Jim Neton, by the way.

That is the issue that Joe was bringing out --

CHAIRMAN GRIFFON: Right.

DR. NETON: Is that it may be easy or sort of straightforward to establish the ratio of the isotopic mix in a reactor facility. Once you remove those components and start playing with them, then what are we

going to use, I think there is a question --

CHAIRMAN GRIFFON: Yes.

DR. NETON: For the mix in a separate facility.

CHAIRMAN GRIFFON: Right.

DR. NETON: From what I'm hearing so far, I haven't heard a good answer from our side. We need to establish that. We sort of need to establish what that would be for these other facilities. It doesn't sound to me, from what I have heard here, that we have that approach completely thought out. That would be something that we need to flesh out.

MR. MACIEVIC: And part of the reason you're saying what you are is that most of our discussion, or pretty much all of our discussion last time -- this is Greg Macievic -- was based on LAMPF and the activities going on there.

So, in our discussion here, none

of that is in this document that we responded to, but that is a point. We will have to flesh that out to make that more obvious as to how we are working with the cesium as an action item involved with the reactor --

DR. NETON: I was going to say, also, that saying the whole-body count, there are other radionuclides in the spectrum. So, we typically cover these mixed-fission activation products with an in vivo count. We expect that they're in a library, which assuming they are --

CHAIRMAN GRIFFON: Well, this goes back to the question of the data, too. I don't know what's there or what's available for this time period.

MR. MILES: This is Chris Miles.

This conversation kind of seems to assume that we've only got cesium, the capability to see cesium, but, actually, like

Jim was mentioning there, the whole-body count or if there are other gamma emitters, they are going to show up there.

I think if you've got cesium shown in the bioassay and you have some indication that there may have been mixed-fission products, you know, you can use that OTIB using those ratios.

But like in CMR, for example, they maybe worked with a mix that is maybe a lot of strontium-90, for example. We have data that they did do bioassay for those kinds of things. They did monitor for that.

Just while I'm talking here, to jump over LAMPF real quick, it appears that, I mean from all the documents that I've looked at, the external dose is primarily the issue in that area. Even with the air emissions, it is primarily short-lived positron-emitters that are causing a lot of external dose.

However, in a bioassay record there are other radionuclides identified. There are these checklists to identify people that would be required to be on that bioassay. There's evidence that they did air monitoring to help identify areas where bioassay may be necessary.

And there are counts, whole-body counts of individuals that worked in LAMPF that have various radionuclides identified that aren't cesium. You know, they are the activation products that were produced at LAMPF.

So, I just want to try to stress that we don't only have cesium data.

MR. FITZGERALD: Yes, this is Joe Fitzgerald.

No, I think we were trying to make that point last time, that our misgivings was the application of cesium-137. It wasn't

clear to us what the state of the actual data, whether it's a bioassay or air sampling. I mean I think that's where you start. How much data do you have? How good is it? Can you use it?

The ER sort of preemptorily concludes sparse and lacking. So, you jump a subsequent nuclide. And we're saying, okay, that sort of presumes that the data is not adequate and you're proposing, in essence, a bit of a workaround in terms of using cesium as a substitute.

We had some problems with the cesium, but we are still trying to go back and say, wait a minute, that seems to imply that there's no air-sampling data that is useful to use, no comparison that could be done with what data is available.

We found ourselves debating the strategy without having as the first order to

understand what the availability of the data is.

Now the ER points out that the in vivo counting capability came online and afforded the opportunity to see these things. However, in the records, it is not manifest necessarily in the records in terms of the results that would have come out of the detection.

So, that is certainly a conundrum in the sense that that's how the line was drawn, but it doesn't necessarily show up in terms of the records that one would use for dose reconstruction. So, it sort of begs the question, is 1975, or we could argue 1970, the break-point by virtue of the technology giving you the capability? But if that capability doesn't manifest itself in better records that would be useful in dose reconstruction, then is that the proper break-point or not?

When does the data, whether it's bioassay data or air-sampling data or some comparison of that, become sufficient that you don't have to necessarily do a, I call it, workaround? But finding a technique that enables you to get around the lack of data, so that kind of begs the question. If the data is that lacking, what changed in 1970 or 1975?

I think we're beginning to hone-in on the fact that, well, people were being whole-body counted; there were checklists. But I'm still, I guess, bothered by the fact that, even though upstream you had indications for whole-body counting, downstream the actual results don't quite marry up.

I would be really interested if one could marry them up better and find out if a comparison can be done. Really, that would be a far better place to be than using a substitute as a means to get there.

MR. MACIEVIC: Well, as far as Appendix A on the health physics report, if you look on page 2, start looking down in -- this is 1975 -- this is Greg Macievic -- and see for the LAMPF laboratory air samples in quarter 2 they had 909, laboratory swipes, 204, water, 11, other 13, alpha swipes, 639, beta swipes, 893.

On the next page, page 3, you have LAMPF laboratory, gamma, 1,352. LAMPF laboratory, tritium, 13, and the LAMPF laboratory, gamma spec, 133.

Then, you go down with the LAMPF monitoring for radiation after shutdown and decay, 16, run operation, 53. All these, and so on down the line.

DR. NETON: Let's be clear what these are, Greg. These are surveys?

MR. MACIEVIC: These are surveys. This is surveys that were taken by health

physics in the second quarter of 1975. There are a number of samples that are taken.

Now the thing is to go to these actual samples and have to produce them to go and see what kind of data you have on them and generate the information you need.

MR. FITZGERALD: Yes. I have to tell you, that's kind of where I would have been on LAMPF because there was a consciousness of what was being produced, and the fact of a short life sort of led to a few more on-the-scene surveys, and what have you.

You know, sending someone to be whole-body-counted, given the detectability and the short half-life, would have been probably not something that was very effective as far as a control.

But I guess that was probably the last time the ER took the position that using the cesium-137 as opposed to maybe going to

air-sample data, using it in some fashion --

MR. MACIEVIC: Yes, other than that, we haven't had that many --

DR. NETON: This brings up a really good question, I think, even though philosophical in nature. But if you've got all these workplace surveys out there, the first question is, we can't go through these things further to demonstrate that things were all negative or such. But the question is, how representative, what percentage of the survey do you need to look at to say, yes, they were surveyed then and that they did detect contamination and followed it up?

The next question is, then, if they are documented surveys -- let's just assume for a second they all showed negative results and there was no contamination. Then, does it follow, then, that people really didn't need to be monitored?

We're getting into a situation now of modern-era types. We are going to be talking about it at the Board meeting and there will be a discussion.

But in an era where there's a lot of documented negative contamination surveys, if people aren't monitored, is it acceptable, then, just to say that people probably were not exposed, with the occasional episodic thing that occurs or an incident and they say, oh, they found contamination and they did follow it up, and there is a whole-body count?

Then, we could track that through the ground and show that sort of the rigor of the program was there to ensure that people were not being overly exposed.

This is sort of a new era, area that we're getting into because these are not routine operations like we have had in the past where you have a uranium facility where

they are constantly generating airborne radioactivity, and they needed to have a routine bioassay program. We are talking about a Pantex and even Mound, I expect.

CHAIRMAN GRIFFON: Yes, I don't know if I can answer the question on the percentage, but I think the argument needs to make sense. Yes, that if you can demonstrate, not like -- in the past we've had arguments where you say you see some writeup that says it had a strong or a robust radiation protection program. I think we need a little further than that as to what they did and --

DR. NETON: Yes, to demonstrate that they actually did have a program.

CHAIRMAN GRIFFON: Right. I don't know the percentages. You know, I mean we're going to debate that. But, I mean, I think I would agree with that, that if you can demonstrate that, then that shows that the

program did make sense, that they didn't need to monitor.

MR. FITZGERALD: This is Joe again.

That is why upstream I just have more confidence in the sampling of the air-sampling data and survey data. The checklists themselves I am a little more skeptical about because it's a checklist. I mean it's something that you're alerting the worker or you're alerting line management that these things might be there, but I'm not sure how that translates into what would follow up in terms of monitoring and bioassay.

I know Andrew is raising some questions. But, you know, that part of it, and the Tiger Team, I'm not sure that connection is as good. I think I would be more confident if the air-sampling and monitoring survey information was sampled and

was uniformly negative or you could at least follow ones that, if you had a sampling of maybe 10 or 20, whatever the number is, that if you could find a bioassay, that would be good.

MR. MACIEVIC: This is Greg.

For the Appendix B on the checklist, since we are taking about that now, I will bring that up. You've got Appendix B is for -- where is that? -- 1977, I think. It is for just the letters A and B, and you have the columns for all the radionuclides that were --

CHAIRMAN GRIFFON: This is Appendix B, Greg?

MR. MACIEVIC: Appendix B. Yes. And the job descriptions and the samples that were supposed to be left by each person, the type of material they were going to work with.

Of course, this is just for 1977.

You would get another checklist for a future date, and if the job title changes and all that. I say that because we went to NOCTS, and on this group that's here found six claimants.

What we found is the bioassay that they had -- and you to have the bioassay and then some -- if it says there's no bioassay required, there was no bioassay for that person. But on five other people, you have in there plutonium, tritium, and uranium that were bioassays that were required. And you find them and extras in the person's NOCTS file, which shows that they had it required, the samples are there, plus extra samples because the person, obviously, worked for several years.

So, you may find in NOCTS more samples than were required in here because the person went to a different job, and we have a

particular person who was a security guard and then became a machinist. When he became the machinist, they have specific samples required that are now in -- well, I should say, in here it says no samples are required, but you find samples in their NOCTS file. That is because they went from being a security guard to a machinist. So, now the machinist just produced samples; whereas, the initial, no samples were required, and from the fact that the person was at that time just a security guard, at that moment they did not require a bioassay sample.

But the fact is we wanted to follow up and find that, when they required sampling, that there's actual samples in the person's record. We have found that to match that back up, we have to go dig further if you are going to find out exactly what year for each one of these samples and things like

that. But the point is that you can do it, and the checklist was adhered to as far as that six people that fit the category in this appendix.

MR. FITZGERALD: Now this is Joe.

So, you're basically saying that you sampled six claimants who -- you worked backwards?

MR. MACIEVIC: Well, what we did was we went and got this, developed the -- we didn't develop it for the people with the bioassay. I went and for the amount of time we said, okay, A and B, to get you a sample, here's 1977, A and B. Then, I said, okay, now go into the NOCTS file for all the LANL employees and, then, find me somebody with the -- you know, we have the IDs for people. This file, which I don't have in here, actually has the names of the people that these checklists belong to. So, I did not put that into this

file for the privacy information, but there is a file which I do have that has the names associated. I went through all those names to find out how many are actual claimants --

MR. FITZGERALD: So, there were six claimants, 1977, A and B?

MR. MACIEVIC: From 1977. Their names were in this list in 1977, and they have the bioassay as according to this statement here.

Oh, I should say there's one guy who worked I think every freaking site there was in the country. So, I mean he was at Brookhaven, Oak Ridge, LANL, NTS. I mean he was all over the place. So, he would be sort of an outlier one as far as the samples go.

DR. NETON: But we should have known where the samples came from.

MR. MACIEVIC: Yes, you can find out.

DR. NETON: The bioassays --

MR. MACIEVIC: Exactly. And we didn't go into that depth, to say, okay, which sample comes from which site and who gets that --

MR. FITZGERALD: And the checklist does stipulate bioassay.

MR. MACIEVIC: Yes, it does stipulate bioassay.

MR. FITZGERALD: Now the only question I guess I would have on that is, is there an inherent bias just because these are claimants, meaning that clearly they have a health effect they are going in and claiming? How many had bioassay requirements?

DR. NETON: I am not sure why there is a connection between health status and --

MR. FITZGERALD: Well, I mean I am just trying to figure out if you're working

backwards --

MR. MACIEVIC: No, that's the thing; we did not pick. Out of all these people, there is whatever, 100, I don't know how many, 100 in here, or something like that, 150 names that were on those sheets in 1977. We picked the 1977. We didn't pick it for claimants. We picked it for that.

MR. FITZGERALD: All right.

MR. MACIEVIC: And then went and said, how many of these --

DR. NETON: But it seems to me we do have the Los Alamos bioassay database.

MR. MACIEVIC: Oh, yes, exactly.

DR. NETON: So, one could go --

MR. MACIEVIC: Right, exactly.

DR. NETON: And randomly sample the database.

MR. MACIEVIC: You could do that.

MR. FITZGERALD: Which is what I

think you were alluding to earlier, that you could sort of compare and see what was there?

MR. MACIEVIC: Sure. I think that would be worthwhile.

MR. FITZGERALD: Well, we could expand that, but --

CHAIRMAN GRIFFON: I am not sure as to whether, if you were on the checklist, if you were monitored. So that would be a better check.

MR. FITZGERALD: If you came in with mixed-fission products and exotics and said, can you marry up where there is a bioassay requirement for those to what was actually in the database.

CHAIRMAN GRIFFON: Right. Because this one, I guess the only question I would have, the six people that you looked at, the six claimants, you mentioned plutonium, uranium, and tritium.

MR. MACIEVIC: Right.

CHAIRMAN GRIFFON: There were no exotics --

MR. MACIEVIC: That is the thing.

CHAIRMAN GRIFFON: Everybody was monitored for those things. Or a lot of the population was.

DR. NETON: There were some requirements on here for gamma.

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: I tend to agree. I don't think we are arguing on the plutonium in the modern era, and tritium, I think that --

DR. NETON: We should match up --

CHAIRMAN GRIFFON: The checklist and the database.

DR. NETON: It took time and effort to get the Los Alamos database computerized, as I recall.

MR. MACIEVIC: Yes, it is. You could go to the database and check that out.

DR. NETON: I think that is something that would be worthwhile doing, for the fission products.

MR. MACIEVIC: Since we are on that, this is not quite the same thing. But what we did do is went to all the NOCTS for the DRs or went through all the DRs for LANL, and we searched on the exotics and came up with -- and you don't have this. This is a listing with the NIOSH ID and the radionuclides sum.

For the exotics, we found two cases of actinium, one case of -- well, I'll give you the years, too. For the actinium, the person worked from 1997 to 1999 and was a cement finisher. That was one of them.

The other actinium was pre-`76, and I believe it's a fireman that was involved

with that for actinium.

And then, we have one curium, and the person worked from `60 to `93, and it was a mechanical technician.

Then, we have a number of strontium and it goes on, and we have thorium are the other ones that are there that were picked out.

And I just picked out one for strontium. He worked from `76 to `89, and he was a custodian.

So, these were not workers that you would just consider a person who was working on, like an operations-type person or a person working with the material. You have a custodian. You have a mechanical technician. You have a fireman. And there are exotics in their DRs.

Now this was a last-minute thing that I decided to search on. So, we had to go

back through the DR and find out exactly how the exotic is referred to in the DR and how it was handled, because that is not brought out.

But what I wanted to see, I mean, do we even have the DRs where we are talking about any of these exotics and you can come up with the DR for LANL, the ones that have been finished?

So, that is something I guess we can go and follow that up, if we want to have that as an action item, to take a look at, pursue that further on the DR reports, to find out exactly where these exotics come from, how they're referred to in the DR, and what was done with them in that document. So, you have a better feel for --

MR. FITZGERALD: Current handling.

MR. MACIEVIC: Right, right.

MR. FITZGERALD: I guess I would also -- this is Joe again -- I would also want

to highlight thorium-232, which didn't figure over a long time now, but does show up as a secondary and was also cited in that memo I passed around as part of their library. I don't know if that was really addressed specifically in mixed-fission activation as part of the exotics.

MEMBER MUNN: This is Wanda.

Greg mentioned it as having shown up in at least one of the assays that they had.

What seems to be said here is that the language in the ER and in the responses that we have from NIOSH so far aren't as clear as they need to be in order to address the specifics that have been asked. At least that is what I think I'm hearing.

Is that correct? I think I'm hearing from Greg that the data is there; the information is there; the process is there.

But we don't see it in language or in the right places for us to be able to pick that up. Am I hearing that correctly?

MR. MACIEVIC: We've got all of this information, but we have not gone to all these individual sheets to pull all of that out and discuss it. I guess, essentially, we have been at an upper level of talking about we're saying you don't see the material, and we are saying that is because it was not a chronic and an all-encompassing problem throughout the facility.

When you see it in the small amounts and the small localized areas, it is because it really was not the problem that we're addressing. The main players were the plutonium, uranium, tritium, and all that. I don't know if --

MEMBER MUNN: No, what I'm saying is I believe that what you are saying now

addresses many of the concerns that people have. But what I'm hearing Joe say is, "Show it to me. Where is it?" You have not said so.

Is that a fair --

MR. FITZGERALD: Yes, I think that's fair. I think the ER, recognize we're looking at the second part of this SEC.

MEMBER MUNN: Yes.

MR. FITZGERALD: The first part was recommended and awarded as an SEC based on the inability to dose reconstruct based on mixed-activation, mixed-fission products prior to the advent of this whole-body counting.

Okay. So, the whole-body counter comes online, and the presumption is that the data that would be available for dose reconstruction is going to be there now; it's going to be available for mixed-activation, mixed-fission products; you're going to be

able to do it.

And we read the ER, and again, that's all we have to go by. The strategy is to use substantive nuclides to enable one to do dose reconstruction, which begs the question which we're talking about, which is it doesn't sound like the technology afforded a better database to work with, which raises some questions about that break-point in 1970 or `75.

And all we're saying is querying this thing and saying, okay, we can argue about cesium-137, but let's go back to the basics, which is, if data is so poor, you know, it's not available -- and there may be reasons for that -- we should look at that first before we look at the strategy of how you solve that problem and decide if it's sufficiently inadequate, then perhaps `70/`75 isn't the break-point because the technology

did not result in sufficiently better data.

That's kind of where I think we are in a sense, that we ought to make that that we understand that fully. That's the central question. I think there's a premise in the ER that this technology enables the data to be generated, solves the problem of mixed-activation, mixed-fission products.

However, the actual results that we're looking at don't necessarily conform with that. So, what do we do with that difference? We're not seeing the results now, but there's reasons for that perhaps, but we haven't seen them presented yet.

I think what we're hearing is that there is data. It may not be the bioassay data, but there is data, perhaps air-sampling data, that at least for LAMPF might provide a means to get there, you know, the hierarchy bioassay air sampling. So, that might give us

a way to get to a characterization of what the upper-bound exposures may have been at LAMPF.

Now I still have a problem because that is LAMPF.

MR. MACIEVIC: There is bioassay data at LAMPF. I mean that's clear. I know Liz, she looked into this and came up with a number of bioassay data, you know, mercury-203, beryllium-7, osmium-185, that she identified. And they were workers that were, indeed, at LAMPF in their job descriptions.

So, they were clearly identified as requiring bioassay. They clearly did the counts on them, and there are data available.

MR. FITZGERALD: You are making my point, though. I'm saying that there is sort of a contradictory message in the ER that one needs to apply this other approach because the data is not -- the ER says it's lack or scarce.

I guess my feeling is, what is it? Is there enough data to work with, in which case how would you work with that data? Or, if there's not enough data to work with, I have two issues, one of which is, okay, is 1975 a valid break-point, then, to begin with? And secondarily, is the workaround of what it's proposing, whether it is a cesium-137 surrogate or something, is that technically-feasible?

MR. MACIEVIC: I think a part of the problem is that, in doing this, the split of what we're calling the exotics really goes more towards the actinides and resultant material. The mixed-activation products and things like that, I think we can dig up a lot of the information from these surveys and all that. You will get a lot of the picture painted in that we can work with the survey data.

When you get to things like curium, neptunium, and stuff like that, you are not going to find, you won't find a lot of bioassay and you won't find a lot of, well, very few internal types of things.

So, I suppose the way we have the ER, including the mixed-fission and activation products in exotics is not quite the place it should have been put. It should be put separate from that with its own set of data that we can provide. It is doable, as opposed to using the substitute data for these other radionuclides based on the intakes of the primary actinides.

So, I think we need to --

CHAIRMAN GRIFFON: We are talking around the subject a lot, I think. I mean in our matrix we did separate those two items. So, I would like to just stick to the mixed-fission product, activation products for now.

And I think I got a handle on the accelerator followup, the action items on that. On the reactor side of it --

MR. KATZ: Before you go on, though, can we just state what that action item was, because it never really got on the record clearly.

(Laughter.)

CHAIRMAN GRIFFON: I have that NIOSH will follow up to determine if sufficient in vivo or other data exists, and "other" being air sampling, swipe data, or that followup from your appendix that was described as survey data, to reconstruct mixed-activation product exposures. No longer proposing use of cesium-137 for these workers. That is for the accelerator group, right?

MR. FITZGERALD: I think the comparison and trying to figure out that comparison would be valid because you have

enough data.

And what Chris is saying, there seems to be data, but I guess we have had a difficult time nailing that down.

CHAIRMAN GRIFFON: Right.

MR. FITZGERALD: And it's a central question because, again, we're moving from an SEC that was recommended and awarded based on inability to do that with mixed-activation, mixed-fission products. And now we're saying you can do it, but we're struggling to actually pinpoint what data is available.

So, I think that is where you start. You have got to at least figure out whether the premise of the technology arriving actually resulted in better data. If you can't do that, then I think we are in a bad place.

Which is, to answer your question,

Wanda, I can't understand how the data is better if we can't even put our finger on the data yet.

CHAIRMAN GRIFFON: Well, this is just for LAMPF. I mean I'm talking about --

MR. FITZGERALD: Well, we are talking about LAMPF right now, but --

CHAIRMAN GRIFFON: Right, right.

MR. FITZGERALD: But that was part. This is the mixed-activation portion of this.

CHAIRMAN GRIFFON: Right. That's the one action that Ted asked me about. I thought I had it clear, was that the followup for LAMPF, whether there's sufficient -- I mean the first question I would have is, if there is in vivo data, can you do individual dose reconstruction? Do you even need to go to any kind of other model?

And then, if that seems to be

sparse, as is indicated in the ER, then the second tier maybe should be to look at that air-sampling and other survey data. And maybe it turns out, as Jim was discussing, maybe it turns out that all that data suggests that none of these people needed to be monitored. Therefore, you can make that argument.

So, there's a number of ways to go there. Or you can define something about the source-term and bound exposures that way. But I think those are the two steps I had in there, to look and determine if there is enough in vivo first, and then to look at the air-sampling and other survey data, and then report back on how you are going to reconstruct. That's for LAMPF.

Then, for the other group, I'm still up in the air on what, I'm still a little confused.

DR. NETON: You are talking about

the alpha-emitting exotics?

CHAIRMAN GRIFFON: No.

DR. NETON: There is a clear distinction in the Evaluation Report between those.

CHAIRMAN GRIFFON: No, I am talking about for the other, for the reactor facilities for mixed-fission products.

MR. MACIEVIC: This is just LAMPF. In the alpha you've got it all.

DR. NETON: The alpha is entirely different --

CHAIRMAN GRIFFON: Right, right.

MR. KATZ: This is Ted.

So, you also talked about random sampling of the bioassay database, to do that more formally than the few cases that Greg discussed. That was another action.

CHAIRMAN GRIFFON: That was another action, right.

MR. KATZ: That was a separate action. That's what I wanted to get clear as well.

CHAIRMAN GRIFFON: And I have that NIOSH to do analysis linked to checklist information as in Appendix B -- because that was just a sample of one year, right, I think? --

MEMBER MUNN: Yes.

CHAIRMAN GRIFFON: To the LANL dosimetry data to determine to what extent the data is available.

That might not be worded perfectly, but linking the LANL dosimetry data to the checklist, that idea.

MR. FITZGERALD: The third one, if I remember what Greg just said earlier, was to actually look at the maybe dose reconstructions, was it? Yes, to see how exotics are, in fact, addressed in those dose

reconstructions.

CHAIRMAN GRIFFON: Well, I was going to save that for the exotics.

MR. FITZGERALD: Oh, okay.

CHAIRMAN GRIFFON: Let's write that down beside, though, yes.

MR. FITZGERALD: Okay.

MR. MACIEVIC: That was, how are the exotics addressed in those dose reconstruction reports.

CHAIRMAN GRIFFON: So, I will save it for item 2, I think it is, in our matrix. But I still wanted to get through. Hey, we're moving fast, I thought.

Let me go back to I think that is everything for the LAMPF facility, but, then, there is the question of the other, right, Joe, the other --

MR. FITZGERALD: The non-reactor facilities.

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: I didn't hear any disagreement that --

CHAIRMAN GRIFFON: For the reactor facilities, for the reactors, right?

MR. FITZGERALD: Well, no, it is the OTIB would apply to cesium in terms of ratios for the reactors. So, I think there is a reasonable basis for doing that.

CHAIRMAN GRIFFON: Okay.

MR. FITZGERALD: It's a reactor-based reactor. But I think there are some unknowns, obviously, when you start applying those same ratios to non-reactor facilities.

CHAIRMAN GRIFFON: Now I've got you.

MR. FITZGERALD: Different information completely, probably a different ratio completely, and exactly what the strategy would be for those facilities.

Again, CMR is the one that comes to my mind, but there may be some other facilities at Los Alamos that would have handled mixed-fission products.

CHAIRMAN GRIFFON: And then, I had for an action item, NIOSH for further description of the approach for reconstructing mixed-fission product doses from non-reactor-type -- maybe it should be mixed-fission products of any type, activation products; it could be either, right? From non-reactor-type facilities. I was going to put parenthetically non-accelerators here, right, because we're addressing the LAMPF in the -- I'm trying to keep this straight. Non-reactor, non-accelerator-type facilities.

I mean, do we have examples of these, just for my sake?

MR. FITZGERALD: Beyond CMR.

CHAIRMAN GRIFFON: Okay, CMR.

MR. FITZGERALD: I mean that's the central chemical processing.

CHAIRMAN GRIFFON: Right. Okay.

MEMBER MUNN: Yes, that is the laboratory.

MR. FITZGERALD: Yes, that is the lab, but, again, we certainly could finger some other facilities. I just think that is what you want to do, is just see where the streams would go from the reactor and just establish where they are.

CMR is a pretty big operation. I mean that one alone would be a fairly substantial addition.

MR. KATZ: Kathy, go ahead.

MS. ROBERTSON-DEMERS: The one example that comes to my mind is when they processed the cores from the Nevada Test Site. I'm not quite sure which facility that was.

MR. MACIEVIC: Probably the lab,

right?

CHAIRMAN GRIFFON: Okay, thanks, Kathy.

So, for the description for reconstructing those doses from the non-reactor test facilities, and the justification for the ratios selected is the last part I have. Is that clear enough?

MR. FITZGERALD: Now, just sort of a postscript, we had pointed to this 2002 memo, not so much to make it a central feature of the discussion. As we just discussed, it is a central feature. However, just to bring up some questions raised as late as the early 2000s --

CHAIRMAN GRIFFON: The audit memo that --

MR. FITZGERALD: Yes. Again, it sort of raised some questions as to what extent the in vivo program was linked to

operation in the sense that they were, in fact, looking for and were equipped to identify mixed-activation products.

And we honed-in on this particular audit just because it sort of identified the fact that there wasn't this connection for a while with LAMPF, and that, in fact, their library did not include the LAMPF mixed-fission products, nor thorium-232.

Now the implications of their library being apparently incomplete weren't clear to me. So, I just wanted to highlight for your followup as far as implications.

I think what you said in your response was, well, as far as the order of importance, it was listed as an observation and not a finding. That may have been, but I think the actual issue identified -- which let me see if I can go back and read this.

Yes, "Discussions with the in vivo

personnel -- this is page 2 of your response -- "Discussions with the in vivo personnel indicate they have not received the library of radionuclides of concern from LAMPF", which was the assessor organization, the LAMPF. "Without this information, the in vivo laboratory cannot identify monitoring strategies or ensure adequate energy calibrations."

That's unsettling. Now it may have been categorized as an observation, but looking at it from outside, I would say, boy, as an observation, that is a pretty heavy observation.

In terms of implications, I think it would be useful to understand what the implications of not having that information. We interviewed the in vivo counter people, the dosimetry staff. And there's this question of, were they looking for exotics or mixed-

activation, mixed-fission products? And they weren't targeting the secondary. They were targeting the primaries.

But the notion was that they probably would have seen a spike if it were an unusual spike. That is pretty much the general reaction.

But this sort of suggests that it would have been less likely. Maybe I am misinterpreting this, but just this memo suggested that it would have been less likely they would have, just because they didn't apparently have this in their library.

So, I introduce that just to raise some questions about to what extent the in vivo program was, in fact, tied into, linked into, and was, in fact, looking for these possible spikes that may have occurred. Because that was one premise that we went into this thing saying. You have the technology,

you have the capability, but are you, in fact, even mindful and looking for anything other than the primary nuclides? And the answer was, well, we're not looking for them, but we will see them if they arise.

I am not actually sure, by virtue of some of this stuff, whether it would have been as apparent.

MR. MILES: That is probably an accurate thing to say about the cesium because, typically, I mean having done a lot of gamma spec myself, if you don't have them in your library, they show up on your report as an unidentified peak.

So, I mean, at least the process that I would use, if you find unidentified peaks, you have got to list it and you go and identify them. You don't just leave them unidentified if they are showing up in your spectrum and go on and ignore them. I don't

think that's a fair assumption to make.

MR. MACIEVIC: Exactly. This is Greg.

At Mound, is a gamma spec operation that I was involved in for a couple of years in doing soil samples, you have your library of the main players that you believe are going to be in the soil, but you don't develop your library to say I'm going to have every possible nuclide that's in there.

Like Chris said, when you do come up with an unidentified peak, you will then go to the documentation and look and see at what particular energies, and you set your energy scale so that you are covering a large energy region. So, if you get unidentified peaks, you can find out what it is you are looking at.

So, I think that is why it became an observation as opposed to a finding in

here, because they said, yes, you can do it that way. It would be nice if you guys would have sent over something to let them know to put it into their primary search to say we're looking for this, but you didn't, but it is not something that is going to suddenly leave you blind. I mean you are going to see something there.

That is why it shows more of a procedural thing rather than a problem with the system that you would start looking in terms of an SEC and say they have missed things based on that.

Go ahead, whoever.

MR. KATZ: Kathy, go ahead.

MS. BRACKETT: This is Liz Brackett, actually.

MR. KATZ: Oh, Liz, sorry.

MS. BRACKETT: I have got the database open in front of me, the whole-body

count results. I am not certain why they would make this statement. Perhaps the people at the in vivo counter themselves determined what they needed to look for.

But there are thousands of results listed for LAMPF people, and included in the lists of reported results are carbon-11, nitrogen-13, mercury-195m, mercury-197, -203, osmium-185. All of these things I think are specific to the LAMPF facility.

So, regardless of whether they were officially notified as to what would possibly be there, these are the things that, when you look at the monitoring in the area, these are the things that are the primary contributors to contamination at the LAMPF facility. So, they were reporting back as far as 1979. These nuclides are in the vivo library.

CHAIRMAN GRIFFON: Is that

database on the O: drive, Liz?

MS. BRACKETT: It is in the coworker folder.

CHAIRMAN GRIFFON: We don't have access to that, I'm pretty sure.

MS. BRACKETT: Okay. There's different versions of it. This, actually, that I am looking at, I misspoke because I had actually extracted this. I pulled out, I did a query on anybody with LAMPF in their work area description. So, this is specific to LAMPF.

MR. FITZGERALD: Liz, this is Joe.

So, really, you are saying that the results that you are seeing sort of, in a sense, contradict this finding that they could not identify the monitoring approach or I'm sure adequate energy.

I am just trying to understand this, because it is kind of a very terse

finding. I think we are surmising that it doesn't seem to have influenced what they are seeing as results. But, certainly, I probably would want to talk to the health physics staff that was evaluating the program to understand the implications and importance of that particular finding.

It sounds like it didn't have any impact on what you're seeing.

MS. BRACKETT: Right. Like I said, my guess is maybe -- it is worded such that what they are saying is that they hadn't been told what they were, but it sounds like, even though they hadn't been given official notice of what the nuclides were, that they must have determined them themselves what it was that they should be looking for.

MEMBER MUNN: This continues to sound like a communications breakdown rather than a technical problem to me.

MR. FITZGERALD: Yes, and I think that may be the case. But, again, I think it is something that we wanted to understand better because it certainly raises some questions as late as 2002.

It sounds like they had had years of experience with LAMPF and pretty much know what the short-lived nuclide source-terms were, and what hadn't happened is probably update. Now that may have implications if you are doing a new experiment, but I suppose it is more than likely you are still going to be dealing with a short-lived gaseous, you know, offgassing from the experiments more than anything else.

MS. ROBERTSON-DEMERS: This is Kathy Robertson-DeMers.

I just want to put my two cents in on the unidentified peak issue. I have also done gamma spectroscopy as well at Mound and

Hanford. Really, unless you have a step in your procedure that says you are going to go and you are going to identify those unidentified peaks, it does not necessarily mean that a health physicist will go back and do it.

And I also had a question for Liz and the rest of the team. That was, how frequently were these in vivo counts occurring? Because they are fairly short-lived products, and if they are spaced far apart, you may miss some.

MS. BRACKETT: Right. I haven't looked at that level of detail. The dates here are pretty continuous, but I am looking at the whole listing. So, I haven't looked at individual people to see how frequently they are monitored.

MS. ROBERTSON-DEMERS: Okay.

CHAIRMAN GRIFFON: Well, as far as

an action item, Joe, do you think if we got the database posted to the O: drive, could SC&A follow up with a memo versus what Liz is reporting out of this database, and whether there's any further thread to pull here?

MR. FITZGERALD: The coworker database?

CHAIRMAN GRIFFON: I mean I am just not clear what --

MR. FITZGERALD: This is the bioassay database.

CHAIRMAN GRIFFON: The bioassay database, yes.

MS. BRACKETT: I think this is a specific in vivo database. I think there's multiple. So, I think in vivo would put --

MR. FITZGERALD: I am just a little confused. I am not sure which one she is referring to.

CHAIRMAN GRIFFON: Is it the LANL

in vivo database? Is that what this is?

MS. BRACKETT: Yes.

CHAIRMAN GRIFFON: Okay.

MS. BRACKETT: Yes.

CHAIRMAN GRIFFON: This is not just from claimants? This is the entire --

MS. BRACKETT: Right, this is the entire database.

MR. FITZGERALD: This is the one that was developed in conjunction with Los Alamos. I guess my question is, that is going to be relied on, I think, in terms of LAMPF to do the comparison we're talking about?

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: And we would do specifically what, in addition to --

CHAIRMAN GRIFFON: Well, I am guessing if there is any followup from this memo or this audit report at this point.

MR. FITZGERALD: Oh, the audit

report?

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: I think there's as much argument that it might have been one of these procedural things. I think the followup that we can offer perhaps, either we or NIOSH could just simply walk that back to the health physics staff that did the review and see if there is any way to shed some light on the implications.

It may very well be that the in vivo staff just kept doing what they have always done, and that would be adequate or not. I think this just draws up a question of it wasn't updated necessarily to the library of nuclides that maybe were in the late nineties/early 2000s, which may turn out to the be same. There may not have been any difference.

But it does beg the question that

if there was a difference, it may not have been picked up by the in vivo folks. If the brand-new experiment was perhaps a new source-term, that may not have been added to the library, just because there wasn't that communication.

And I agree it may have been very well a communications issue, but it might have implications for what they were looking for.

CHAIRMAN GRIFFON: Right.

MR. FITZGERALD: So, I guess certainly as an action, we can sleuth that down and try to --

CHAIRMAN GRIFFON: Who did this audit? I'm trying to remember.

MR. FITZGERALD: It was done by the area office, DOE area office.

CHAIRMAN GRIFFON: DOE area?

MR. FITZGERALD: Yes.

CHAIRMAN GRIFFON: Is that

something you can find --

MR. FITZGERALD: I mean we can try.

CHAIRMAN GRIFFON: Right.

MR. KATZ: Let me just ask, Mark, does it make more sense for Liz or DCAS to sort of flesh out this sort of quick-and-dirty look that she has taken at the data itself? I mean because it is sort of a moot question.

MR. FITZGERALD: It may or may not be.

MR. KATZ: It may or may not be. Maybe not. But it seems like you want to know what you have there in terms of data.

CHAIRMAN GRIFFON: Yes, I think the database is important, but I think we already captured that.

MR. FITZGERALD: This is the most important thing. The only question, and I think Wanda characterized it correctly; it is

a communications issue. And the communications is, what are we doing now at LAMPF and does that necessarily add to the universe of things that you should look for in terms of your bioassay for LAMPF?

And experiments change; things change. That is why you maintain your library.

My guess is the library probably didn't shift that much, but that's a guess. I mean I think we are surmising there were no real-world implications. But if they ran something a lot different in the late nineties/early 2000s, that would have been missed because they didn't update --

CHAIRMAN GRIFFON: And the other question, procedurally, if they had seen a peak, unknown peak, like you said, would they have just procedurally let it go or would they have followed up on that? I think we have

heard both sides of that. So, yes.

MR. MACIEVIC: The one concern I have on this discussion, it is almost like we are now going back in time and going to have to recreate the entire health physics program at LANL, which is going to be a major task and probably not be able to do all of that.

When you are talking in terms of bounding doses, we are talking short-lived radionuclides that have very small contribution to dose. Can we say, well, if they didn't do it, that would drive an SEC and say, "Oh, you can't compute dose anymore," that we are so far off, their library was so screwed up, that they are missing all these radionuclides?

I mean, to come up with a model that we are using from the air filters to look at the dose type of thing is one thing, but how you would link missing certain peaks from

LAMPF and say, "Well, you didn't hit -- you got peak 13 and 14, but you missed 16; therefore this should be an SEC," I find that would be difficult to do and to link that to that.

Because there is going to be uncertainty in this whole program. I mean no one is claiming that LANL is an ideal --

CHAIRMAN GRIFFON: So, I think we will take a break.

Greg, you raise, it's a valid point. I do think it involves at least a little followup just because it was a finding in an audit report.

MR. FITZGERALD: And I don't disagree.

CHAIRMAN GRIFFON: We should keep in mind the dose construct, I agree with you.

MR. FITZGERALD: The reason I mentioned it, to make sure it was put in

context, I noticed there was a lot of focus on it in your response. I just threw that out, not so much as the central brick in the discussion, but --

CHAIRMAN GRIFFON: Sure, sure.

MR. FITZGERALD: Sort of a question about how things were done.

CHAIRMAN GRIFFON: This a good point to take a break, because our court reporter is going to set up in the room now. And we're at the end of item 1, as it turns out.

When we come back, I will recap sort of item 1 on the actions, and then we can move on.

MR. KATZ: Okay.

CHAIRMAN GRIFFON: All right? All right. Take 15 minutes then.

(Whereupon, the above-entitled matter went off the record at 10:24 a.m. and

resumed at 10:40 a.m.)

MR. KATZ: All right, we are going to get started again.

Let me just check, Charles, we have Symon and he is all ready to go. So, Charles, I think you are free. Are you on the line with us still?

(No response.)

Maybe he left anyway. Charles?

MEMBER MUNN: He may have already gotten the word.

MR. KATZ: Okay. Well, maybe Charles left on his own.

The other thing just to note -- well, let me just check first to see, do we have Bob Presley? Are you back on the line?

MEMBER PRESLEY: Yes, I'm here.

MR. KATZ: Okay, great.

And then, let me ask everyone who is on the line, please mute your phones. We

can hear some background sound from some people's phones. If you don't have a mute button, use *6. That will mute your phone. Use *6 again to unmute your phone when you want to speak to the group.

And we will pick up where we left off. Mark?

CHAIRMAN GRIFFON: Okay. Yes, I think we got through No. 1 in the matrix. I do want to summarize the action items.

And from the previous matrix, I labeled the actions from 4/29 A through F. I believe I will just go through these. Some of these we addressed in this discussion. Some of these I still wasn't sure on, whether they are carryovers or whether they disappear, given our new approach.

So, A, I had NIOSH will follow up to determine if sufficient in vivo or other data exists, air sampling, swipe data,

bioassay, et cetera, to reconstruct mixed-activation product exposures. I should say for the LAMPF facility this is. No longer proposing use of cesium-137 for these workers.

For the second bullet item -- I know I didn't have them A through F before. For B, I have NIOSH will provide further description of the approach for reconstructing mixed-fission product, mixed-activation product doses from non-reactor-type facilities, non-accelerator also, and the justification for the ratios selected.

And the justification is getting back to that benchmarking question. What did you base this on? Do you have field data that can support the use of these ratios?

That was in our original action, if you recall, if you look back at the first bullet from 4/29.

C and D, I left these the same. I

am going to need help from the group if these go away or if these are still actions.

NIOSH to provide further information to support the claim that, starting in the 70s, the requirements and procedures along with the available technology, in vivo counting, vastly improved, making it possible to use the in vivo data for the coworker model.

This sort of goes along with that memo question, but not exactly, Joe. I don't know.

MEMBER MUNN: It does seem to. Is it repetitive?

CHAIRMAN GRIFFON: Yes, I think I am comfortable with I left a followup for SC&A on the audit memo to go back and see, if possible, find the investigators from this report and see exactly what they meant by this observation and the significance of it. I

mean I think that is important. So, I think we can say that C goes away or is rolled into item F.

MEMBER MUNN: Yes.

CHAIRMAN GRIFFON: That's okay with me.

Just bear with me for a second because I am editing live.

Okay. Then, D, NIOSH to provide a better description of the episodic nature of the exposures to MAP/MFP and exotic radionuclides. I think more falls into the exotic item now, but you can tell me.

I am not sure if it was episodic nature or if it was sort of this whole notion that we've talked about in other meetings of campaigns, like some of these special radionuclides end up being campaigns where you only do it for a short period of time in one facility, and it is not used very --

MR. FITZGERALD: I think it applies more for the exotics.

CHAIRMAN GRIFFON: Exotics? Yes. I am going to move that to the exotic.

MEMBER MUNN: That is almost verbatim an action item that is already on there.

CHAIRMAN GRIFFON: I think I did copy it because it had exotics in two. So, I will leave that one just in the exotics, and no further action here.

Okay. Then, E, and this one we already discussed. NIOSH to do analysis linking the checklist information, as in Appendix B, your example in Appendix B, to the LANL dosimetry data, and I guess in vivo dosimetry, do I need to say? To determine to what extent the data is available. So, we are just asking for you to do that linkage analysis of it.

I think we are leaving it up to NIOSH to determine how to present, the format to present that in. Obviously, we are not looking for you to do every sample every year, but look at that and see.

Then, the last one, F, is the audit memo. NIOSH will provide a listing of the radionuclides monitored at LAMPF -- I think I should say at LAMPF/LANSCE, right?

MR. MACIEVIC: Yes.

CHAIRMAN GRIFFON: Yes, based on database results. And this is what Liz was mentioning.

So, I just wanted to get a sense. She gave a listing --

MR. MILES: She mentioned she had like a thousand results that basically identified the nuclides that are in that result.

CHAIRMAN GRIFFON: The nuclides

and how many samples of each, yes, yes. That would be great, just a listing of that.

And then, SC&A will follow up on the meaning of the audit memo, and I said, "to the extent possible". I don't want this to be an endless chase. But if you can find the authors --

MR. FITZGERALD: If they're willing to talk and I can find them.

(Laughter.)

CHAIRMAN GRIFFON: Right, right. Exactly. Exactly.

MEMBER BEACH: Mark, this is Josie.

Does that include the list that NIOSH says that they would provide, the checklist data, so that SC&A can go back into the database and look at them, the SRDB numbers that you talked about early on?

CHAIRMAN GRIFFON: That really is

another action, Josie.

MEMBER BEACH: Yes.

CHAIRMAN GRIFFON: Yes. Which is sort of an administrative action, but it was an action item.

So, it was NIOSH will provide -- and what were you going to provide, the research database numbers for what documents?

MR. MACIEVIC: The checklist, I think, the checklist that we have. Yes, and also --

CHAIRMAN GRIFFON: And the LANL documents, right?

MR. MACIEVIC: For the documents we used for LANL, or for LAHDRA and also the documents we used in the checklist, not the checklist, but the health physics quarterly reports.

CHAIRMAN GRIFFON: Wait. Checklist, HP quarterly --

MR. MACIEVIC: Well, yes, the checklist and the quarterly reports. I can give a listing of all the stuff in Appendix A and B, what documents those are based on.

CHAIRMAN GRIFFON: Okay.

MR. MACIEVIC: Because you actually have document numbers in there, but I can go get that all related to the SRDB or to LAHDRA and say it is either a LAHDRA document or an SRDB document, and then have the numbers.

CHAIRMAN GRIFFON: So, they're not all in the SRDB? They're not all --

MR. MACIEVIC: Well, there's an overlap. I mean we have searched. We used all the SRDB, and we also went to LAHDRA to pull up extra documentation that might be there.

Because in going through, doing the ER, we used both of those databases to

pull as much as we can. So, you've got documents from both places.

CHAIRMAN GRIFFON: Okay.

MEMBER BEACH: Then, the other question I have is the six individuals that you pulled, is there any interest in SC&A looking at those or is there any value to it?

MR. MACIEVIC: Yes, I mean --

CHAIRMAN GRIFFON: I think the better approach is going to be the database comparison.

MEMBER BEACH: The database? Okay.

MR. KATZ: They're going to do a sampling.

MR. FITZGERALD: Just a preview or a smaller sample.

MEMBER BEACH: Okay.

MR. FITZGERALD: You're going to do a bit more comprehensive comparison --

MR. MACIEVIC: By looking at the actual bioassay database, and then taking people -- okay, yes, I have actually a better way of saying that. You're taking the bioassay database and comparing it to the checklist --

CHAIRMAN GRIFFON: Right.

MR. MACIEVIC: People on there for the non-claimants, essentially, and see --

CHAIRMAN GRIFFON: Right.

MR. MACIEVIC: How was that laid out?

MEMBER BEACH: The only other question I have, this list, your Appendix A was A and B. Do you have the full scale from A to Z in that?

MR. MACIEVIC: Oh, yes.

MEMBER BEACH: So, that's all there? Okay.

MR. MACIEVIC: Oh, yes. One of

the things I've got to say is that all of that has not been -- I've got a person still working, transferring all of this data to a database in Excel to get all the checklists in.

Because in this document from LAHDRA and also the SRDB, we've got where the documents all are. But, then, I've got the person going into each one, each individual document -

CHAIRMAN GRIFFON: And coding all that?

MR. MACIEVIC: And coding all the data that is in these documents, so that now you can see the people, the times, what kind of sample, and all of that.

MEMBER BEACH: And once that's done, you will make that information available to us?

MR. MACIEVIC: Well, that will

probably be Christmas of 2074.

MEMBER BEACH: Okay.

(Laughter.)

MR. MACIEVIC: So, what we're going to do is we will expand greatly on what's in here and, hopefully, get through maybe half the alphabet, go through A to L --

MEMBER BEACH: Okay.

MR. MACIEVIC: And then have enough in there to pull over several of the -- or the years that we have, because our database, our data search was primarily concerned in the early 70s, mid-70s and early 80s, because we didn't pick up every checklist for all the years. So, you are not going to see a complete set of checklists from `76 all the way out. We would have to go back to the site and actually collect those or to get that out of the system.

Because our main concern was to

have transition, a transition period from `75 to `76 and the early 70s. So, what these are going to cover is the early 70s.

But that's what we will get. We will get you as it is, and probably, I don't know, we could even send an email out at some point to say, "This is the extent covering. Does everybody agree this is a good size or would you like to see" -- you know, just without all the detail.

CHAIRMAN GRIFFON: Right. That's fine. Okay.

So, that brings us to No. 2. This is the exotics. I know they are overlapped in the ER, but I think it is cleaner to discuss them separately here.

So, I will just let whoever wants to kick it off, either Joe or Greg. You know, there are some actions that were listed here, but it is mainly back to the justification for

your approach.

MR. FITZGERALD: Well, the NIOSH response sort of alludes to the search for bioassay results. It is much of what we have just talked about. So, I don't know if you have anything to add to that.

MR. MACIEVIC: Well, I would like to add on benchmarking. So far, we have come up with there aren't a lot. There were some later years.

One of the ones was a contamination incident which was not usable in the sense that it turned out there was a problem with the dosimeter, and the person had a contamination incident with the dosimeter and they didn't do the full analysis to get a dose reconstruction because it turned there was some other problem. So, we couldn't use that.

We also had one that involved

thorium-232 and curium-244 that's in the LANL database for the exotics, but why it's not in here -- we did do a benchmark comparison, but we didn't include it because they did the analysis at LANL, but the actual exposure -- where was that? -- somewhere in Russia.

So, it was a person working from LANL out in Russia who got exposed to these materials. They came back and did their own dose reconstruction or lung count of this person. But since he wasn't really at LANL, I mean you could say, well, the systems were not the same; this was a different scenario for the exposures.

But, as far as proof of the method, it worked out well in that you had, using our substitution method of using curium and the thorium substituted into the intakes for the primary radionuclides that we had, you come up with a conservative number. I think

it was probably a factor or two or three higher than what they came up, based on the actual lung count model for an internal dose.

And you are also talking about an acute exposure versus this chronic exposure. But the chronic exposure is more conservative than that acute exposure was.

So, it did put numbers that were reasonable with that exposure, and it did, basically, well, in my mind it justifies that, for that particular one, the method works. It didn't give outlandish numbers, and it was for a particular organ dose for the lung for the exposure that it was considered.

And if anybody wants to see that, they can be shown. But, again, we didn't include it because it was an exposure offsite, not at LANL itself.

MR. MILES: Yes, but the approach was bounding for those, but I am not sure how

valid really to compare an activity outside or something. But we've gotten more. We chose a few examples that LANL had provided us that are actually listed in the ER. Since then, we have gone and tried to identify more in the database. We've got a list to go through, and we can probably find other examples there.

MR. MACIEVIC: Right. And that is part of what we were looking for, yes, in that DR list where you pulled up the --

CHAIRMAN GRIFFON: So, you are going to look at a listing of these, quote/unquote, "exotic exposures"?

MR. MACIEVIC: Right.

CHAIRMAN GRIFFON: And look at your use of primary nuclide and see if it's --

MR. MACIEVIC: Right, and when we talked about the DR list, looking at all the DRs and querying on exotics, the exotic radionuclides, that list that I had mentioned,

that is the one you have to go back to the actual DR now and take a look at the --

CHAIRMAN GRIFFON: Once you have this, I mean assuming that you look at this and it seems reasonable to use the primary radionuclides to substitute for these exposures, how do you determine who gets this assigned to them?

I think Jim -- we were talking about this on the break, actually. How do you assume which workers might have been exposed to these exotics?

MR. MACIEVIC: What we have been doing -- and I will ask Don Stewart to chime in after I am done -- what we have been doing is doing it on a case-by-case basis to look at the actual situation and if it is applicable.

Because we are not viewing it as a chronic problem, but a problem for the entire site, and that anybody in particular areas,

you are going to end up with everybody getting exotic dose if you don't try to specifically look at what kind of activity is doing and whether it is justified, either through some kind of incident or specifically in an area that is having these radionuclides.

Because it goes counter to what we are saying, in that the reason you don't see much of these exotics is because they are just not present. If we start giving everybody the dose from exotics, you have just countered yourself and said, well, you're giving them all this dose, but they really don't need it. So, that is a question that we are looking at, but it is on a case-by-case basis.

Is that pretty much it, Don, or --

MR. STEWART: Yes. Yes, we wouldn't make a presumptive exposure to these very exotic materials. You know, if the prevalence at the site was low, in fact,

existence, period, is low.

So, I think we had some things we were talking about, job classifications, you know, actinide chemists and things like that. But, for most people, the overwhelming population of cement workers and ditch diggers at LANL, really not a lot of them are presumptive exposures to the exotics.

MEMBER MUNN: And if they were, it would be clearly episodic? It would be likely to be known as episodic, would it not be?

MR. MACIEVIC: Right. Right, it would have to be some --

MEMBER MUNN: I would think so.

MR. MACIEVIC: Right.

MEMBER MUNN: Certainly, you wouldn't expect chronic exposure to --

MR. MACIEVIC: Exactly. The quantities and where the materials are, it wouldn't lead itself to be something you could

stumble into --

MEMBER MUNN: No.

MR. MACIEVIC: In any particular part of the plant. Or, even if you were in an area where the material was, it would not have been airborne. Because the areas where they do work with the actinides, they have their own air-sampling program beyond the health physics to determine if there was any kind of releases in the room.

So, if there wasn't an episodic or an incident type of activity, you wouldn't want to say, well, let's just give it to them because they were in a particular building.

MEMBER MUNN: The question of whether or not the exposure would be adequate to be called significant would be called into issue in cases where people were simply passing through or minimally exposed.

MR. FITZGERALD: That is precisely

the sort of the dilemma we were talking earlier, which is if you don't have any measurement data, how are you going to tag which workers? I mean I guess, if you have air sampling or something, that would give you some indication of whether you have any exposure pathway, and if you do, some means to characterize that.

Otherwise, it just seems like you are in the dilemma you are talking about, which is, who's in that room and is it reasonable to assign some kind of dose? And what would that dose be?

It sounded like before the approach was to, again, benchmark against the primaries and use those intake values. That would be seen as bounding for those nuclides.

Then, the question would be, well, who would get that dose? Now you are going to identify categories of worker. I would assume

you are going to include your maintenance staff and people that would maybe come in and out. But it does sort of raise the question of what that cohort would be.

MR. MACIEVIC: Well, the thing is, when you do that, the problem that comes up is, if you've got a person who is coming in, say custodial services, cleaning a room with the material in it, you are going to have to make the assumption that this material is somehow in the air all the time or contamination that is giving it to that worker.

What I need to find, which I haven't found yet, is surveys information because things like CNC-11 was definitely the actinide type of research area. Like I said, they did have their own, as they state in their own procedures, which I have. I've got the procedure information that is in those

document.

But they did their own air sampling beyond what health physics had for air sampling to determine if there were any kind of releases or if there was any kind of contamination problems that they had in the room.

So, that would be one way of going back, if you can find those surveys, and say, have they ever had any results on that kind of thing?

MR. FITZGERALD: Yes. I think that is superior to what was presented in the ER because the ER basically says you can do a sitewide average based on the intake value for the primary.

And that gets you into issues, well, is that reflective of what the exposure potential was in that particular operation or not? And you're bringing it back to maybe the

operation itself, which may be more representative than that sitewide average, because the sitewide average I think presents its own issues, which is, how representative is it? Because if it is an exotic operation, it probably doesn't reflect the average anyway.

MR. MACIEVIC: And there are several documents that talk about it, but the thing is to go from this list here, which I think I even have -- let's see.

MEMBER MUNN: Well, the knowledgeable people who would have been involved in operation of what we call exotics would certainly be protective enough of their own health and welfare to want to know what their exposure was over and above anything that might be recorded on a regular standard basis for other Members of the Work Groups.

MR. MACIEVIC: Well, see, you have

here, this is like for 1975, a standard operating procedure for handling actinide elements, americium, curium, californium, and berkelium, and a standard operation procedure for safe-handling of radioactive sources offsite for CNC-11 trailers. Those CNCs are the ones that handled the actinides.

So, you have in just this one I pulled out here two sets of procedures on how to work with this material, and then there's the procedure within these procedures as to how to do the air sampling. But, like I said, the trick is now finding those particular samples.

MEMBER MUNN: Right. Yes.

MR. FITZGERALD: You're moving -- what was a qualitative approach which says that we have looked at the literature and it looks like it was handled the same way. It appears that we would be restricting these

primaries.

Is there any data? Now, presumably, there's not the bioassay data, although there might be some for neptunium, but I'm not sure. But certainly you don't have the bioassay. What you are now saying, there may be some area sampling that might be applicable when you look at it.

MR. MACIEVIC: That's right. And it would be, again, small, but the tool is there. But the key is to find that data.

That's why in the time limits in doing the ER you are able to find the documentation that talks about specific things they are doing, but, then, to go and dig up those samples or to go to the site, which this may be still, well, probably still at the site, where you would have to go and do another data capture specifically looking for this type of survey data that we have set up.

Because you do have survey data, which, again, that's not a complete document, but there are discussions of surveys where periodically you do see the exotic radionuclides are mentioned in there. So, it is there in small amounts, and we maybe have -- well, even though I've got the document, I don't necessarily have the survey to cover that.

CHAIRMAN GRIFFON: Well, yes, I guess my confusion is that I'm looking at all the previous actions, and it was all related to sort of verifying the proposed approach of using the primary nuclides is satisfactory. Now we're saying that might not even be on the table. Is that on the table or everything is sort of pending?

MR. MACIEVIC: For the example that we have from the offsite, it does do it. For sample calculations, using the substitute

for the exotics for the primaries, those provide, in example dose reconstructions, provide reasonable results. But when we are going back, there's data that has to be dug through further to pull out that info.

The method itself is not, when you do it with the examples and with the one, they provide reasonable numbers. So, I'm not worried about this providing some off-the-wall values when you do the substitution. But the trick is, it seems from here, we have to be able to go, and if we are starting to talk to go back to the source and pulling up from different areas actual sampling data, that gets to be trickier.

And our approach is that there isn't a lot of data when we wrote the ER, and that is covered by this. If you run into a situation where you have in a DR someone talking about or an area we know to be with

the actinides, we can apply this as an extra factor to make sure we've got that dose included. But those are not based on readings from samples.

CHAIRMAN GRIFFON: See, I feel like I'm aiming at a moving target. My focus was to sort of validate and in my mind be comfortable with this model of using the primaries for all the exotics.

I know you said and Don on the phone said, well, it's sort of a case-by-case basis, but from the Board's standpoint, we have to look at it as, you know, is the method adequate for all members, potential members, of the Class for all? You know, a case-by-case basis sort of doesn't answer the question for me.

How are you going to determine who? I think there's the who and then there's what the dose, you know --

MR. MILES: It seems like there's, at least from my understanding of the ER, the objective of the ER is to present a methodology that could be used to bound intakes. Now the implementation of the nuts and bolts on how the dose reconstructor might take all data available to them and reconstruct a dose, those kind of details are presented in a TBD or that kind of a document.

CHAIRMAN GRIFFON: Yes, but, procedurally, the Board has always said that we want to know; it's the show us how, you know.

DR. NETON: I think we need to maybe more clearly define which work populations these exotics would be applied to.

CHAIRMAN GRIFFON: Yes.

DR. NETON: Clearly, it's not the whole site. Greg talked about it. It's not the whole site.

CHAIRMAN GRIFFON: Right, right.

DR. NETON: There's certain areas where these existed. These were minor players.

CHAIRMAN GRIFFON: Just by their nature, right.

DR. NETON: Yes. And whether we can constrict the use to certain areas, certain job titles, that sort of thing, we should be able to do that.

CHAIRMAN GRIFFON: Well, then from an action standpoint, I mean I am just trying to understand how to direct this thing.

Yes, go ahead.

MEMBER BEACH: Well, I want to, too, because the service workers, you say it's a minor or a small group, but the service workers were all over. Those need to be addressed.

MR. MACIEVIC: Well, yes, I agree,

and I was going to say, as far as for Andrew, for the firefighters and the --

MEMBER BEACH: Janitors, maintenance workers.

MR. MACIEVIC: All that group, the only way I can see -- well, we can go back and take a look at the associations that would have these potential for the actinides, but you would have to, in doing any kind of dose reconstruction and having a maintenance person or someone coming into that area, they would, then, have to get -- because you would have to rank on some amounts of time. You couldn't say the person was there 2,000 hours a year and working in that facility. You would have to say, what would be the percentage of time? You would have to give some fraction of that dose to that worker.

CHAIRMAN GRIFFON: I'm not sure -- we always get into problems when we start to

try to do that, you know.

MR. MACIEVIC: That gets tricky.

CHAIRMAN GRIFFON: Yes. Worker tracking is, you know --

MR. MACIEVIC: Well, let me ask Don. Don, didn't we talk about a clear set of job titles and activities that are specific to LANL?

MR. STEWART: Yes, when we were talking about the substitution approach.

MR. MACIEVIC: Right.

MR. STEWART: Yes, we had a list of job titles and areas, and I actually have been looking for that. I haven't been successful in finding it as yet.

CHAIRMAN GRIFFON: Well, let me go to Andrew who had a comment, and then Joe.

MR. EVASKOVICH: Well, my question is -- it's more of a question. Because I addressed the stack air monitoring and the

problems associated with that which were revealed in the Clean Air Act lawsuit. There were several buildings that had stacks that were not monitored.

My question is, were the exotics in these buildings that weren't monitored? In which case, then, you do have an environmental problem or environmental exposure for the workers at LANL. I haven't heard that addressed yet. Where are these located at? What were the systems? Were they in gloveboxes and were they vented out through stacks? And if the stacks were monitored, then you have a potential for exposure there. That doesn't seem to be addressed.

MR. MACIEVIC: Well, see, with the actinides and that, you would have to look at incidents that are occurring. Now when you have a routine process where there is materials being used all the time and there

are some releases going on over a period of time, that's one thing. But when you're dealing with the actinides in these laboratories, the problem is different in that you're not having -- a release from these facilities would have, you would have to look at the incident lists to see whether or not there would be this type of activity going on, that you would account for this.

Because it's not a routine process that is going through that you will have lots and lots of these exotics continuously being pumped out or not being monitored or working on a process where this material, even if it's not a monitored stack, would have been over years pumping this material out of the stack. So, it is a different type of problem that would be addressed.

CHAIRMAN GRIFFON: Yes, go ahead.

MR. FITZGERALD: Yes, my question

was actually relevant to you were trying to shape an action. As we were talking, I was thinking about, you know, in the ER they basically married up the exotics to the primaries that would be used to bound them. I am thinking of a matrix where that might end up being the fallback at some point, but if you had a matrix where you had the exotics and you had any available bioassay information, and I think perhaps neptunium -- there's a couple of campaigns where I think they actually do have some data.

Then, you have situations -- and I think you referred to them -- where there might actually be some air sample information or whatever, contamination surveys, or whatever. You haven't found that yet, but there may be.

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: It is sort of

like going down the hierarchy of establishing what data there is that could be applied. Then, of course, the question is, can you apply it? But you would march that down.

Then there might be situations, which goes back to Jim's earlier comment, where you can establish there was an exposure potential and why. That might be something -- I can't predict what that might be. It might be a situation where you can establish there's no exposure potential.

That kind of establishes for that family of exotics kind of where things stand and what your strategy would be in each case. Because in some cases you might be able to use the available monitoring information to bound the exposures and you might be able to tag it to a certain cohort of workers.

In other situations, there really isn't any data, and if somebody has some

established exposure perhaps to that exotic, then you will have to perhaps propose the sort of fallback position, if you may, which is to use the primary.

I get nervous when you get to that fallback position because it sort of begs the question. If we don't have any data, no source-term evaluation information, and you are using a substitute primary, I would want that benchmarked in some fashion to at least establish the relevance, that it actually will bound, as you gave that one example.

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: Otherwise, it is kind of speculative. Intuitively, it sounds right, but there's nothing hard to go on.

CHAIRMAN GRIFFON: And the air sampling to some extent might be useful in that regard.

MR. FITZGERALD: Yes, and I'm just

saying, if you march down that --

CHAIRMAN GRIFFON: It's in the same ballpark area.

DR. NETON: But you run into problems where these things were used so infrequently --

CHAIRMAN GRIFFON: Right.

DR. NETON: That you don't have a lot of data. So, we find little bits here and there, and then the question is, well, how representative is that? And you say, well, maybe that's it. I mean you don't know how often this was used.

CHAIRMAN GRIFFON: Yes, yes.

DR. NETON: I've been looking through these RWPs, special work permits and procedures that we cited in the ER. It is pretty definitive as to how you handle this stuff and what you do when you're working with it.

So, it's clear that there was an understanding and a recognition of the hazard and containment of the hazard, and they worked with it under some very tight radiological control. The question is, how much data do we need to pull out to convince someone that controls that are on paper that are in place actually were there, given that's it's not a very high-frequency operation?

CHAIRMAN GRIFFON: Well, the other thing about not so high-frequency operations is that the protocols around those operations are probably not so tight. Do you know what I mean?

DR. NETON: Well, I don't know, Mark. I'm looking at all manipulations --

CHAIRMAN GRIFFON: Sometimes just by the very nature, they're experimental in nature, Jim.

DR. NETON: Just let me quote --

CHAIRMAN GRIFFON: Yes.

DR. NETON: Just this one part, "All manipulations of curium are carried out in closed glovebox vacuum systems to maintain a negative pressure," and neoprene gloves, a minimum of 10-gauge thickness, tested for leaks before they install these boxes.

I mean these are not very slipshod operations. I mean they are well-thought-out.

MR. MACIEVIC: Also, you have high external doses associated with several of these things. So, it's not like it's on its own that you would be somewhere without the dose rates being increased externally if this were a contamination problem all throughout a facility.

MEMBER MUNN: And we certainly have vast information to show that.

MR. FITZGERALD: I think this gets into the broader question that I think we're

talking about in Santa Fe, which is you don't have any hard data and clearly, there was an exposure potential. Can you deal with it in terms of the procedures that are in existence at that time and some appreciation of the controls that were implemented or in the context of EEOICPA, which I think is skeptical of DOE's management controls, and should you do that?

I think this is a really hard question, which is the one we're talking about in Santa Fe, because I don't know. I think we have hit that point in a number of cases, particularly with the secondaries, where you don't have a lot of data and you have to make some kind of overriding assumption that it looks like and reads like things were pretty well-controlled. And intuitively, you expect by the 80s and nineties you are going to see much better controls, although I have to say I

was at Fernald in `85 and that wasn't the case.

So, with a grain of salt, you have to assume things.

MR. MACIEVIC: I will tell you for LANL, as far as I think even currently today, you are not going to find bioassay programs for the actinides and that they are going to have a specific program for all these materials. They are still viewing it as a contained problem that is being watched over here, but it is not a general process problem.

Because if you're talking all the way up to 2005, and we talked to the current people in the facility, and we had the dosimetry, they did not have examples right off the top of their head to show, from lung counts and all that to say, "Oh, we counted. We had a neptunium here. We had a curium here. We did this and this and this." It

wasn't there.

DR. NETON: In this era, and I'm talking about after `75 forward, the process was in place to evaluate the hazard, put in some workplace controls, and then evaluate to see if those workplace controls actually worked.

You would do a lot of routine surveys and find that they were actually in place, but the need for bioassay would not really be there. You don't use people as human air samplers to see if your workplace controls are working.

So, I'm looking here at the CMR building. This is sheet -- I'm referring to Appendix A that Greg discussed earlier. There were 9,000 alpha contamination surveys of the CMR building in the third quarter of 1975.

So, clearly, they recognized the hazard. They are surveying for it. If these

contamination surveys are coming back clean, where is the need to have bioassay samples to document exposure or demonstrate no exposure?

I think it is incumbent upon us -- I agree that we can't just cite a procedure and say the procedures were there, but I think some tieback, as we talked about earlier, to all these surveys and air samples that were taken to demonstrate that the controls that were in place actually worked and we're not seeing evidence of loose contamination in the workplace. And if there was, did they do something about it?

MR. FITZGERALD: I think that also goes to the question of health physics controls and management at not only DOE-wide, but particularly at Los Alamos. We are very hesitant about citing Tiger Team reviews because they were compliance-based and they looked at whether procedural compliance was in

place.

But, nonetheless, some of these snapshots give you pause, which raised I think a healthy skepticism about whether any site was necessarily following its own procedures, let alone following practice.

I think that was the great awakening in the early 80s at DOE, that despite the policies, it wasn't necessarily being implemented rigorously at many sites. I think the context of this program is going to be skeptical of what you read in the procedures and what should have been going on versus what was actually going on.

So, I'm sort of getting into what we are going to talk about in Santa Fe, but the issue is, when you have no monitoring data, how do you weigh --

DR. NETON: Well, but I would suggest you do have monitoring. We just

haven't provided --

MR. FITZGERALD: Okay.

(Laughter.)

Well, that's what I said earlier. We have the data, but that's the first action, is to get the data, and then to see where we don't have the data.

DR. NETON: Yes, I agree.

CHAIRMAN GRIFFON: That was on the table from last time.

DR. NETON: I 100 percent agree with you. Just citing the procedures is not sufficient in and of itself to put this issue to bed. We have to show some demonstration of compliance with procedures and that the workplace controls were effective.

MR. MACIEVIC: Well, I don't know. Another philosophical question, but if you are looking at what I view as something becoming an SEC, there's one thing to say that

a site which they screwed up here, they had problems here, they had doses that were higher than they anticipated, and it just basically was a screwed-up place, but an SEC says they were doing something that they basically had no clue of that is exposing people to a level that we have no clue that we can even talk about.

To me, it says there is going to be a lot less information on a site like that as opposed to somewhere where you do -- and, yes, you have to go through the actual reports and pull up the survey results. But when you're going into an SEC, you have to say that the actinides really were so prevalent and not watched and had no clue about, that this site could be exposing people and all kinds of workers to stuff that they have really no handle on what they were doing.

But these documents don't show

they didn't have a handle on it. They knew it existed. They knew it was there. They had things that were going.

Now how much a person got over time, you can go and look at the air-sampling data and try to figure out. But to push it to the other end, to say there was a total breakdown --

MR. FITZGERALD: The perspective I keep going back to is Los Alamos is somewhat unique in the sense that we are dealing with this two-part SEC. The first part SEC focused on not the primaries, the primary radionuclides, but actually secondary nuclides.

I'm trying to understand logically, prior to the in vivo counter being installed, it was understood based on this SEC being granted that, even though they were aware -- you know, certainly there was this

awareness and there were certainly controls in 1974-75 on certainly mixed-activation, mixed-fission products. You saw it, you name it.

The ability to know what the actual doses would be, whether it is by recordkeeping or by dosimetry system was lacking. With the advent of the technology, all of a sudden, that situation, based on the Evaluation Report, has changed.

We now have not just the awareness -- that existed before the in vivo arrived -- but now you have a means to actually come up with data, usable data, for dose reconstruction. That's what we keep coming back to. Is there data? And if there is no data, that kind of creates a fundamental question on the table.

If the technology didn't give you better data, and you're trying to establish a different way to do it, then whether or not

there was an awareness, whether or not there was procedural conformance, it still comes back to the data. Is the data better? That is, to me, the hallmark of --

MR. MILES: Well, you keep coming back to there is no data, but we had Liz just mention a while ago there were like a thousand results she was looking at in the database --

MR. FITZGERALD: I'm just speaking to the ER.

MR. MILES: For LAMPF.

MR. FITZGERALD: I'm just speaking to the ER. The ER, that's what we're evaluating. That's what the Board is looking at.

The ER, basically, says that it is sparse or lacking, and therefore, we're going this way. At the table now, I think -- and this is partly our confusion -- is we are hearing that there is data. We haven't really

unpacked it totally, but when we unpack it, that might offer a path forward, which is good news because I think that is a better place to be than what's in the ER. But we haven't seen it yet.

MR. MILES: Well, I think there are data, and those data will be used as available for a dose reconstruction. But the effort in the ER is to present a methodology that could be used to bound in the absence of data.

CHAIRMAN GRIFFON: Well, then, now I'm back to the beginning of the discussion.

(Laughter.)

Are you or are you not admitting that for some people -- because we have to evaluate it for all claimants over this time period, whether you can reconstruct dose. So, you're saying for some they will have personal data. That's fine.

MR. MILES: That's right.

CHAIRMAN GRIFFON: We understand. That's in the DR process. But we have to look at the other, the outliers. So, how are you going to bound for everyone? How are you going to reconstruct for everyone that might be exposed to these exotics? That's the other layer of this question.

So, are you, then, proposing that you would use -- I'm still saying in my first action, until you just said that, my first action was that you should go back and look at this other data available for these exotics, like air sampling, like swipe data, like source-term data even, to determine the extent that that can be used for reconstruction or to validate the use of substitute data. That was my first action.

MR. MACIEVIC: Right.

CHAIRMAN GRIFFON: So, let's stay

with that one.

DR. NETON: Yes, I'm with you on that.

CHAIRMAN GRIFFON: So, that's the first.

MR. MACIEVIC: Well, I think --

CHAIRMAN GRIFFON: So, you are not necessarily saying flat out that you will use what you are referring to as the primary nuclides, the plutonium or americium. You won't necessarily use that as a substitute. You're going to look at this other data first?

MR. MACIEVIC: Right, right.

CHAIRMAN GRIFFON: Okay. That's what I wasn't sure.

MR. MACIEVIC: Well, and, see, I think the question, because we keep saying no data, as you go back in years, we start getting into the sixties and fifties, there is less actual survey data --

CHAIRMAN GRIFFON: Right.

MR. MACIEVIC: And less things there. Whereas, as you're going into the later years, you just by volume and looking at the numbers of samples and things done, that has increased.

CHAIRMAN GRIFFON: Right.

MR. MACIEVIC: So, that is the kind of thing we're talking about as far as when you say more data or less data, there is more survey data being produced.

CHAIRMAN GRIFFON: I mean this is the example we just used with the accelerators. It may be that, like Jim said, if you go back, you find the different campaigns that were run for neptunium, and you say, you know, it was run for three weeks in this one area and they did 50 air samples over those three weeks, and they all came up non-detect. Then, maybe that's convincing enough

that there was no potential, even though the source-term was there, there was no potential for airborne exposure, and therefore, they didn't do bioassay.

So, that convinces the group that, okay, you know --

MEMBER MUNN: How long are you going to have neptunium around anyway?

DR. NETON: Well, the door is still open on using this ratio technique though. It may end up being the case that we have access to smears and air-sampling data, but we've never been successful at convincing anyone that air sampling data can be used to estimate intakes, unless it's very rigorous readings on an air sampling campaign.

CHAIRMAN GRIFFON: You're right.

DR. NETON: But if you have evidence from a general area sampling program, it really doesn't look like much is going on

out there, but then you can say, okay, but that allows me to say my ratioing technique is probably going to be okay. It will be above what the GAs were saying.

I'm not suggesting that we will develop air sampling models here because, frankly, that's something we've never been able to do --

CHAIRMAN GRIFFON: Right. And that's why I say this other data to reconstruct or validate this substitute method.

DR. NETON: Exactly. Right.

CHAIRMAN GRIFFON: I'm leaving it open for you. Okay.

DR. NETON: I got you.

MR. STEMPFLEY: Mark?

CHAIRMAN GRIFFON: The other thing I said in this action -- oh, I'm sorry, go ahead.

MR. STEMPFLEY: My name is Dan Stempfley. I'm with the ORAU team.

And I had a quick question about the discussions in terms of bounding. My question is in the ER we defend the ability to bound. If that question is satisfactory, don't methods that you are discussing about specific dose reconstruction processes, don't they become TBD issues rather than SEC bounding issues?

CHAIRMAN GRIFFON: Yes, but we've asked -- I mean the Board procedure, you might want to pull that up. The Board procedure is to have in this Work Group process show us how you're going to bound. So, just saying that you can bound and not having the exact way you're going to do it, and not validating it --

DR. NETON: Yes, we've been down this path before.

CHAIRMAN GRIFFON: Yes, we've been down this path.

DR. NETON: It's one thing to say that we can bound all intakes for exotics by assigning exotics to everyone.

CHAIRMAN GRIFFON: Right.

DR. NETON: I think we've gone down the path where the Board doesn't accept that.

CHAIRMAN GRIFFON: Right.

DR. NETON: If that's what you're going to do, then that's what you're going to do. It's not okay to be morphing your position as you go.

See, originally, that's how we started off with these processes. We would say, well, we can bound it by doing --

CHAIRMAN GRIFFON: Right.

DR. NETON: We'll just assign this to everybody. And the Board's position was,

well, if that's what you're doing, then fine; let's talk about that.

And then we would say, well, we could refine it later on as we go and develop these processes. The position we have been in lately is we have to have a fairly well-defined --

CHAIRMAN GRIFFON: Yes, there's also the sufficient accuracy argument.

DR. NETON: It's a sufficient accuracy thing.

CHAIRMAN GRIFFON: Yes, yes. If you start just throwing high numbers at everything --

DR. NETON: Are you going to assign curium intakes to secretarial staffs, and that sort of thing?

CHAIRMAN GRIFFON: Right, right.

DR. NETON: We need to define who this applies to.

MEMBER BEACH: And I have a question on the ER. Did this ER capture all of the exotics that were used? And if not, how important is it to make sure that those are all addressed?

MR. MILES: I think that at LANL they pretty much used just about anything you can imagine at one point or another. In some way, shape, or form, there's just about any radionuclide that you can think of used there in some way, shape, or form. And I think it is still the case today.

In fact, most all these issues that we are discussing I think you could ask, is the situation different last week for a worker that was there last month? Could we bound that worker's intake?

Because all these issues that were discussed so far seem to be applicable to today.

CHAIRMAN GRIFFON: Well, yes. I don't know where the -

MR. MILES: Bioassay results for every radionuclide on the chart of nuclides.

CHAIRMAN GRIFFON: Right. I would rely on SC&A's review on this to look at the sort of primary campaigns. I mean we can't track down every laboratory experiment, right?

MR. MACIEVIC: Well, I actually have a procedure in here that -- this is Greg. Oh, well, we don't have to say that now. Never mind. Never mind. This isn't Greg. Don't worry about it.

(Laughter.)

On a procedure on how to work with einsteinium, I mean you've got some off-the-wall radionuclides --

MEMBER BEACH: Right. I just wanted to make sure that was addressed because I don't have the total grasp on the importance

of it.

MR. MACIEVIC: Well, it's interesting that Andrew provided a document, not this current one, but from the -- oh, what is that?

MR. EVASKOVICH: From the petition, the 2002 radiological --

MR. MACIEVIC: Yes.

MR. EVASKOVICH: Building survey.

MR. MACIEVIC: Review of the site.

MR. EVASKOVICH: Yes.

MR. MACIEVIC: And they looked at things.

MR. EVASKOVICH: They only used it for one year, though. I couldn't find any other years, but that one just happened to pop up on a Google search. So, I grabbed it.

But I referenced it in the petition, and then I referenced it again in this review that I wrote.

MR. MACIEVIC: Oh, is it the LANL National Resource Council report that you sent? Because it was a document that -- no, I don't have the year.

MR. EVASKOVICH: No.

MR. MACIEVIC: It was a pre-assessment screen for LANL, the LANL National Resource Council document. They were doing a preliminary look of --

MR. EVASKOVICH: That was for environmental exposures offsite.

MR. MACIEVIC: Oh, yes. Well, I thought it was also they talked about onsite stuff, too.

MR. EVASKOVICH: Well, they do, but the concern or the basis of concern for the document was dealing with the potential for offsite releases because they had the Pueblos involved and they had Bandelier National Monument involved and the Forest

Service.

So, what they were looking at with that was identifying the source-terms and the possibility that they migrated offsite through either the canyons or through the air, the canyons being water runoff.

And the Clean Water Act, that's another lawsuit that was filed in 2008, I believe. So, there have been issues with that.

It's a later action item or at least it was referenced in the matrix, you know, identifying source-terms, but the other document refers to in 2002 they did a survey where they actually listed materials and where they were located, which, yes, it does confine. But it goes back to my earlier question, you know, the stack air monitoring and the potential for release --

(Voices on the phone line.)

MR. MACIEVIC: Remember your mute.

MR. KATZ: It's okay. Folks on the line, if you could mute your phone? We can hear you discussing Andrew's comments. You could use *6 if you don't have a mute button to mute your phone. Thank you.

MR. EVASKOVICH: But, like I said with the stack air monitoring, I think it would be helpful because this goes to the episodic nature, I think. That was a question that was raised in the last meeting, and I think it is going to come up later on in the matrix, is the episodic nature of these exposures.

So, you're saying, okay, well, it's episodic, but, yes, it's episodic, but still did it go out through the stacks? Was it not monitored? Is there a potential for, say, the guy cutting the grass outside the building to have been exposed while the people

inside were not? That is kind of what I'm trying to get to.

MR. MACIEVIC: Oh, yes. And my point with bringing up the document is in there, when you go through that -- and I did a check through the PDF -- the source-terms that they talk about that are of concern to them are basically the primary, are the primary radionuclides.

Because I was looking to see if maybe in some of these documents someone was talking about any of the exotics, and they are not mentioned in the process. It's the basic primaries.

So, when you look at other environmental reports, it is the primaries that are always the material that the concern is for and not the exotic radionuclides.

MR. EVASKOVICH: Well, I would think the Clean Air Act lawsuit does reference

the exotics as well because --

MR. MACIEVIC: Okay. I didn't look at that.

MR. EVASKOVICH: Well, I referenced it in the petition, and from what I understand, there's a lot of documentation that is on file with the court there, the U.S. District Court, but it's just there's a lot there.

MR. MACIEVIC: Yes.

MR. EVASKOVICH: And I didn't dig into that. But I just referenced what the result of the lawsuit was and just talked to the people that were involved with the lawsuit. And it isn't just the primaries that they were concerned with as far as offsite exposure.

That was the purpose of it, was they were concerned with the offsite exposure. They're looking at LANSCE. They're looking

at the activation products, but they're looking at the stacks as well.

I think that is a concern, is that if they're working with exotics, depending on the nature of the stack and where the air is coming from, what's released coming out of the stack? That is kind of what I wanted to address when I did the petition, was if you're not monitoring for the exotics and you don't have any bioassay for it, then how are you going to reconstruct the dose?

So, if somebody is outside, okay, a guy is in the laboratory working with exotics. He has got a glovebox. He has got negative pressure. Where is that going to? It is going out the stack. If it is not filtered properly, and they don't know that because they didn't monitor, what is the potential for exposure to the person outside?

With just the whole nature of

airflow out of a stack, the stack tipped downdraft, you know, the stuff that I discussed in the petition, that was kind of the issue that I was trying to raise and I was hoping to get addressed, aside from what was happening at the explosive sites and the testing that was done there.

So, that's one of the things I was hoping to see addressed, was the potential for the environmental exposure that is not addressed in the dose reconstruction. Because you're saying, well, we've got all this bioassay data for comments, but you don't have the bioassay data to apply to the DR for people that are exposed to the exotics through these other means, through the environmental exposure that could have occurred through the stacks and the explosive testing.

MR. MACIEVIC: Well, LAHDRA also is one of the projects that addressed the

environmental problems. I think they just released that report, but --

MR. EVASKOVICH: Yes. Well, you know that's why I threw in the Clean Air Act lawsuit, just because they're saying, well, we have to stay here, but the Clean Air Act lawsuit says the quality of the data is not there.

CHAIRMAN GRIFFON: Okay. I'm going to try to go back to the action list. I think I sort of recapped where we need to go with item 2. But let me see if I have agreement.

The first one, I just edited the first one based on our discussion because part of what I wanted to see if NIOSH can respond to is, well, I'm thinking back to like Mound with the Wayne King document that shows nuclides by areas.

But NIOSH to provide a listing of

the -- and I put in the word "major" -- of the major exotics. In other words, I understand that it is a laundry list, and I am going to let you guys define where that cutoff is. And SC&A will, obviously, be looking at it, too.

But define a listing of the major exotics by location and to identify and provide other types of data, monitoring data, air sampling, swipe data, source-term data, dose-rate data, et cetera.

NIOSH will determine the extent to which the other monitoring data can be used to reconstruct dose or to validate the use of substitute data to bound doses from exotic nuclide exposures.

So, that's that other data.

MR. MACIEVIC: Right.

CHAIRMAN GRIFFON: And I added on that first part, which is where were these campaigns done and what time frames, you know,

that kind of thing.

MR. FITZGERALD: With workers, you mean identify the categories?

CHAIRMAN GRIFFON: Yes, I think that in our matrix it comes in item 4, the linking of the workers to the -- I'm going through the same four bullets we had before. I'm just following, these are sort of follow-up actions from the April actions.

So, the second action I have is NIOSH will -- and I think this is still pertinent, but this was the first one you said, Greg, and you actually said it when we were discussing No. 1.

NIOSH will go through the claimant files to look for data or for claimant files that have data for exotic exposures to determine if the use of the primary nuclide substitute model will effectively bound or effectively yield the same result as the use

of the exotic data.

So, it is another way of sort of confirming that model. That sort of assumes that you are going to go with that model. But I think that still is pertinent, even though you are looking back at the air sampling and other data, too. All right.

No. 3, I said, "No further action. See No. 1 above."

Basically, it was to provide a better description of the episodic nature of the exposures. I think if you provide location and time frames, all that stuff, we are going to understand a little better about what these campaigns were. So, that should answer that question, I think.

No. 4 was for NIOSH to provide a matrix from checklist data and RWP data. I'm not sure if it's RWP data, but more from checklist data, right?

MR. MACIEVIC: Yes, checklist and the quarterly reports.

CHAIRMAN GRIFFON: The quarterly reports.

MR. MACIEVIC: And there are RWP data -

CHAIRMAN GRIFFON: Okay.

MR. MACIEVIC: That could also be brought in, but I don't have that.

CHAIRMAN GRIFFON: Okay. To look at which workers or job types were monitored for which radionuclides over time. And this is the exotic radionuclide, which exotic radionuclides over time.

That's sort of a carryover from the last action that we had the same thing. So, this gets into the question of, can you place people or job types in these areas?

Then, the only other one that I have started hanging out there is Andrew's

question of the sort of exposures to support workers outside. I think it does come up later in our matrix. So, I am going to write it on the side for now on how I am dealing with that. I won't include it in 2, but I haven't forgot it. Remind me if I do.

But does that sort of capture where we're at with it? Okay.

Do you want to move on? I think 3 is similar, and maybe we can knock this out before lunch.

MR. FITZGERALD: Yes, I think on 3 the context is the coworker model --

CHAIRMAN GRIFFON: Right.

MR. FITZGERALD: Rather than anything else, whether or not it's sufficient data to make the coworker approach valid. That is a typical question raised in any SEC. So, that is a question that I guess part of what you are going to be looking at is --

MR. MACIEVIC: Well, we did provide you some of it laid out by year, the bioassay data and --

MR. FITZGERALD: Yes, I think the context we are particularly interested in is in the exotics and the other nuclides in particular -- I think that we certainly had some data points where the question is how much, what would actually be used in the coworker model, and is that going to be feasible, that question.

Because you have -- was it OTIB? -- not OTIB, but was it OTIB-62 -

MEMBER BEACH: Yes.

CHAIRMAN GRIFFON: Yes.

MEMBER BEACH: And it said, "and -63", post-`75.

MR. MACIEVIC: Does that answer the question? Because it was, can that be laid out for all these radionuclides by year

instead of five-year intervals for the bioassay results? And that does answer that, as to the number of samples that are available during those periods, and cesium being the one that --

MR. FITZGERALD: It gets to be kind of scant in a couple of years. I guess you are talking a five-year on cesium, though?

MR. MACIEVIC: Yes. Yes. We. The whole-body count data for cesium are presented in five-year intervals, and it's because of the fact that you needed a larger pool of numbers to make it more, improve the statistics for it by having the whole-body count. Because this is only the --

MR. FITZGERALD: So, it's sort of two issues on that. One, we question the cesium-137 to begin with.

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: But assuming you

use cesium-137, whether the five-year -- I guess you're going to the five-year rather than by-year, if that's sufficient data to feed a coworker distribution?

So, this does overlap the other issues, I guess, Mark. I mean in a sense --

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: That, you know, there is reliance on the cesium-137 for the exotics at least. You're going back and looking at the mixed-activation products from the standpoint of what we discussed in item 1 to see if there's sufficient data there. That will also feed into whether that would be sufficient for a coworker approach on the mixed-activation.

So, this is sort of, I guess, a fallout question, Mark, as far as the sufficiency question will then feed into whether the coworker model would be valid or

not, based on cesium for the non-accelerators and then whatever data you can find for the accelerators.

Then, the second question is, is that going to be sufficient for a coworker approach? I guess we can't really answer that question.

CHAIRMAN GRIFFON: Yes, we've got to really wait until 1 and 2 are answered until we can move on to 3, right? Is that what you're saying?

MR. FITZGERALD: Yes.

CHAIRMAN GRIFFON: So, all these, I think these will just be carryover actions pending the answers, you know, your responses to the first two things we discussed, right? Because we're not even sure if you're going to end up with the same coworker approach.

MR. FITZGERALD: Right.

MR. MACIEVIC: Well, for the

mixed-activation products for like LAMPF, we may end up using it. We'll find the data and go with something with the air sampling data --

CHAIRMAN GRIFFON: Right, right, yes.

MR. MACIEVIC: As opposed to using something like that.

CHAIRMAN GRIFFON: Right, right.

MR. MACIEVIC: Which I wish we had separated that out -- that the exotics really were with the actinides and often not considering mixed-activation products as an exotic.

MR. FITZGERALD: And the other dimension to this thing is your picture of the sufficiency of the information is going to shift, presumably, improve over time, even from `75 forward. So that, I think that is one thing we looked at in terms of the

coworker model. You know, there may be some questions in the earlier part of that period, but I would assume that that is going to get much better as the data gets, you know, the program gets better.

So, I don't know if that's going to be a dimension you will be looking at, but if there is insufficient information in the earlier time periods, when do you feel that the level of adequacy gets better for that kind of thing? What time frame are we talking about? I mean, was it good from the get-go or do you see some kind of --

MR. MACIEVIC: Oh, yes, all of them have to be a function of time.

MR. FITZGERALD: Well, that's what I'm saying. Yes.

MEMBER BEACH: Well, part of that was on page 6 of your report, Greg, it talks about the lab notebooks -

MR. MACIEVIC: Yes.

MEMBER BEACH: Were a primary method of reporting. Have those been scanned to the O: drive?

MR. MACIEVIC: Yes. I can ask Bob Burns.

Bob, are you on there?

MR. BURNS: I'm here.

MR. MACIEVIC: On the notebooks, all that stuff has been transcribed from the notebooks into the database and available to be viewed?

MR. BURNS: Available? Well, they would be available at LANL. I don't know if it's correct to say that they have all been transcribed.

MR. MACIEVIC: Right, right.

MR. BURNS: I think the notebooks were reviewed, my understanding, primarily as a QAQC measure, if you will --

MR. MACIEVIC: Right.

MR. BURNS: To look at, since the notebooks initially were the primary means of recording that information, they were looking to see, when the information was transcribed into the database, was made electronic, how good was that process? How accurate was that process?

If you're asking me, were the notebooks --

MR. MACIEVIC: Well, not all the --

MR. BURNS: You know, 100 percent transcribed, I don't know if that's the case.

MR. MACIEVIC: But is there a place where we could have the Work Group Members, if they want to take a look at and see a piece of it to see what was transcribed into the database or where its location is?

MR. BURNS: Yes, we know the

notebook numbers. LANL could, presumably, provide those, the notebooks, that is.

MR. FITZGERALD: It doesn't sound like it's available online.

MR. MACIEVIC: Right, not online.

MR. BURNS: I don't believe so. I don't believe we went through and like copied the notebooks or anything like that.

MR. MACIEVIC: Okay. Okay, that's right. It is basically going through the notebooks, checking and verifying, but not taking notebooks back, copying them, and putting it all in the computer. Okay.

MR. BURNS: Right.

MR. FITZGERALD: I would say, Mark, I think we were talking about the question of validation and verification.

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: That, which is a normal element of all the SEC reviews, this

was part and parcel to what they had done, you all have done, in terms of looking at the logbooks, the paper, looking at the actual bioassay records, comparing the two. I think as you put in the ER, there was a sampling that was done. It obviously wasn't 100 percent, but there was a sampling that was done.

My question on that was more the V&V, the validation and verification, for what we're talking about today which is the exotics. I mean, did that follow through and did you find enough data that you can validate what was in the database, which may be part of what you are going to be doing in terms of a comparison of what's in the database. You might also see, you know, just to answer the question of V&V, to what extent that was part of the sampling, and so forth.

MR. MACIEVIC: Yes. Okay.

MR. FITZGERALD: This gets to the integrity and reliability of the database question.

CHAIRMAN GRIFFON: Right. How about for the cesium and for the primary nuclides, though? You say you went through that match process that's in the ER? You have to refresh my memory. But did you look -

MR. MACIEVIC: Yes.

CHAIRMAN GRIFFON: The sampling, looking back at the logbooks, comparing the percentage of the --

MR. MACIEVIC: Right. Well, let me -- Bob, do you want to go through the --

MR. BURNS: I would point out that was primarily for the earlier data. As of the nineties or so, the database was the primary means of recording that information, if you will.

CHAIRMAN GRIFFON: It went right

into the database, you're saying? Yes.

MR. BURNS: That's my understanding.

CHAIRMAN GRIFFON: Okay. But `76 through `88, you did sample?

MR. BURNS: I don't know the specific dates. I would have to pull up the --

CHAIRMAN GRIFFON: I mean at least post-`76, it's for this SEC period, you believe?

MR. BURNS: I want to say yes, but I need to verify that.

CHAIRMAN GRIFFON: Yes. Okay, you can check on that, yes.

And what radionuclides, the primaries or --

MR. BURNS: That is correct.

CHAIRMAN GRIFFON: Cesium? Not cesium.

MEMBER BEACH: It says cesium.

MR. MACIEVIC: Well, yes, there's a --

MR. BURNS: The earlier data would be the so-called TUPo data, the tritium, uranium, polonium data. And then plutonium also. But, then, later would be plutonium, uranium, tritium, primarily. Like I recall thorium data, and so forth. But I mean we are talking about in vitro data specifically.

CHAIRMAN GRIFFON: Right. Okay.

MR. MACIEVIC: Well, and as we say in the document, that side task for that validation process is you've got 100 to 200 records where LANL had performed analyses for anolytes such as strontium-90 and mixed-fission products, and other than the routine nuclides. So, there were other validations in there to see if that materials was in there.

MR. FITZGERALD: Here's the cite

from, I guess it's from the ER. "From 2000 to the present, virtually all the data is validated and verified. From 1990 to 2000, 85 percent was. From `44 to `90, it varies from 25 to 90 percent. Virtually all records of dosimetric significance have been validated and verified."

So, this is from the Los Alamos --

MR. BURNS: I think what that means is they focused on the positive results, if you will, or the high numbers.

CHAIRMAN GRIFFON: Which is good. Okay.

MR. FITZGERALD: And I think what we're saying is part of what Greg was talking about, doing a comparison and maybe at the same time just kind of indicating if that was included or not in the V&V. Is that possible, looking at the -- are there records as to what -- it sounds like everything was V&V'ed after

2000.

MR. MACIEVIC: Right. We should be able to do that.

MR. FITZGERALD: But this says records of dosimetric significance. So, it's very possible that they may not have risen to the level of exposures which would be -- I guess that's something to maybe question.

MR. MACIEVIC: Well, yes, we can look into the whole idea of V&V for the specific areas, especially looking at exotics.

CHAIRMAN GRIFFON: Okay.

MR. MACIEVIC: Can you type in official --

CHAIRMAN GRIFFON: Yes, I'm working on it as we're talking here.

(Laughter.)

MR. MACIEVIC: I don't think we're going to get all this in today.

MR. FITZGERALD: I think, in

general, this was done rigorously, the validation. You know, I think the comparison of the logbooks was done pretty comprehensively by the lab site.

MR. MACIEVIC: Yes.

MR. FITZGERALD: I don't think generally there's an issue with it.

CHAIRMAN GRIFFON: And this, I just went through, if you look at my matrix item 3, No. 1, I broke that out into 1.1, .2., .3., .4 because they are the four bullets that SC&A listed. Then, I will come back to those.

But No. 2 says, "NIOSH to explain the drop off in bioassay data over time and why it was justified from a radiological operations standpoint."

In other words, this gets back to the -- well, Joe, maybe you can explain. When was the drop off? Sometimes in a D&D period, like Jim mentioned, they --

MR. FITZGERALD: Yes, what happened is at most of the DOE sites they took a hard look at who was being monitored --

CHAIRMAN GRIFFON: Right.

MR. FITZGERALD: And bioassayed. We interviewed a lot of the guards, for example. The current generation, by and large, were not bioassayed. There was a decision that the potential for exposure didn't support monitoring.

So, there was an appreciable cutoff on. You know, it's talking about bioassays, but it also applies to badging as well. Probably in the mid-nineties was the era.

So, our question was, since these individuals were monitored and they stopped being monitored, as far as dose reconstruction, how is that drop off going to be addressed, particularly for support service

workers and guards and that group which a lot of them were taken out of the bioassay program? There was a question as far as looking at coworker and looking at dose assignment, how that was going to be addressed as far as operational change, actually, a policy change for the lab.

MEMBER BEACH: Joe, you mentioned the guards. Was it just the guards that were taken out or were --

MR. FITZGERALD: No, it was a large -- I mean they did it lab-wide, you know, who really needed to be on bioassay and made some decisions to take a number of categories of workers out of bioassay.

Now it turns out for TA-55 they have reversed that and put workers or guards on that team back on bioassay. So, you know, it's a changing policy question. It all comes down to what they weigh is the exposure

potential.

But as far as how this is going to be addressed in the coworker model and all that, I think that was just a question of the drop off. The distribution is going to be different and the categories of workers involved will be different.

My sense is that, unless the exposure circumstances change dramatically, you probably have a body of data that can be used, but you have very little data after that period.

MEMBER LOCKEY: Was that exposure potential or exposure down at the -- did they put them on --

MR. FITZGERALD: They did an assessment of what the past history had been and what sources you were dealing with and what the practices were. And the presumption at the time was that we kept, for example, the

guards in, presumably, minimal exposure areas and they weren't permitted to go into the exposure areas; bioassay would not be necessary. That was the guiding principle. They and others, including support workers who were seen as not going into areas of potential exposure, were taken off bioassay as well.

I think the concern would be, what was the driving reason and did that have any implications for what exposures they may have been receiving?

MEMBER LOCKEY: Let me go back and ask the question again.

MR. FITZGERALD: Yes.

MEMBER LOCKEY: Is it based on modeling or is it based on actual exposure data?

MR. FITZGERALD: I think it was based on exposure data from past exposures, as to whether or not it would be warranted. I

mean, if you had an individual who didn't have any bioassay-positive results for an extended period of time, then you would have to weigh whether it would be worthwhile to continue to include them in the program. And I think a decision was made at that point in time that certain categories of workers didn't seem to have that exposure potential. Therefore, the bioassay wasn't necessary. That was the decision that was made.

MEMBER BEACH: Doesn't that go back to the way they set up their program initially? When you go into ACES, a lot of times it identifies what your job category is, what training you need to have. So, a lot of that is programmatic, isn't it?

MR. FITZGERALD: It's programmatic, but it's also policy. I think there were a lot of sites that looked at their policies and made a determination that numbers

of workers that were previously monitored, it didn't appear to be necessary to continue to monitor them.

And it was a controversial thing, you know, taking people out of monitoring. I mean I remember all kinds of flack because there were questions raised as to whether or not that was justified. You had sort of a process of justifying based on not only past exposure history, but also the procedures for the workers that were going into operational areas at the time, that you would have that assurance that they weren't being exposed to airborne particulates.

MEMBER LOCKEY: So, when you are talking about that, you're talking about exposure monitoring, not biological monitoring?

MR. FITZGERALD: Yes.

MEMBER LOCKEY: But if they

documented that there's no exposure, based on the lack of exposure, they eliminated --

MR. FITZGERALD: Just operational considerations, yes. It is still controversial, and it still raises issues.

I know we did talk to a lot of the guard force and enforcement workers, and they basically said, well, we haven't done bioassays for years. But we went back and looked at the database, and did some sampling of the database, and up until that time, they were, in fact, monitored and the results seemed to follow with --

MEMBER LOCKEY: Exposure monitoring you mean?

MR. FITZGERALD: Yes, exposure monitoring, right.

CHAIRMAN GRIFFON: So, I guess the question is, it's a NIOSH action listed here to sort of look at that and see whether it was

justified, whether it was a justified change in policy, right?

MR. FITZGERALD: Well, it was a change in policy, but what the ramifications are for a coworker model --

CHAIRMAN GRIFFON: Right.

MR. FITZGERALD: You're going to be assigned doses forward. And if you have the guard force showing doses before that time, what would be the assignment of doses now that they are not getting any bioassays?

CHAIRMAN GRIFFON: Right.

MR. FITZGERALD: Is it going to be the average of the previous years or is it maybe an operational upper bound? Because they were in these areas, you know.

MR. MACIEVIC: Well, but that sounds like --

MR. FITZGERALD: If you have a policy decision, I guess the question is, how

do you actually --

MR. MACIEVIC: But if you find no data, if you find that the data is zero, zero, zero, zero, zero, zero, get rid of the program, then am I assigning -- I mean it's based on --

MR. FITZGERALD: But it wasn't zero, zero going back previously in time.

MR. MACIEVIC: Right, right.

MR. FITZGERALD: So, I guess that is the question: how are you going to --

MR. MACIEVIC: But, I mean, like the previous five years from when they got rid of the program, and you show five years of zero data, are we giving -

MR. FITZGERALD: It is just --

MR. MACIEVIC: Yes, but I am trying to get in my mind what I'm answering to --

MR. FITZGERALD: What is the approach going to be for what will be

decidedly a gap?

CHAIRMAN GRIFFON: What is it? Yes.

MR. MACIEVIC: Right.

MR. FITZGERALD: Yes, and this is not specific to Los Alamos. I guess it is sort of something we would find at many sites.

CHAIRMAN GRIFFON: Right, at many, yes.

MR. FITZGERALD: By policy, you would have taken a whole category of workers out of the program, and it was a judgment call.

CHAIRMAN GRIFFON: Yes, remember, this isn't just security; we use security workers as an example.

MR. FITZGERALD: No. No, it's a lot of them.

CHAIRMAN GRIFFON: But it's a lot of --

MR. MACIEVIC: They did that with external dosimetry and everything else.

MR. FITZGERALD: Right. The numbers of bioassays you see it's a drop off.

DR. NETON: Yes, we cover that with certain approaches. I mean there would be a Class of workers who were not monitored who we think should have been monitored.

CHAIRMAN GRIFFON: Right.

DR. NETON: A judgment would have to be made. Or didn't need to be monitored and then you end up with an environmental thing. So, you've got to make a judgment call depending on the worker.

MR. FITZGERALD: It's a question, noticing the distribution of bioassays, that they drop off.

MR. MACIEVIC: We see what the issue is.

CHAIRMAN GRIFFON: Yes, yes.

All right. Then, the third item was SC&A to review the proof-of-principle sample cases. Were there some sample cases that were provided?

MR. FITZGERALD: Yes. Actually, we did that.

CHAIRMAN GRIFFON: I'm not sure how applicable they are now, given that a lot of things are in flux, but we can see what you've got.

MR. FITZGERALD: If I can find it.

CHAIRMAN GRIFFON: Keep in mind Wanda's a little late for lunch.

MEMBER MUNN: Yes.

(Laughter.)

CHAIRMAN GRIFFON: Go ahead, keep looking, but I'm just warning you.

(Laughter.)

MR. FITZGERALD: I'll feel someone gnawing at my ankle here shortly, right?

CHAIRMAN GRIFFON: She checked in last night and told the front desk that she was -- what was it? -- mad as a rattlesnake?

MEMBER MUNN: Yes.

(Laughter.)

CHAIRMAN GRIFFON: So, I took two steps back.

(Laughter.)

MR. FITZGERALD: Let me find that, and maybe after the break --

CHAIRMAN GRIFFON: It's a Western expression, I guess.

Okay, we can do that after lunch.

Let me get through No. 4. NIOSH to investigate whether any of the air-sampling data is available for the nuclides of interest. I'm going to refer that to 1 and 2, obviously.

Let me just go over 1.1, .2, .3, and .4 real quickly. Or, actually, well --

MR. FITZGERALD: While you're looking, I do have it here.

CHAIRMAN GRIFFON: Okay.

MR. FITZGERALD: I'll just make a copy of it and pass it around --

CHAIRMAN GRIFFON: All right. All right.

MR. FITZGERALD: After lunch.

CHAIRMAN GRIFFON: That would be fine.

MR. FITZGERALD: We did look for sample cases.

MEMBER BEACH: Joe, is that the May 2010?

MR. FITZGERALD: Yes.

MEMBER BEACH: Okay.

MR. FITZGERALD: Right.

CHAIRMAN GRIFFON: All right. So, item 1, and I'll go through these real quickly. Item 1 was the four bullets from the

third column of the matrix. Because I was doing this quickly, I just said "C", but they're a column. But now I'm calling them 1.1, .2, .3, .4.

NIOSH needs to further follow up on this question of saying database. So, I'm doing a carryover on this one. I say, NIOSH needs to further followup on this question. The database is from `76 to `88. Can it be used for `89 to `05?

And I'm not even sure, am I correctly characterizing that? Is the database from `76 to `88? Because that was sort of the first question in the first bullet there: is this data applicable for the outyears?

MR. FITZGERALD: Right.

CHAIRMAN GRIFFON: Joe?

MR. FITZGERALD: Yes.

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: That's our understanding of the --

CHAIRMAN GRIFFON: I don't necessarily expect a response to that, but if I just want to get the question right right now.

MR. FITZGERALD: Uh-hum.

CHAIRMAN GRIFFON: Okay. That may be similar to the one we just talked about, the going forward issue.

MR. MACIEVIC: Yes, that is.

CHAIRMAN GRIFFON: Yes. 1.2 is the data sufficiency and adequacy issue. I just said that NIOSH will follow up on the validation of the exotics. I put that the primary nuclide validation seems adequate. SC&A's has reviewed and confirmed this.

Is that fair to say, Joe?

MR. FITZGERALD: Yes.

CHAIRMAN GRIFFON: Yes. Yes.

Item 1.3, I put, "See item 2 in the matrix."

Item 1.4, "See item 1 in the matrix."

(Laughter.)

So, those are covered.

Then, we'll take up the sample ones after lunch.

MR. FITZGERALD: Yes, I'll go ahead and pass this around.

CHAIRMAN GRIFFON: All right. Okay. It is a good time for our lunch break.

Any other?

(No response.)

Okay. We'll come back to neutrons.

(Whereupon, the above-entitled matter went off the record at 12:10 p.m. and resumed at 1:17 p.m.)

A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

1:17 p.m.

MR. KATZ: Good afternoon.

This is the Advisory Board on Radiation and Worker Health, LANL Work Group, and we're just reconvening after a lunch break.

Let me check on the line and see if we have Bob Presley back with us.

MEMBER PRESLEY: I'm here.

MR. KATZ: Great.

Mark, it's all yours.

Just let me remind everyone who is on the line, please mute your phone. If you don't have a mute button, use *6, and then you use *6 again to unmute your phone when you want to speak to the group. Thank you.

CHAIRMAN GRIFFON: Okay. We're continuing on the matrix.

Item No. 3, I just want to go back

to the action item No. 3 of matrix item 3. Joe copied at the lunch break his followup on the case reviews.

And, Joe, maybe you can step us through what you have here.

MR. FITZGERALD: Yes.

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: I think there are two sample dose reconstruction cases that we were pointing to on the O: drive which NIOSH identified. We took a look at those. Those were plutonium intake cases.

And that probably is the root of maybe a continual concern, which goes back to what we talked about earlier today. We found no issue with how dose reconstruction was done or anything, but we would still question how that is going to be applied as a substitute primary for the exotics, which is what we talked about earlier.

So, in terms of the sample, the sample was for Pu. I guess the only thing I would say is that, when you go through your comparison, we would like to see something for the exotic, a sample for the exotic itself, which is, I guess, what we talked about in the previous action.

So, really, again, no issue with how the dose reconstruction was done for the two samples. I think it lays it out pretty much there. But the question still revolves around, can you substitute that for the exotics?

And the other two action items, of course, also came out of the last Work Group meeting.

CHAIRMAN GRIFFON: Okay. So, I am going to say SC&A found no issues with the approach in the sample cases.

MR. FITZGERALD: But the sample

cases were Pu.

CHAIRMAN GRIFFON: Right. Yes.

MR. KATZ: So, how many other sample cases are we looking for?

CHAIRMAN GRIFFON: Well, I think that depends on the exotics, right?

MR. FITZGERALD: Yes. I mean the context we are focused on is the exotics.

CHAIRMAN GRIFFON: Right.

MR. FITZGERALD: I don't think we have any argument with the primary.

CHAIRMAN GRIFFON: But I don't necessarily even think that we need a sample, if we just can see the method being used for the exotics.

MR. FITZGERALD: The method is what we're after.

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: I think at the time, during the Work Group meeting, it was

sort of like, if we could look at a couple samples, that might calibrate us. But I think it just sounds like a better approach to actually look at the availability of the data --

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: Compared against the air sampling.

MR. KATZ: Okay. So, that's already covered.

CHAIRMAN GRIFFON: And that's covered in their options.

MR. FITZGERALD: That's covered already, right.

CHAIRMAN GRIFFON: Yes.

Of course, you have all my notes. What's obvious now may not be obvious in four months.

(Laughter.)

MEMBER LOCKEY: That's pretty

good, four months, not one week for me.

CHAIRMAN GRIFFON: Yes. Yes, or in a week.

MEMBER MUNN: Tomorrow morning.

CHAIRMAN GRIFFON: Okay. I think we are ready to move on to No. 4. And this is related to the neutron dose reconstruction.

I think there was only one action that I had listed anyway. Oh, but it's referring back to SC&A's three items.

MR. FITZGERALD: Not to beat a dead horse, but these are four traditional questions --

CHAIRMAN GRIFFON: That come up, yes.

MR. FITZGERALD: On N/P ratios that we have raised in other SECs, which is when you are dealing with NTA film, how does the dose reconstruction take consideration of some of these adjustment factors that you

would have with NTA?

So, we can go through them. I think we went through them at the last Work Group meeting. I think the outcome was that NIOSH was going to clarify exactly how those were treated in terms of the energy dependency issues, the fading issues. These are pretty much, I guess we have raised these almost in every single SEC almost.

CHAIRMAN GRIFFON: So, is there any information on this at this point?

MR. MACIEVIC: Oh, well, I have on this issue -- what is it? Page 7 of the report I sent out.

Basically, as we discussed --

CHAIRMAN GRIFFON: My battery is down. My battery is down. I just noticed it.

MR. MACIEVIC: It's lunch time; that's the problem.

CHAIRMAN GRIFFON: Yes, yes.

MR. MACIEVIC: The issues that we talked about last time, we had said that we were making a distinction between the dosimetry system being able to -- whether it needed correction as far as being a TBD issue versus an SEC issue.

And what I provided in here is basically an outline of all the activities of things that have been done to the dosimetry system in discussions by LANL over the last several years, up to 1995, to show that, one, the issue was in the minds of LANL, that they were adjusting their dosimetry, remodeling.

When you get into the post-`75 period, I worked up this table on page 13. This is based on all of the claimant dosimetry, neutron dosimetry records. We have a database that was developed a few years ago that pulls in all the external dosimetry from all the sites, all the data that is being

entered in the past and currently being entered today. And it's pulled into the computer database for each site, and the data is put into these particular categories of the neutron dose, the photon dose, extremity dose. And all that is in the database for all the claimants for all the sites.

So, I took for LANL all the claimants' neutron dosimetry over the years for the period of `76 to 1995 and computed -- well, page 14 has the little graph with it -- but I computed the average, standard deviation, and then the average plus standard deviation, the number of positive readings, and the number of claimant IDs that were used. That's not the number of claimants. Each claimant may have had several doses over the years, over a particular year, adding to that number that you see there.

So, what you see is, from `76

through `79, or the `79 period, when the new dosimetry system comes in, if you look at the number of positive readings on the dosimeters, which is all I look at, positive neutron doses, looked at that value, and you come between `79 and `80, that number jumps by a factor of like three to five, the number of positive readings that they got on their dosimetry after installing the new dosimetry system.

So, what that immediately first tells you is, yes, something occurred. It is seeing more neutrons. The number of zeroes are going down. The number of positives have gone up.

And I put the number of claimant IDs -- and I'll get to about gamma dose in a second because I didn't have that on this chart because I just got that a couple of days ago -- but the number of claimant IDs, to show

that the number of claimant IDs that are being used is essentially the same all through the period from `76 through, basically, 1987, 1988 time period. They're about the same.

What you see is that the positive readings stay quite high all through that period. They start to drop off in time, and the reason that the number of positive readings or, well, the number of claimant IDs drops off in time is because, as you go later in the time period, you've got less and less claimant IDs, number of claimants involved in those years.

But what you see is the doses do stay roughly about constant, even when you go through the second crossover period, which is in 1989-1990, when the new dosimetry came in using the NTA that had the desiccant and the TLD system as well. So, that was there. They said now we've essentially gotten rid of the

fading issue.

But, as you notice on the chart, as you look at the number of positive doses, I mean it does decrease some, but you are not -- what you would expect to see if there were large components of radiation dose being, neutron dose being missed, you would see at that point either some kind of spike in the number of positive readings or the average value of those readings increase because you're seeing more dose associated with something occurring.

And I also have the gamma on there, which, like I said, is not in the report. But the gamma dose, in order to check that, okay, there might have been something operational going on at the time where you were starting to see more gamma dose. The number of positive photon doses basically ranges from `76 through `82, is the period I

took as it crosses over in there, in that crossover period.

You have number of positives as 786, 688, 497, 543, 684, 943, 785. So, they're all not even a factor of two off from each other. So, you have the number of positive photon doses do not really increase or decrease. So, the photon dose is staying the same.

You cross the transition period where they put in a new TLD for the neutron. The number of positive neutrons jumps up. The photons basically stay the same. So, again, this is an arm-waving approach because you haven't gone to every other thing.

But, to me, you would see, expect to see also some kind of spike or transition occurring in the period where now we're saying that the dosimeter in 1989-1990, that this dosimeter is seeing a lot more as a better

dosimeter.

There's really no changes in the neutron doses that are there, the average or the standard deviation. You're staying within the same bounds.

So, what this whole picture points out to me is that the neutron dosimeter, as is being stated in these action items or in the statements from SC&A, is that there's something defective about that dosimeter because of the fading issue. But when the fading issue is corrected in the 1990s, you are not suddenly seeing more neutron dose or a major change in what's being recorded.

And now with the new dose in the transition period from `89 to `90, that is still higher than -- well, it starts to drop off later because you start, in the later years, as you get into the late nineties, your number of activities and things started

changing. So, you can't go too far out in it.

But in the two transition periods, you see a distinct transition in the `79-80 period, and you really don't see any transition between the `89 and `90 period. That, to me, says that there is not a major problem with the dosimeter.

What it does say is that you can have issues about it being a dosimetry issue to either add more dose or do something to it, but that the period between `80 and `90 does not have something super-odd about it that would say, well, you are missing things. If anything, the doses are much higher in that period. So, it looks like the dosimeter is actually overresponding as far as some of the values that are on there.

So, without getting into the dosimeter itself and its functioning, I don't see you have a -- now the N/P ratio issue, I

would not extrapolate. What I would do is extrapolate from the period just beyond the changeover in the 1980-81 period and use that N/P ratio to go backwards, with the amount of data we have to go back for the two or three years. You need to go previous, as to correct for the pre-TLD area for the three or four years that you've got.

MR. FITZGERALD: I guess my reaction would be, yes, I think sort of in a very macro, empirical -- I understand where you're coming from, but this is really, I think, a very specific question.

One is you are using the 25 years to, in essence, back-extrapolate that experience for the `75 to '79, whatever it is. And the only question we raise is, can one establish that the operations, you can normalize the operations so that it would make

that back-extrapolation or back-usage legitimate because of the energy dependence issues and things like that?

MR. MACIEVIC: Well, I wouldn't extrapolate all those years. I would use these years --

MR. FITZGERALD: Just the last --

MR. MACIEVIC: Just the beyond.

MR. FITZGERALD: Just beyond?

MR. MACIEVIC: Right.

MR. FITZGERALD: Okay.

MR. MACIEVIC: Not 25 years. Because, yes, as you start moving into the later years, into the late, the mid-nineties --

MR. FITZGERALD: Right.

MR. MACIEVIC: And then the 2000s, the operational issues really --

MR. FITZGERALD: But that wasn't, in the ER, if I'm not mistaken, that wasn't

really clear, that you were just going to use -- and that makes more sense to me -- just use the successive years that would be closer in the way of operations and energy.

MR. MACIEVIC: Right.

MR. FITZGERALD: So, this clarifies the fact that you're going to use some subset -- maybe it's three; maybe it's five years -- following 1979 --

MR. MACIEVIC: Right.

MR. FITZGERALD: And use that operational period to back-apply the --

MR. MACIEVIC: Right.

MR. FITZGERALD: Again, I think you have to kind of take a look and make sure --

MR. MACIEVIC: Well, you can look at the operational type of thing --

MR. FITZGERALD: That's right.

MR. MACIEVIC: As a backup check

to see that, for the period you're talking, over that transition from the `78 to `82 time period, that you're not having something very odd occurring.

MR. FITZGERALD: Well, I think that's what we're coming to, Mark, on that particular issue, is just getting away from applying something that was so broad and lengthy timewise. I think this would be a better strategy.

The other issue is just simply on the fading question. As we were just saying, there's a time period before they put the desiccant in and did things like that where the adjustment factor would need to reflect whatever was going to be missed. I don't think that is going to be a hard thing to do, but it just seems like it needs to be part of the approach.

MR. MACIEVIC: Right, and I agree.

That is the dosimetry issue that you can look at, take into account the fading that would have been and apply it back to that period.

MR. FITZGERALD: Right. This is part of the "how to" thing that we wanted to raise. These are the same issues we raised in other SECs, as to how would one accommodate the energy dependence and the fading as far as the dose reconstruction approach.

And it wasn't evident or it wasn't clear enough for us in the ER or it raised questions. I think that's what we wanted to get, is some specific answer on that.

And the things that we had in the matrix I thought pretty well captured the question. I think you're giving us some of the answers or at least some of the approaches that you're proposing.

So, you are going to limit the back-application of the -- what do you call

it? -- the neutron dose records to those four or five years, I guess it is four years, between `75 and `79, or something like that?

MR. MACIEVIC: `76.

MR. FITZGERALD: `76 through `79?

MR. MACIEVIC: Right.

MR. FITZGERALD: Which I think is a more reasonable strategy.

And you are going to validate that nothing operationally is dramatically different.

MR. MACIEVIC: Right.

MR. FITZGERALD: And the second thing is, on the fading, you are going to look at pretty much what adjustment factor would be necessary for that 10-year period, I guess --

MR. MACIEVIC: Yes, it's pretty close.

MR. FITZGERALD: That 10-year period where fading would have been an issue?

MR. MACIEVIC: Right, through that until they get the new dosimetry, which takes care of that.

MR. FITZGERALD: Right. Right. Okay.

CHAIRMAN GRIFFON: Say those two things again, Joe. NIOSH intends on limiting the --

MR. FITZGERALD: Well, on the energy dependence question that was raised, I think what Greg is saying, that they are going to limit the back-application of the neutron dose experience from what looked like 25 years. In other words, taking all the data past 1980 and applying that for `76 through `79.

I think what Greg is saying, no, we recognize that energy dependence is an issue and, from an operational standpoint, truncate that down to, I don't know, three,

five years -

MR. MACIEVIC: Yes, right.

MR. FITZGERALD: Whatever it is, and use that because that would be closer to the energy spectrum that you would have seen in that four-year period.

And he's also talking about validating to make sure that nothing major changed operationally that would give you different energy levels during those four years. We are talking about `76 through `79. It is a piece of this time period after the SEC that isn't covered necessarily by --

MR. MACIEVIC: Right. Because you definitely have the issues with just the NTA --

MR. FITZGERALD: Right.

MR. MACIEVIC: And no TLDs to back it up.

MR. FITZGERALD: Yes, NTA was used

exclusively up to `80. So, we are trying to cover that four years -- or I guess it's three or four years -- four-year period.

And I think what he's proposing is an approach to mitigate the energy dependence question.

But what you're going to do, I think, is come back and propose whatever time period you're going to use, and then also validate that the operational changes weren't significant?

MR. MACIEVIC: Right. To fill that in to make sure that -- that's the other hole that there was --

MR. FITZGERALD: Right.

MR. MACIEVIC: Nothing going on to give you some bogus reason why this --

MR. FITZGERALD: Right.

MR. MACIEVIC: Stayed the way it was.

MR. FITZGERALD: And the second issue deals with the fading factor on NTA. After 1980 --

MR. MACIEVIC: Well, basically `80 to `90.

MR. FITZGERALD: Yes, after 1990 --

MR. MACIEVIC: Right.

MR. FITZGERALD: They were aware that this problem may be contributing to the fading and provided a --

CHAIRMAN GRIFFON: Since 1990, you said?

MR. FITZGERALD: Yes. And it provided a desiccant, what have you, to alleviate the fading issue. So, we have a 10-year period for which you are going to have to adjust for the fading factor.

Like I said, again, I think there's enough information; you can go back

and apply an adjustment factor.

MR. MACIEVIC: I think so.

MR. FITZGERALD: You lost some of the edges. So, the adjustment factor would increase the dose proportionately.

MR. MILES: Do we think that -- I'm not intimately familiar with the neutron dosimetry, that process, how they implemented it. But they were clearly aware of fading back in -- I'm looking at 1971 documents that talk about NTA film fading at DP, Los Alamos, and here's one, another one.

I know that LANL had some good external dosimetrists at the time that were in the forefront of neutron dosimetry. Were there no adjustments or no considerations of fading? Do we believe there's no adjustments to the fading for the dose of record that is in the books?

MR. MACIEVIC: Well, so far, I

have not found -- I had been looking for some kind of smoking gun that says, you know, here's how we were correcting the problem.

CHAIRMAN GRIFFON: In other words, they were problem-correcting?

MR. MILES: It seems hard to believe that if they were clearly aware of this as a problem, that they wouldn't have implemented some -- if they knew it was way off, it seems like --

CHAIRMAN GRIFFON: Right.

MR. MILES: They would have had some correction tool --

MR. FITZGERALD: Well, I think that's a legitimate issue. I mean, clearly, if we can find documentation that indicates that, then --

MR. MILES: They would have done something --

CHAIRMAN GRIFFON: Yes.

MR. MILES: To get something surrendered, I would think.

MR. MACIEVIC: But even if we go find something that says it, I don't think this would be a -- well, you know, the correction factor is not going to be huge, either, because, as you can see with these doses, obviously, this is just the average and standard deviations.

But you don't see any big, wide spread, and, of course, this is over all the readings and all that, but you are not seeing this small number here, and then, all of a sudden, you get this large value which you are going to have to correct a lot for the previous 10 years. If anything, it will be a small factor that's not -- you are not going to be pushing these doses up to hundreds of millirem. It will go up to --

MR. KATZ: Unless they had been

using a correction factor, and then, when they dealt with the fading problem, they would no longer be correcting for it. So, that might be why you had constant numbers, right?

DR. NETON: It's a possibility.

MR. MACIEVIC: When you look at the `76-77 time period, of the average dose and all that, it is much lower than some of the other ones in the region. So, it may have or may not have had something there. So, the best thing to do is to --

MR. FITZGERALD: Well, given the time frame, too, you know, we didn't have a chance to hone-in on some of the specific questions. But this would be a question one could ask the dosimetry program, and I think from a historical standpoint you could probably just see, yes, here's the technical document which lays out the external dosimetry for neutrons, and it includes an adjustment

factor, or it does not and we didn't do that until -- you know, I think the context is more of a Site Profile-type context in the sense that, sure, we want to make sure the "T's" are crossed, but, clearly, there's a pathway to dose reconstruction on the neutrons. So, keep that in context.

CHAIRMAN GRIFFON: And what about the N/P ratio question?

MR. FITZGERALD: Well, I think that was --

CHAIRMAN GRIFFON: Is that separate from the first?

MR. FITZGERALD: No, I think that was more -- let's see. I think that was the question in the ER. We were looking for some validation or justification on the assumption that you could back-apply -- we just talked about that -- back-apply the data from `79 forward back to that four-year period.

CHAIRMAN GRIFFON: So, it's that four-year period?

MR. FITZGERALD: Yes. We could not find supporting information that would justify using that large a stretch on the N/P ratios. I think what Greg is suggesting, that there's no reason to try to apply such a lengthy period to things, a shorter operational period right after `79 and some validation that the operations did not change.

CHAIRMAN GRIFFON: So, the model for those four years is going to be to use N/P ratios?

MR. MACIEVIC: Right.

CHAIRMAN GRIFFON: I didn't know if you were going to do it like a coworker model.

MR. MACIEVIC: No. We've got enough coworker models as it is right now.

(Laughter.)

CHAIRMAN GRIFFON: I guess the first action I would have, then, is that you have to show us this method, right? Like what are the N/P -- beyond describing it, how are you going to get the N/P ratios? I mean, are they going to be --

MR. MACIEVIC: Oh, I will have to go to the actual neutron data and pull out and go with the gamma.

CHAIRMAN GRIFFON: Right.

MR. MACIEVIC: Get the neutron data, develop that, the N/P ratio for the three to four, five years after --

CHAIRMAN GRIFFON: Yes.

MR. MACIEVIC: And then applying it to the four years before.

CHAIRMAN GRIFFON: But I think you're missing -- well, possibly. I mean that's why I want to see the model, because, in my opinion, that might be missing a big

step, which is, are you just doing a site average of all neutrons divided by a site average of all photons for the time period?

MR. MACIEVIC: No. I did that, but --

CHAIRMAN GRIFFON: You did that? Okay.

MR. MACIEVIC: No.

CHAIRMAN GRIFFON: Right.

MR. MACIEVIC: This would try to be more specific.

CHAIRMAN GRIFFON: Would it be area-by-area? Would it be --

MR. MACIEVIC: Yes, I've got to see exactly how the data in there is set.

CHAIRMAN GRIFFON: Right.

MR. MACIEVIC: And try to break it into more of a regional thing than to just say here's one big site average.

CHAIRMAN GRIFFON: Right.

MR. MACIEVIC: Because there are reactors and there are --

CHAIRMAN GRIFFON: Right.

MR. MACIEVIC: You know, the LAMPF area. I mean, if anything, to have to have the LAMPF --

CHAIRMAN GRIFFON: And the ratios are going to vary all over the place, right.

MR. MACIEVIC: Right.

CHAIRMAN GRIFFON: Because that's what we want to see, is just the methodology there.

MR. MACIEVIC: Because the ratio goes in 1976; this is for the whole divide -- the whole neutron by the whole gamma for all that. It's .69, and then, up in 1982, it's 2.36, if you just did a ratio of everything sitewide.

CHAIRMAN GRIFFON: Right, right.

MR. MACIEVIC: I'm sure, in

between, if you look at LAMPF for particular situations and reactors for particular situations, you will see that there.

And with these people, and knowing we can get to what their tasks were, we can, I believe, get, since it's based on the claimant, put them into particular areas and try to group out in different groups, so that they take the neutron doses and fill them in correctly.

CHAIRMAN GRIFFON: And this is `76 to `79? I just want to get it right.

MR. MACIEVIC: Yes, the N/P ratio, yes, based on the three to five years after that.

MR. MILES: Here's a 1971 document that talks about they did studies on NTA film fading. For six hours, 1.62, let's see, two weeks, four weeks, and it looks like a conclusion out of that was to raise the dose

conversion factor from 0.16 rem per track to 0.024 rem per track, effective July 1971, for the DP facility only.

Then, in `73, there's another article here. They're talking about NTA film use at LAMPF, and they did a lot of different measurements, multi-sphere measurements, and talk about coming up with a rem-per-track neutron conversion factors.

So, it looks like they had facility-specific rem conversion factors that did consider the issue of fading. Obviously they knew it was a problem. I would think that that fading issue wouldn't be consistent throughout the year because I think it's pretty dry at Los Alamos some parts of the year and not so dry other parts. I don't know if they accounted for that, how that worked.

CHAIRMAN GRIFFON: I think it's like Joe said -

MR. FITZGERALD: Yes, I think it's pretty clear they recognized the issue and resolved the issue by 1990. So, we're just trying to step back and say, did you go back, you know, at what point did you actually make adjustments? And if we can ascertain that, then this would make some sense as far as where we would need to put an adjustment factor in.

MEMBER MUNN: It looks like in `70 and `71.

MR. MACIEVIC: Yes.

CHAIRMAN GRIFFON: Okay. I think that's it.

MR. FITZGERALD: Yes, the context was just clarifying what we couldn't quite put our finger on in the ER.

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: That's pretty much where we are on the neutrons, not to say

that it is a non-tractable issue, as John would say. I think it's very tractable.

I thought he would be here. So, I can steal his thunder.

(Laughter.)

CHAIRMAN GRIFFON: So, I have two remaining actions on it, then, I think. It is that NIOSH would provide specific methodology for applying the N/P ratio that appeared from `76 to `79. NIOSH intends on limiting the back-application of this data to three to five years after the period of interest. NIOSH will validate that operational changes were not significant over the period of time proposed.

And then, two, NIOSH will adjust for fading for the period from `80 to `90. NIOSH will provide the basis for the conversion factor.

MR. KATZ: Although not

necessarily adjust for fading.

CHAIRMAN GRIFFON: If necessary. Right. If determined necessary.

Is that it, Joe, for that?

MR. FITZGERALD: That is it for that one.

CHAIRMAN GRIFFON: All right. Anybody else have any actions they want to add for that?

(No response.)

I didn't think so.

All right, Wanda, so you want to add another action?

MEMBER MUNN: No. It sounds reasonable to me to verify that it actually was being considered.

MEMBER LOCKEY: I'm sorry, I didn't hear what you said. Say it again?

MEMBER MUNN: That it actually would be considered as being addressed,

although not well-documented.

MEMBER LOCKEY: Right.

MR. FITZGERALD: But all those memos you cited in your tables, none of them addressed that issue, apparently?

MR. MACIEVIC: Well, that's it. I mean they don't say, "Here's the correction we did."

MR. FITZGERALD: Right.

MR. MACIEVIC: But like other things, they're pointing to things --

MR. FITZGERALD: Right.

MR. MACIEVIC: But they never say specifically until you get to -- well, in a couple of things they --

MR. FITZGERALD: They never specifically say, "This is what we're going to do about it."

MR. MACIEVIC: Right. Right. So, I think it could be clarified by looking

through some more of these documents.

CHAIRMAN GRIFFON: All right, now No. 5. I'm not sure if this doesn't overlap with our discussion. I'm on to matrix item 5, if that's okay.

Does this overlap with our discussion earlier for the LAMPF and LANSCE facilities, Joe, or is this different stuff?

MEMBER MUNN: It sure seems to.

MR. FITZGERALD: Actually, this got conflated with the previous one. The issues at LANSCE and LAMPF were the incidental exposure of ironworkers that were stationed on the LANSCE site.

CHAIRMAN GRIFFON: Okay.

MR. FITZGERALD: And one particular individual was expressing concerns that the ironworkers after LANSCE was constructed and operating -- you know, this is the upgraded LANSCE --

CHAIRMAN GRIFFON: Okay.

MR. FITZGERALD: That they were staying in trailers that were located right behind the beam stop in target area A.

CHAIRMAN GRIFFON: That's right.

MR. FITZGERALD: And there's concern about both the potential for direct radiation from the beam stop as well as uptakes from --

CHAIRMAN GRIFFON: A holding pond.

MR. FITZGERALD: There was a retention pond that was located right adjacent to the trailers where, apparently, fairly high levels of tritium were disposed. It was an evaporation pond, essentially, for tritium-containing liquids.

And we spent a great deal of time talking to the HPs and the LAMPF operators about the question, saying, you know, it's maybe a legitimate issue, but it would seem

there had to be a lot of data. This is one where you have an operating accelerator, and from my experience, you had a lot of measurements taken around the beam stops. In fact, the design is all calibrated on maintaining certain exposure levels.

And we looked at that question, and at least from the external standpoint, saw no reason why your external radiation sources would be different than what the TLDs they were wearing -- they were wearing TLDs -- would have seen and would have been recorded. So, from the external standpoint, we didn't see any potential for exposure that would not have been reported on their badges, the TLDs.

On the internal side, however, this question of a lot of liquid being -- and LAMPF did process a number of coolant systems, what have you, that were very highly contaminated with tritium. They did pipe it

out, and they did use evaporation to get rid of it.

So, the concern about maybe having an immersion dose of tritium in that area where they were stationed -- it wasn't the best pot, I think, to stick people in terms of trailers, but it was temporary housing, as it were, for these support workers.

And we were looking for in this case just source-term information, saying, okay, you have this retention pond. You do have outflow in terms of contaminated liquids with tritium. Something like that in the modern era, you would be taking samples. If nothing else, RCRA, some of their requirements, you would be taking samples of the pond, getting concentrations.

So, we were looking for that data to put that issue to bed when we were interviewing. We actually had a manager from

LANSCE who said, "Yes, we have that data." And that's exactly what you want to hear.

So, we said, "Can you get it for us?" He said he would, and that's the last we ever heard from him. The followup, the lab wasn't going to release the data.

So, we have put the issue down as an issue or a question, but are aware of the fact that there is, in fact, source information of what kind of concentrations here we're talking about in this retention pond. So, I think there is a pathway to actually doing a calculation or an estimation, and there might even be some grab samples over that as well.

But we weren't successful in our foray in getting our hands on any of that data. So, where we stand right now suggests that, at least from the internal standpoint, that there was a potential pathway for these

workers. We think that there must be a way to obtain the data, according to the source, and make some kind of upper-bound estimation that, if you were immersed in whatever was being evaporated off in terms of tritium, this would be the maximum exposure you could expect, since they weren't bioassayed. That would probably be the pathway for a dose reconstruction.

And this was specifically cited by an ironworker, and he has filed claims. This is sort of a gap. It's a gap in the data.

So, that is kind of where this thing came out. It's an uptake question regarding the retention pond at LAMPF, a question of what would be the immersion dose due to tritium to workers that would have been stationed adjacent to this pond.

And I think in our piece that we presented there's a map and everything, but,

again, it is right beside target area A, right beside the retention pond. They were relatively close.

But you have to look at prevailing winds and a number of other issues. You know, it's something that I think is doable, but you need data.

MR. MACIEVIC: Would it be possibly a good idea -- because before we start developing models that we will all be discussing whether or not they're valid -- to try to get maybe DOE and someone else to push the idea of getting them to release this information?

MR. FITZGERALD: I agree wholeheartedly. We pushed from our standpoint, and we're now saying --

DR. NETON: Yes, we can take that.

MR. FITZGERALD: Yes, like I said, I think it's definitely doable. I just think

that the data has to be obtained. Once one establishes, you could do that --

MR. MACIEVIC: Could you send me an email or something with the name of the person and all that?

MR. FITZGERALD: I sure can, yes.

MR. MACIEVIC: Then, we can go and start from our end and start pushing this. Because if he is saying the data is there and all that, why not just try to beat them to give the information --

MR. FITZGERALD: Right.

MR. MACIEVIC: Instead of going through the whole thing of validating models and --

MR. FITZGERALD: I've taken our position unless we get no.

(Laughter.)

It's kind of like, okay, we'll then bounce it to the agency, and the agency

can go further.

But, again, I think I would suggest that it is doable. Once one demonstrates the bounding approach to what looks like a gap in the bioassay information, I think that goes away.

MR. MACIEVIC: Sure.

DR. NETON: So, let me see. I can understand the tritium to some extent, but the note here talks about, "and other radionuclides." We are trying to grasp what we are talking about for other radionuclides.

MR. FITZGERALD: Yes. It was an effluent stream from the LAMPF. It was mostly tritium, but --

DR. NETON: But, as far as I know, no other nuclides that are volatile would be immersing them in a cloud, other than tritium.

MR. MILES: This was just for evaporation from the pond, right, Joe?

DR. NETON: You can't evaporate cesium from a pond.

MR. MILES: Yes.

CHAIRMAN GRIFFON: They are saying from the dried-out pond, is the note I have, but the soil --

MR. MILES: Oh, the scavenging of the soil?

CHAIRMAN GRIFFON: I guess.

MR. FITZGERALD: Well, the pond wasn't always -

MR. MILES: The pond would dry up maybe.

MR. FITZGERALD: The pond wasn't always wet, but --

MR. MILES: Yes. Maybe the wind was blowing.

MR. FITZGERALD: If you can imagine the sort of stream where it goes out in the pond, evaporates, becomes dry, more

comes in, you know, it's a dynamic --

DR. NETON: I was reading the strict comment, "immersion and whatever airborne tritium or other radionuclides."

CHAIRMAN GRIFFON: Yes.

MR. MILES: But we don't know the extent or the maximum contamination levels in this pond. You've got a table here --

MR. FITZGERALD: I'm sorry. Where are we?

MR. MILES: You've got a table in the SC&A report, page 36. It shows the south lagoon. Am I looking at something that's different? It shows like 8 microcurie per liter. Is that just a value or is that, do we believe, is like a maximum?

MR. FITZGERALD: No, that's a value. Like I said, we were looking for the records.

DR. NETON: This person had

indicated that they had bioassay data or pond-monitoring data?

MR. FITZGERALD: It's pond-monitoring data. No, there is no bioassay data.

MR. MILES: So, we're concerned that the levels may be much higher than 8 microcurie per liter?

MR. FITZGERALD: Yes. I mean sort of the question is, if you have the pond data, that would give you by year, I would assume, because you're taking continuous samples, that would give you a bounding estimate of what the most they could have been exposed to.

With tritium, my gut says it wouldn't be much because you would have dispersion; you would have wind direction.

CHAIRMAN GRIFFON: Right.

MR. FITZGERALD: I mean there are some factors that you plug into it.

MR. MILES: You know, these levels aren't very high. I mean 10 microcurie per liter --

MR. FITZGERALD: Right.

MR. MILES: If somebody ingested a whole liter --

MR. FITZGERALD: Yes.

MR. MILES: You're talking about a millirem, a fraction of a millirem.

CHAIRMAN GRIFFON: Right.

MR. FITZGERALD: I think this could be the staff --

MR. MILES: So, the levels had to be much, much higher.

MR. FITZGERALD: Just like the external was, but it was an explicit question raised by an ironworker who was actually there who filed a claim. So, it seems like something -- there was no bioassay records -- just to settle it.

CHAIRMAN GRIFFON: It seems like something that could be closed out pretty quickly, if you get the pond data and those levels.

MR. MILES: Or higher than this maybe --

CHAIRMAN GRIFFON: Right. Exactly.

MR. MILES: These are representative to the upper levels, I would think.

MR. FITZGERALD: Really, if the data exists, let's get the data and do it. Unfortunately, I am still not quite sure why. He seemed to be pretty enthusiastic when I asked him.

MR. MACIEVIC: We talked to him several times as well.

MR. FITZGERALD: I suspect it went up the management chain.

CHAIRMAN GRIFFON: I'm looking back to your items in the matrix.

MR. FITZGERALD: Right.

CHAIRMAN GRIFFON: And a lot of it references to the neutron question, too.

MR. FITZGERALD: No, no. I think the table got conflated, meaning that some of those issues are identical to the ones that were in the previous one.

CHAIRMAN GRIFFON: They're just for LAMPF in general, you mean?

MR. FITZGERALD: No. The neutron ones were for neutrons, and LAMPF just specifically addressed --

MR. KATZ: They just got transposed here.

MR. FITZGERALD: They got transposed somehow. I'm looking at this version of the matrix. The previous didn't have that.

CHAIRMAN GRIFFON: They look different to me. It says use of only 1 NCF, the use of a single NCF of .2 for --

MR. FITZGERALD: It looks like a repeat of the --

CHAIRMAN GRIFFON: For LAMPF is not appropriate.

DR. NETON: No, no, they're different issues.

CHAIRMAN GRIFFON: It's a specific issue.

MR. FITZGERALD: I'll go back and take a look.

CHAIRMAN GRIFFON: Lack of details. I mean some of them overlap with the neutron stuff --

MR. FITZGERALD: Yes.

CHAIRMAN GRIFFON: We just discussed, but that one, the first one in particular, it questions the use of --

MR. FITZGERALD: Okay, you're right.

CHAIRMAN GRIFFON: Of the 1 neutron correction factor.

MR. FITZGERALD: So, this is the neutron question overlaid with the LANSCE facility.

CHAIRMAN GRIFFON: So, my action for that was that NIOSH will follow up on this as part of the response to item 4, matrix item 4.

MR. FITZGERALD: Yes.

CHAIRMAN GRIFFON: Because where I've asked you to explain how you're going to do the N/P ratio --

MR. FITZGERALD: Yes.

CHAIRMAN GRIFFON: I think, like you said, Greg, you are going to look at what groups go together. So you can capture that.

MR. FITZGERALD: And the other

three parts of this that were identical to the previous --

CHAIRMAN GRIFFON: The other parts look --

MR. FITZGERALD: Yes, the same.

CHAIRMAN GRIFFON: Like they're covered in item 4?

MR. FITZGERALD: Right.

CHAIRMAN GRIFFON: Covered in item 4? Okay.

MR. FITZGERALD: Okay.

CHAIRMAN GRIFFON: Yes, I think the other ones are covered in item 4 as well.

Jim, did you look through those?

DR. NETON: Yes.

MEMBER MUNN: I think the holding pond is the big thing.

CHAIRMAN GRIFFON: Yes, I just caught that one.

MR. FITZGERALD: Yes, there's one

that is different than the preceding. I think that ties to the fact that the energy spectrum at LAMPF is obviously going to be much different than a lot of the other facilities.

So, I need to at least email you some identifying information and contact information.

MR. MACIEVIC: Right. So we can contact someone. We need to get that pushed through.

MR. FITZGERALD: Do you want the worker identification information?

MR. MACIEVIC: Yes, we might as well go with that.

MR. FITZGERALD: You got that, Mark?

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: Okay. We'll take that action.

CHAIRMAN GRIFFON: All right.

Well, for the second one I have NIOSH will follow up with DOE on the sampling data available for the holding pond to determine if sufficient data exists to characterize the source-term and has to be able to bound potential exposures.

Potential tritium exposures? Should we narrow it to just tritium?

MR. FITZGERALD: Tritide.

Now do you want to start that issue?

MEMBER MUNN: No, he's still --

MR. FITZGERALD: You're still --

CHAIRMAN GRIFFON: I was saying, from the holding pond, potential tritium exposures? Have we decided that this other --

MR. FITZGERALD: The other nuclides was more resuspension particulates.

CHAIRMAN GRIFFON: Right.

MR. FITZGERALD: But I think the

major issue is the tritium.

CHAIRMAN GRIFFON: I'm just asking if the other is still in here or not.

MR. FITZGERALD: Well, we put the other in only because the pond is dry between --

CHAIRMAN GRIFFON: Right.

MR. FITZGERALD: So, there's other constituents. Maybe it's just a factor of clarifying whether tritium is, in fact, the nuclide of concern for inhalation. We couldn't discern that looking at it.

DR. NETON: Well, I don't know if they are going to have -- this guy is talking about data for the pond. They probably have water samples. I don't know that he has soil.

MR. FITZGERALD: Well, we didn't know, either, and that's what we were trying to find out, if they had it.

MR. MACIEVIC: Find out what the

nature of the data is. Your resuspension model --

MEMBER BEACH: And then, Joe, you're going to give NIOSH the contact information?

MR. FITZGERALD: Yes, yes.

Certainly, the broader issue is you have got the ironworkers' station next to the retention pond. What could they have been exposed to?

DR. NETON: Was this a retention pond posted as a contamination area? Or does anyone know?

MR. FITZGERALD: I don't know that specifically.

MEMBER MUNN: I thought this was just effluents from the --

MR. FITZGERALD: Accelerator.

MEMBER MUNN: The accelerator.

DR. NETON: Oh, the accelerator.

MEMBER MUNN: If it's just the effluent from the accelerator, then --

DR. NETON: It is probably going to be a lot of very short-lived stuff.

MR. FITZGERALD: I don't think so. It is going to be mostly tritium. Tritium was the actor at LAMPF.

CHAIRMAN GRIFFON: Okay. I'll put it in there, and if they don't respond to it, you can just say --

DR. NETON: The accelerator effluent I'm not worried about.

CHAIRMAN GRIFFON: Right.

MEMBER MUNN: I don't expect they would be getting any significant -

CHAIRMAN GRIFFON: Exactly. Okay.

MR. FITZGERALD: The only asterisk is the target, whatever targets they might have been using. But, again, that's usually sealed.

DR. NETON: They're sealed.

MR. FITZGERALD: Yes.

CHAIRMAN GRIFFON: Okay. No. 6, I think we're ready for No. 6 This is the tritium coming up.

MR. FITZGERALD: Yes, the stable tritium compounds. I think you rightfully noted that we're grappling heartily with that at Mound.

The only issue I think for Los Alamos is to pin down exactly what compounds are of relevance at LAMPF. I don't think that has been done. Or at least it could not be done in the ER.

So, we can grapple with the dosimetry questions, I think, at Mound, but I think in the meantime characterizing the source-term that we are talking about would be useful.

DR. NETON: Yes, I'm looking at

this, and this seems to be talking about --

CHAIRMAN GRIFFON: This is focused on the other, yes.

DR. NETON: The special tritium compounds that are formed from elemental tritium interacting with metals in the workplace.

CHAIRMAN GRIFFON: Right.

DR. NETON: To my knowledge, those are all Type M or F. They are very few Type S tritium compounds.

MR. FITZGERALD: There's other issues we can't discuss.

DR. NETON: Okay.

MR. FITZGERALD: But I think those are the ones that we would be most concerned about.

DR. NETON: So, in that case, that's a crisp -- it's not a very difficult adjustment to model, then, the Type M. The

dose doesn't go up that much.

MR. FITZGERALD: We're not saying it was Type S, but, again --

DR. NETON: Right, but I mean I can't believe that elemental tritium would interact with metals in the workplace and create these very insoluble like hafnium tritides. There's only a couple of forms of tritium tritides that are super-insoluble, to my knowledge. I don't have a clearance, so maybe I'm missing something here.

But to suggest that elemental tritium diffusing around the site is creating these highly insoluble tritides doesn't seem credible to me.

MEMBER MUNN: It seems unlikely.

MR. FITZGERALD: Well, you do have a diffusion issue as a source, but I think that's going to be superseded by the S types that exist.

DR. NETON: Well, that's what I'm saying, because the note, as it reads here, talks about STCs produced through diffusion; absorption activity of elemental tritium can impact a larger population. That's the issue here.

CHAIRMAN GRIFFON: Right. The issue is the impact or the who.

DR. NETON: Right. And what I'm saying, though, is that is a --

CHAIRMAN GRIFFON: Yes.

DR. NETON: It's not a significant -- there is a difference, but if you model it as a moderately-soluble tritium, you don't end up with these massive doses like you do in what you're talking about.

CHAIRMAN GRIFFON: The question I have is, is there an action that I missed in this, Joe? Is there the normal question that we always have with the other tritides?

MR. FITZGERALD: Yes, it is a normal question that we ask, but the question here is there's two parts to this thing. One is to characterize the source-terms, compounds involved, which I think, again, needs to be done both on the classified side --

CHAIRMAN GRIFFON: Okay.

MR. FITZGERALD: And the dosimetric aspect of this, I agree, we're kind of -- I don't know if we're getting closer. We're grappling with it at Mound, and I think that will inform what we are talking about here.

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: But I think it helps to have this part.

MR. MACIEVIC: Look at the source-term.

MR. FITZGERALD: Well, make sure that we nail down the source-term at LANL

because LANL is implicated. It is just a question of which ones we are talking about and where, and, you know, the usual questions.

CHAIRMAN GRIFFON: Right.

MEMBER MUNN: So, is there anything else we should do in between now and the time Mound tells us --

MR. FITZGERALD: Yes, that's what I'm just saying.

MEMBER BEACH: Characterize.

MR. FITZGERALD: We should characterize the sources at Los Alamos in a way that would enable whatever attention needed, once we figure out this whole thing at Mound.

MEMBER MUNN: But you would think they would be considerably smaller than at Mound. Wouldn't there be a smaller number --

MR. FITZGERALD: It's different. It's different operationally than at Mound.

MEMBER MUNN: Yes, a smaller number of potential compounds is what I'm saying. Wouldn't you think?

MEMBER BEACH: And you said it needed to be done for the unclassified and the classified versions?

MR. FITZGERALD: I think we're talking mostly the classified side.

MEMBER BEACH: Okay. That will make it more --

MS. ROBERTSON-DEMERS: This is Kathy Robertson-DeMers. Can I make a clarification here?

MR. KATZ: Yes, go ahead, Kathy.

MS. ROBERTSON-DEMERS: Actually, iron oxide tritide in the DOE manual is classified as a Type S. I just wanted to make you guys aware of that. You know, this is rust.

So, I don't think it's fair to say

that all of the tritides that may be formed as a process of diffusion and reactivity are Type M.

DR. NETON: Well, I'm not sure about that, Kathy. We have to take a look at it. I mean, yes, it's bound to some iron, but is it sufficiently tightly bound to -- you have to distinguish between the mobility of the tritium itself and the rust particle itself. I think we need to take a closer look at that.

I would be very surprised if that tritium behaved like a tightly-bound hafnium tritide. If it did, I think they might have used it for other applications, to be honest with you.

CHAIRMAN GRIFFON: Fine. We can follow up on that.

DR. NETON: We can follow up.

MS. ROBERTSON-DEMERS: Okay.

CHAIRMAN GRIFFON: And, Joe, when you say characterize, you're talking about all the sources, other sources that they used at the site and how and where?

MR. FITZGERALD: The identity of the compounds --

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: Solubility -

CHAIRMAN GRIFFON: The same stuff we went through with Mound?

MR. FITZGERALD: Yes, we did that on the first part, and now we're dealing with the second part. But I think the first part would be useful to do in the meantime, while we are trying to decide what the dosimetric approach would be for that.

CHAIRMAN GRIFFON: All right.

MR. FITZGERALD: Now I might add, there's not very many sites where you deal with the S. I think LANL, Mound, maybe one

other site is it.

CHAIRMAN GRIFFON: So, I just put that NIOSH needs to characterize and determine dosimetric approach for all tritides at LANL. Most of the discussion will have to be in a classified setting.

MR. FITZGERALD: Yes.

CHAIRMAN GRIFFON: All right. That's action 2, and action 1 is the byproducts stuff.

All right, I think that's it for No. 6, right?

MR. FITZGERALD: Yes.

CHAIRMAN GRIFFON: Moving right along, No. 7, this is the service personnel question.

MR. FITZGERALD: Yes, we had no --

DR. NETON: Okay, we have talked about this, I think, which is the decrease in the number of bioassay-monitored individuals

and a discussion of why it was or was not appropriate, and what dosimetric implications it has.

CHAIRMAN GRIFFON: Yes. Do you remember what number? I want to reference back to the actions.

MR. MACIEVIC: It was 3, I guess. No. 3?

CHAIRMAN GRIFFON: Three, NIOSH will determine the drop off in bioassay data and justify radiologic -- okay. Item 3, action item 2. Matrix item 3, action item 2.

Does that cover all that, Joe? I just want to make sure we're not missing something.

MR. FITZGERALD: Yes, I mean, based on the petition and discussions with Andrew and others, we went ahead and actually sampled 30 claimant files that dealt with guards and firefighters and support service

personnel. This was between `76 and 2005.

Again, it was not a broad analysis, but 30 is a fair number. We found that the monitoring that was done and the results seemed to equate to the kind of work that they were involved with. It wasn't strictly by category. Clearly, there was a hazard analysis and people were monitored based on the type of work they were doing.

The observation that we came up with is what was said before. That being said, these bioassays, by and large, ceased except for some limited workers after -- what time period was that? -- the mid-nineties, I believe.

The implication we are left with is, if in fact there is an approach for that time period, then we don't see any pronounced issue here.

DR. NETON: You're talking about

after the mid-nineties?

MR. FITZGERALD: I can go back and --

DR. NETON: It says mid-nineties.

MR. FITZGERALD: I can go back and check the exact date.

MR. MACIEVIC: Yes.

MR. FITZGERALD: It's mid-nineties when they backed off. Usually, most sites, it was the D&D era, not necessarily LANL, but D&D everywhere, where they --

DR. NETON: Yes, this is also in the 835 compliance, is it not?

MR. FITZGERALD: Yes, 100 millirem.

DR. NETON: Yes. So, there, presumably, should be a Technical Basis Document that --

CHAIRMAN GRIFFON: Exactly.

MR. FITZGERALD: I think so.

DR. NETON: Discusses the rationale behind this.

MR. FITZGERALD: I think so, and I think this was, looking at the petition, in particular, and support service workers, I think this was the remaining issue or question, was just to pin that down a little bit better, so that we feel secure about that lack of bioassay.

That's the feedback we got from most interviews, was nobody was on bioassay, where at one time they were, that issue, yes.

Of course, this doesn't supplant the questions we raised earlier on the exotics and what have you, where you do have those issues, obviously, in terms of potential exposures.

CHAIRMAN GRIFFON: All right. I think we're on to the last item. I don't even have it numbered here.

But at the end of our last meeting, Andrew raised several things that I think he felt were not covered in our discussions so far or points he found in reviewing the ER. We agreed that we should follow up on these.

So, I'll go through these, and then I know you sent out additional information. So, anytime it's relevant here, you can chime in and then add on if you have others.

But the first item was a discrepancy between the two reports. I don't know, Greg, if you had a chance to respond to any of these?

MR. MACIEVIC: No.

CHAIRMAN GRIFFON: Okay. All right.

MR. MACIEVIC: Yes, we have not.

CHAIRMAN GRIFFON: Some of these I

think are clearly just questions. He points out an apparent discrepancy from the previous SEC report, ER report, versus this current one.

I think you just want clarification on that, right?

MR. EVASKOVICH: Well, I think I got that -- I as talking to Joe on the side, that was concerning the difference between the two notebooks. There was a reference to 1980, was when they were switched over, and one said 1990. But I guess the information that would be contained in those notebooks or logbooks has actually been included or incorporated in OTIB-62, we said?

MR. FITZGERALD: It was a bioassay development program, a data-based development program that was based on the logbooks, information from the logbooks.

So, I think you have two periods,

one period where, as I understand it, all the information was in the logbooks and nowhere else. Then, there was a period -- and correct me, Greg -- where LANL itself began to put data directly into their own database, which I think is this 1990 period, or whatever.

And then, there is a third stage where NIOSH stepped in with the lab and created this in vivo database. So, we think of three time periods, and I believe that's the case.

Is that right? Am I representing that?

MR. MACIEVIC: Right, yes.

MR. EVASKOVICH: So, I'm thinking that it really is a non-issue because it's incorporated in the OTIB.

CHAIRMAN GRIFFON: Okay. All right. So, we'll say no further action on that one, for 1.1.

All right. The second item is a concern raised about exotic radionuclide exposure at the firing sites. So, it is still regarding exotics, but go ahead. Maybe you can expand on this.

MR. EVASKOVICH: Well, just I haven't seen anything yet. When they were doing the meeting last January, when they were discussing the report, I got a chance to talk to Bob Burns. And he said, well, yes, they did use exotics at the firing sites.

So, that's why I raised that question. It's because I go back to the air monitoring or the environmental air monitoring problems that they had. So, I think that is a pathway that needs to be looked at. I don't know if that's been addressed or will be addressed.

MR. MACIEVIC: Well, that's something we would have to look at --

CHAIRMAN GRIFFON: Okay.

MR. MACIEVIC: Because we haven't addressed that.

CHAIRMAN GRIFFON: All right.

MEMBER BEACH: So, is that for the whole time period, the `76 to 2005? Or do we know?

MR. EVASKOVICH: I don't know. He had mentioned it. Because, first of all, I don't know if I have the clearance for it. I do have a clearance, but, you know, "need to know." And it was in a public environment. So, I didn't push for the issue because knowing the nature of the exotics work, I just raised it as a question, I think, to be looked at.

CHAIRMAN GRIFFON: Bob, are you on the phone? Is Bob --

MR. BURNS: I am.

CHAIRMAN GRIFFON: Can you

elaborate on that at all?

MR. BURNS: Not a whole lot. I would say, recognize a lot of materials that were used at the firing sites. There were activities out there that were -- I've got to be careful what I say, but --

CHAIRMAN GRIFFON: Yes, yes.

MR. BURNS: It's not everything was done in such a manner that material was dispersed.

CHAIRMAN GRIFFON: Okay. We'll leave it at that and let you follow up on that, so we don't --

MEMBER BEACH: Well, then, who worked at the firing sites? That's another question I would have. Was there service workers?

MR. EVASKOVICH: Yes.

MEMBER BEACH: Okay.

MR. EVASKOVICH: Because sometimes

they did station guards out there. They did have firefighters out there because they had incidents of them having to put out fires afterwards.

Then, the whole issue of protective equipment that was discussed when Greg came out to meet with us. They didn't wear protective equipment because it's a wild land fire, which is different from a structural fire.

Additionally, afterwards, laborers would be assigned to clean up the areas, and either they would use rakes and shovels all the way up to large equipment in order to move parts around or do cleanup activities.

Then, there's a question, most of that -- well, the ones that I talked to said, when we did this, no, we didn't have any PPE for cleanup afterwards. So, you're dealing with potentially large pieces to be picked,

all the way down to the smaller particulate could be disturbed from the soil and then resuspended. So, there is that issue, aside from what actually would have been dispersed through the explosion, which I also discussed in the petition.

So, I think that's why that's an issue.

CHAIRMAN GRIFFON: All right. Let's look at No. 3, which is badge access to areas. Petitioner disputes the argument that this completely restricted personnel from certain areas.

I had a question mark on this one because I'm not sure I captured your thought correctly there.

MR. EVASKOVICH: Well, I think it's more to determining how people who were in these areas were potentially exposed. I mean, how are you going to place somebody near

a --

CHAIRMAN GRIFFON: Yes. I think this gets back to the who, who was in a certain area to be exposed.

MR. EVASKOVICH: Yes, and just making that determination. I just kind of said, well, if you look at the badging process and the recordkeeping, I'm not too sure about which areas, what kind of control they had or what kind of recordkeeping they had as far as people accessing the areas.

CHAIRMAN GRIFFON: I guess this might not require an action, unless NIOSH intends on using those in any way to place workers for exotic exposure, reconstruction, or whatever.

DR. NETON: We hadn't anticipated that.

CHAIRMAN GRIFFON: Right. But, I mean, I think it's just a --

MR. EVASKOVICH: I think they're more referring to the checklist --

CHAIRMAN GRIFFON: The checklist, right.

MR. EVASKOVICH: And the RWPs and stuff.

But I just want to have that clarified, I think, or just reach an understanding as to how they are going to say a service worker was or was not exposed to these radionuclides. You know, how are they going to make that determination?

CHAIRMAN GRIFFON: Right.

MR. EVASKOVICH: And then, I'm saying there could be problems associated at least with the badging process, if they were to use that approach.

CHAIRMAN GRIFFON: I'm just going to put in the action: NIOSH will consider this in their overall determination of

considering who potentially was exposed to various radionuclides.

In other words, if you're not going to rely on it, it's a non-issue. But if you end up in any way using this access, you know, badge access as a key to -- so, it's important if you use it. If not, it's not applicable, I guess.

DR. NETON: Okay.

CHAIRMAN GRIFFON: Okay. All right. The next item is item 4, and I did say -- you said, during the meeting, you had mentioned NIOSH, that a new Environmental Report will be available soon. I think that meant the section of your --

MR. MACIEVIC: Right. Yes, that section was issued, and since we made an SEC, the previous SEC, we had environmental issues that would have had to have been considered on dose reconstruction. But since that's all now

SEC for everybody, those issues are no longer involved and the report, the environmental TBD is out, or had been issued a while back.

CHAIRMAN GRIFFON: Andrew, do you have any followup on this?

MR. EVASKOVICH: Which one are we talking about?

CHAIRMAN GRIFFON: Four.

MEMBER BEACH: No. 4.

MR. EVASKOVICH: Well, mine is showing considering the occupational health reports.

CHAIRMAN GRIFFON: Yes, occupational health reports. Somehow I was tying that -- oh, maybe I meant questions raised, but that's No. 5, Greg, that you're responding to, and I skipped 4 accidentally. Sorry about that.

So, my response up under April 29th should have been No. 5. I'll change

that.

Let's go back to 4. I'm sorry. Four is the occupational health reports, yes.

MR. EVASKOVICH: Yes, that was just because they do have a question there that they asked us to fill out concerning exposures to radionuclides and the toxic chemicals.

That's why I was wondering, because they were talking about the checklists, and, you know, it's in the form of a checklist and people self-report what they have been exposed to. So, I wasn't sure what they were talking about, and they kept referring to these exposures, these checklists.

CHAIRMAN GRIFFON: I think we'll answer this question when we have you look at the checklist versus the database, right? That's going to put an end to that, I would

think, when we see that analysis and you look --

MR. MACIEVIC: Well, the health physics checklists are definitely, I mean, they're set up -

CHAIRMAN GRIFFON: Yes.

MR. MACIEVIC: Because they are talking about bioassay is needed and all that.

CHAIRMAN GRIFFON: Right.

MR. MACIEVIC: So, it's not a system of you doing it. It's part of the program to say, "Here, this is what you're going to need for going into this type of job."

So, it wouldn't be a self-reporting.

MR. EVASKOVICH: Yes, it's a different type of --

CHAIRMAN GRIFFON: It is different? Okay.

MR. EVASKOVICH: It's a different type of capture there. I think they're just looking from the occupational health standpoint, you know --

CHAIRMAN GRIFFON: Right.

MR. EVASKOVICH: I think to determine whether or not I guess treatment or further investigation is necessary as opposed to controls. Would that be an administrative control, the checklist?

MR. MACIEVIC: Well, I wouldn't -- yes, I guess you would call it an administrative control because it is a form that is filled out by health physics to say what's in there.

MR. EVASKOVICH: Yes.

MR. MACIEVIC: But it's not a -- well, I guess, for lack of a better term --

CHAIRMAN GRIFFON: So, what about these occupational health reports? Are they

not relied on at all?

MR. MACIEVIC: We haven't been looking at those.

CHAIRMAN GRIFFON: Yes. I'm not familiar with them.

MR. MACIEVIC: It's been the quarterly reports from the health physics organizations and all of that --

CHAIRMAN GRIFFON: Right.

MR. MACIEVIC: And the health physics checklist itself, not an occupational report. I mean, if anything, they would be used as sort of a backup to different things, if you wanted to.

MR. EVASKOVICH: Well, yes, like I said, I don't think it would be a reliable source even.

MR. MACIEVIC: Right.

MEMBER BEACH: Well, but isn't this kind of part of the one prior to that,

the badging access? Because you said that they use that for the required badging.

MR. EVASKOVICH: Well, no, the areas are different because of different security levels. You know, there's different controls there for security purposes, and then there are some for training. You swipe the badge and determine whether or not your training is up-to-date. If it's not up-to-date, you don't get into the area.

But, you know, I was questioning whether or not that would be used as a record that NIOSH would use to determine, you know, to do a dose reconstruction or to develop a possibility for trying to figure out who's in the areas and maybe a percentage of time.

This person spends this much time in TA-55 and then this much time in TA-18, just to kind of figure out where service workers would be, to figure out how you're

going to assign dose according to different areas and potential sources.

MR. MACIEVIC: No, we are using the other things, as the rad work permits and things that are official documents that someone does some kind of measurement or has to do something to find out what you're going to be doing as opposed to, yes, any document that is self-filled-out or a thing like that would be highly questionable.

MR. EVASKOVICH: Well, I had raised the question because, when we had talked before at one time, you had mentioned, "Well, we would assign like a percentage. We would try to assign a percentage."

MR. MACIEVIC: Oh, that was based on what I was talking about this morning with Don Stewart about, if we had tasks like when jobs categories are laid out and we look at the job categories to try to figure out which

ones would fit in particular areas where you know the radionuclides are, then you would have to determine the length of time a person would be either cleaning an area or, if he were a security guard, was going to be in there maybe one day of the week, or something like that, and then adjust the dose value to the length of time.

But that wouldn't be off of a self-proclaimed thing. That would be an official document from either human resources or something like that that says, when you're punching the timecard, here's what it's being charged to, that kind of activity.

Of course, that doesn't always hold, but it is a better, it is a much more --

MR. EVASKOVICH: Yes. Well, that's what I was wondering because, like going back to that, for, say, guards, we used timesheets. When I first started there, we

just had a pay code that we used for different, like you were assigned a pay code.

So, if you're an SB02, you used, I think we used S50. But like, say, if you're a special response team member, you get a little higher pay because you have additional duties and training requirements as far as like firearms and, you know, shoot house. So, they used S51 or something like that. So, there's different pay codes, and that's all we noted, but we worked all over the site.

Then, like I have talked to other support workers, and they would go to SM30. That's where the headquarters was, basically. They would go to work, they would clock-in, and then they would say, "Well, we need you to go to this site here, this site there." They may have job codes and stuff, but I don't know if you can tie people to more particular work assignments.

MR. MACIEVIC: No, it wouldn't be down in that kind of detail of trying to figure out based on a pay code what, because then we would have to know every year --

MR. EVASKOVICH: Yes.

MR. MACIEVIC: What fraction of your time. No, this would be like you have a security guard who would -- basically, you would have, okay, that particular group enters all facilities, and then it would be a matter of what fraction would you assign to a security guard going into facilities. You are not going to say 100 percent in each facility. You have to figure out some kind of fraction.

MR. EVASKOVICH: Well, that's what I was wondering, too, if you're going to use this data to try to determine that fraction. That's kind of my question.

CHAIRMAN GRIFFON: It doesn't sound like it.

MR. MACIEVIC: No, because that would be specific people within a group, and we are not going to try to get down into the weeds of which special groups of this one umbrella group spend time. That's not going to be it.

It would be you would have security, or whatever the official, security guard, inspector, that would be the title, and that would be that group gets assigned this number.

MR. EVASKOVICH: Okay.

MR. MACIEVIC: That's about as far as I'm going to go.

MR. EVASKOVICH: Well, that's what I was wondering is, how do you develop that number? My line of thought, that you would be using access, you know, maybe take a sample and say, okay, well, the guard spent this much time at TA-18 and just average that and say,

okay, that's our average. You know, that's what I was wondering, how you develop that number.

MR. MACIEVIC: That's the key to developing that number. We're going to have to base it -- but it's not going to be based just on --

CHAIRMAN GRIFFON: Self-reporting.

MR. MACIEVIC: Yes, self-reporting kind of things. But we will have to find out the total number of facilities accessed and how much time in a particular week or in a year a person would have access.

DR. NETON: It might not be that specific.

CHAIRMAN GRIFFON: Yes.

DR. NETON: Typically, what we end up doing is finding the facility with the highest exposures that the person worked.

CHAIRMAN GRIFFON: Because of this

whole issue of people going in and out of facilities, yes, yes.

MR. MACIEVIC: Right. Just like you're saying, yes.

CHAIRMAN GRIFFON: It's too complicated.

MR. MACIEVIC: Well, that makes, yes, more sense to do it that way.

DR. NETON: Typically, we don't get into that level of detail.

CHAIRMAN GRIFFON: Right. We've gone down that path and realized it doesn't work, yes.

DR. NETON: I'm not saying that it's not an option on the --

MR. MACIEVIC: No, but it sounds like that's a better route to go because you want to make sure that you are giving them a bounding kind of dose to apply to a person that's in a work situation.

CHAIRMAN GRIFFON: Well, here's what I put for now: the occupational health reports, the ones referenced in the question, are not being used by NIOSH to identify who should have been monitored for various radionuclide exposures. Rather, the HP checklists are being used. These are being cross-checked in matrix items 1 and 2.

All right? So, I just left it at that. So, no further action on this. If the question comes up later in how they are going to parcel out time, we will look at that.

All right. Now item 5 is the environmental. It says, "Question raised about NIOSH's environmental model." You say that this is the new section of the Site Profile that has just been out? Is that what it is?

MR. MACIEVIC: Well, there's not an environmental model. It's the

environmental TBD --

CHAIRMAN GRIFFON: Right.

MR. MACIEVIC: That discusses all these issues in there. That was recently updated. Well, recently? It was about eight months ago or nine months ago. But that has been updated and is out there to be looked at.

CHAIRMAN GRIFFON: I guess I think an action here would be that SC&A probably needs to look at that, especially with regard to I think one of your concerns is the treatment of exotic nuclides and things like that in the environmental part, because that came up on your earlier comment, right? Yes.

MR. EVASKOVICH: Yes. Well, stacks and the testing sites.

CHAIRMAN GRIFFON: Yes. That's an SC&A action, I think, Joe.

MR. FITZGERALD: Yes.

CHAIRMAN GRIFFON: You haven't

looked at this? Yes, it's just come out.

MR. MACIEVIC: That gives you two.

MR. FITZGERALD: Three.

(Laughter.)

This will be a new TBD environmental section?

CHAIRMAN GRIFFON: Yes.

MR. MACIEVIC: It's an environmental TBD.

MR. FITZGERALD: I mean, in general, is there anything that we can say about that?

MR. MACIEVIC: It has not really been -- I mean the issues -- I'm trying to recall what's in there. The issues that were really modified, I mean it's been pretty much the same.

The issues that we were discussing that have been changed are because of we had the previous SEC where we had discussed things

pre-`75, how we were going to look at environmental. Since that's now all SEC, that's been removed and it's pretty much the same document as it was before, except I don't think it discussed previous years.

CHAIRMAN GRIFFON: Okay. Item 6, source-terms which were identified in the SEC petition that have not yet been addressed. And I might need more specifics here, if you can help me out.

MR. EVASKOVICH: Well, I referred to the areas of concern and possible release sites.

And those are designations from the Environment Department in New Mexico, and they are also referenced in the report that the National Academy of Sciences did concerning the monitoring wells that were drilled at LANL in order to look at the possible leaching in the groundwater.

Then, there are a number of sites that are uncharacterized. So, they don't know what's in them. I think there's a potential there, at least for service workers, because they may be in these areas doing work, for exposure to who knows what.

Then, the other issue that was raised in the National Academy of Sciences report is the mass balance, because they don't have a mass balance for LANL as far as materials that they used and where they ended up at.

So, I think that raises the potential, the question of, have you captured everything for the source-term or potential exposure for workers?

MEMBER MUNN: Andrew, are you suggesting that the test wells themselves are a potential source that has not been considered?

MR. EVASKOVICH: No. What it is, the purpose of the wells is to look for material leaching into the groundwater.

MEMBER MUNN: I understand.

MR. EVASKOVICH: So, they drilled the wells to monitor the groundwater to see if material was getting into there.

MEMBER MUNN: Yes.

MR. EVASKOVICH: Now potential release sites from above-ground leaching in -- they haven't all been characterized. They don't know what's there. They don't know if it's toxic, if it's radiological. So, you're missing potential source-terms exposures to workers because they are in these areas in doing their work.

MR. MACIEVIC: You mean on the surface?

MR. EVASKOVICH: Yes.

MEMBER MUNN: Potential surface

leach sites is what you're talking about?

MR. EVASKOVICH: Yes. Yes. And those can either be affecting leaching into the groundwater or there are runoff issues when they go into canyons or if there's a hot spot somewhere.

MEMBER MUNN: Yes.

DR. NETON: What time period are we talking about?

MR. EVASKOVICH: Well, I'm trying to think. It's over a large period of time. I know I referenced some of the RCRA reports in the nineties, and they were talking about areas of concern, potential release sites. I forget how often the permit period is for LANL, but there are always --

DR. NETON: Now when you say "release sites", I mean --

MR. EVASKOVICH: Well, that's what they're characterized as. In the environment

reports they are saying, well, we have a potential release from this site and we don't know what the material is.

DR. NETON: Okay.

MR. MACIEVIC: These are buried sites, right?

MR. EVASKOVICH: Well, they could be or in the forties they had the Kick and Roll Program where they just went out and they kicked it off the truck and they left it there.

So, they are trying to identify all the sites and the cleanups. It was one of the issues the Environment Department raised as far as their permitting for LANL. They were saying, well, look, you know with these sites also it's here.

DR. NETON: So, when someone would go out to these sites to do work at all, there would be no physics characterization at all?

MR. EVASKOVICH: Well, they don't know what's there at the sites.

DR. NETON: Well, I know, but they typically go out with some kind of a survey team and do at least a surface survey.

MR. EVASKOVICH: Well, I'm not sure. See, that's why I raised the question. Has it been looked at and has it been identified? Because the Environment Department says these are here, and I talked to some people who said, "Well, yes, we've been into this area."

CHAIRMAN GRIFFON: Can you help us out? Just for the action item list, it would help me if you within your initial petition, can you tell me what pages these are listed on or where they are further explained? So, that at least you can look into them further, because I don't think we are going to get very far without looking at those reports and

understanding -

MR. FITZGERALD: I was also going to say it sounds like you have additional new sources that may not have been addressed at this point in the TBD. So, I'm not sure -- we can look at the TBD, but I'm not sure that that's going to help.

CHAIRMAN GRIFFON: Well, it's a different issue. I mean this could complicate your followup, yes.

MR. FITZGERALD: Well, it just means that there's things that aren't covered in the TBD that are sources that may have not been identified.

CHAIRMAN GRIFFON: Right. Right. Yes, I think you should take a preliminary look at the environmental report anyway.

MR. FITZGERALD: Right.

CHAIRMAN GRIFFON: And then have NIOSH look at this. Because I'm not sure --

DR. NETON: Yes, I'm not sure what these are.

CHAIRMAN GRIFFON: Right.

DR. NETON: I mean, if it's surface contamination, that's one thing, but if it's subsurface burial or something, then --

CHAIRMAN GRIFFON: Where workers are likely not to access or have any exposure, yes --

DR. NETON: We need to look at it.

CHAIRMAN GRIFFON: You need to look at it further, yes. Okay. And Andrew can give us the references.

I'm just going to look at 7 while you're doing that. Well, this is about -- and I think I got that -- is it Sierra Grande?

MR. EVASKOVICH: Yes, and the spelling on that is C-E-R-R-O.

CHAIRMAN GRIFFON: C-E-R-R-O.

Sorry. C-E-R-R-O. Thank you.

MEMBER BEACH: What year was that fire? Andrew, do you know offhand?

MR. EVASKOVICH: 2000.

MEMBER BEACH: It was in 2000?

CHAIRMAN GRIFFON: Yes, it was recently, yes.

MR. EVASKOVICH: And then there was another fire that was in the 70s. That one actually burned more of LANL, at least for some areas of concern.

CHAIRMAN GRIFFON: I may not have captured all your statement on that yet.

MR. EVASKOVICH: I think that was the Dome fire. I'm not sure. I'll have to look at that again because that one I couldn't find a lot of information on it.

CHAIRMAN GRIFFON: Okay.

MEMBER BEACH: You said that was a `76 fire?

MR. EVASKOVICH: In the 70s.

MEMBER BEACH: In the 70s?

MR. EVASKOVICH: Yes.

MEMBER BEACH: Okay.

DR. NETON: I thought we addressed this issue.

CHAIRMAN GRIFFON: Did we?

MR. MACIEVIC: Well, we have a paper that Don Stewart, a study on --

CHAIRMAN GRIFFON: Yes, he's developing a White Paper, yes.

MR. MACIEVIC: Yes.

DR. NETON: I thought we talked about this.

MR. MACIEVIC: Today?

DR. NETON: No, no, no. Perhaps. I mean this is a familiar issue.

CHAIRMAN GRIFFON: Yes.

MR. MACIEVIC: What Don had done, though, is he looked at the air-sampling data,

took the highest air-sampler data that gave the highest dose, and then modified it to the hours and amount of time that the firefighters would be there, and increased the amount of dose that the person would have gotten based on, well, it's based on the air-sample data that was taken at the fire.

CHAIRMAN GRIFFON: Yes, which doesn't answer the question of the adequacy of the monitoring, right.

MR. MACIEVIC: Right, right.

CHAIRMAN GRIFFON: But do you have that White Paper? Has he made that available yet or no?

MR. MACIEVIC: I've got it right here. Yes, we've got it, and I want to have a couple of people take a look at it. But, then, we can have it --

CHAIRMAN GRIFFON: Okay. All right. NIOSH.

MR. FITZGERALD: What would be also helpful is if DOE did a characterization at the fire, how that compares, or does it --

MR. MACIEVIC: Well, let's see what we've got out here.

Instead of me reading this, hey, Don, are you out there, Don Stewart?

MR. STEWART: Yes, I sure am.

MR. MACIEVIC: Can you just go quickly over the Cerro Grande, the little White Paper we got, instead of me reading through it and going through that?

MR. STEWART: Sure. Los Alamos did a report on all the data that they had available. They subsequently revised that report and put out a final report. I think it was -- I don't remember the year.

This work is based on that. It is just, okay, what if a person is at the worst fire locations the entire time, and we made

some claimant-favorable guesses or assumptions about that. Then, we basically just came up with an intake based on measuring results of the fire.

In fact, their highest result was for uranium, that they could not separate from naturally-occurring uranium. But I took that result because it was the highest result. And then, I think we assigned it as plutonium-239, basically, just to get the highest possible dose.

And we thought that was very claimant-favorable because, as we discussed with the firefighters, they were extremely mobile during this fire. They never spent much time at all in any one location constantly. So, by assuming that they spent the entire time at the fire, at the highest measured location, we felt that we had bound an impossible dose for the fire.

MR. MACIEVIC: Right. It went from .09 millirem up to .3 millirem, so basically a factor of three increase by making that assumption.

DR. NETON: Is that committed dose?

MR. MACIEVIC: Yes, committed effective dose equivalent.

CHAIRMAN GRIFFON: But you didn't address -- I mean I think you have a concern about the accuracy of the air monitoring.

MR. MACIEVIC: And we used the air monitoring --

CHAIRMAN GRIFFON: And the resuspension issue after -- this would only be during the fighting of the fire, right?

MR. MACIEVIC: Right.

CHAIRMAN GRIFFON: There's two parts of this that haven't really been --

MR. EVASKOVICH: Yes, because

during the fire, power was lost to the air monitors for a number of days, one or three days. I think it just depends on the location of the monitors. So, there was no monitoring during that time.

And then, the other was the particulate accumulating on the filters, because it's a normal changeout time of two weeks, I believe, and I think they were changing them out daily because they were getting clogged with particulates from the fire.

So, I think that is something that needs to be addressed. The question, I guess, is, how much does it affect the accuracy of that monitoring?

Then, you have to consider after the fire, especially for the firefighters because they go back and they overturn the soil, and they're looking for different hot

spots.

The nature of the fire, depending on the heat of it, it breaks down the soil. It causes it to erode easier, and it makes resuspension a lot easier for particulate material. So, I think you need to determine were they in hot areas, meaning radioactively hot, and how much resuspension was there? How was it affected by the fire?

I didn't see any of that addressed.

CHAIRMAN GRIFFON: Were there any surveys after the fire?

MR. EVASKOVICH: Maybe it was limited, limited discussion by LANL concerning resuspension, especially with radionuclides.

MR. MACIEVIC: I believe they did do some surveys after the fire.

CHAIRMAN GRIFFON: If you can get that White Paper to us, but, also, there's

other parts of the questions you might want to --

MR. MACIEVIC: Right.

CHAIRMAN GRIFFON: If possible, follow up a little further, if there's anything to add to that. If they have in the LANL paper, maybe you can -- I don't know if that's posted, or whatever, but --

MR. MACIEVIC: No, it's not posted.

CHAIRMAN GRIFFON: Maybe that discusses the analytical techniques they used and how they pulled the samples.

MEMBER BEACH: Does that just address the 2000 fire or does it --

MR. MACIEVIC: Yes, just the Cerro Grande.

MEMBER BEACH: Just the Cerro. Okay.

CHAIRMAN GRIFFON: I mean I would

be more concerned, quite frankly, on the location of the samplers rather than the -- in that type of event, if you're fighting a fire, where are you putting these samplers? I don't think they were BZAs or anything.

MR. MACIEVIC: And this is based on the data from the Los Alamos Airnet Environmental Air Monitoring System. So, we could go back, I guess, and see what the nature of the locations of these.

DR. NETON: And they were taking bioassay samples on these firefighters or --

MR. EVASKOVICH: Well, I don't know whether really the bioassay would have worked anyhow because they shut the lab down for two weeks. So, pretty much the only people that were there were -- I think they had limited operational personnel in the operational areas.

DR. NETON: The pre-samples.

MR. EVASKOVICH: Yes. And then, they had guards and firefighters there.

DR. NETON: Excuse my ignorance, but were these fires in very contaminated areas?

MR. EVASKOVICH: Yes. On page 46, in fact, I start listing the areas of concern, potential release sites.

DR. NETON: But do we know that they were heavily contaminated?

MR. EVASKOVICH: Well, those are areas that are, well, they are listed as areas of concern or potential release sites. So, I don't recall the exact amounts that are in there.

I included a 500-page document from the Environment Department that lists these, and they talked about what's in some of them that they know of. Some they know, and some they don't.

DR. NETON: But it all depends on the surface contamination and -

MR. EVASKOVICH: Yes. So, I listed those I think just to inspire you to do a review.

(Laughter.)

CHAIRMAN GRIFFON: It would be interesting if they have any bioassays on those guys, though, you know, even a few weeks later, or whatever, yes.

MR. EVASKOVICH: As far as like the discussion of the areas further and the mass balance, that's on page 60 of the petition. So, pages 46 and 60.

CHAIRMAN GRIFFON: That's for the potential release areas?

MR. EVASKOVICH: Yes.

CHAIRMAN GRIFFON: Okay. Thank you.

MR. EVASKOVICH: There's

discussion of that.

CHAIRMAN GRIFFON: Pages 56 and --

MR. KATZ: Forty-six and 60.

MEMBER MUNN: Forty-six and 60.

CHAIRMAN GRIFFON: Forty-six and 60.

MR. EVASKOVICH: That's where they start at.

CHAIRMAN GRIFFON: Okay. All right, item 8 is, oh, this is pointing out LANL versus Nevada Test Site, I guess.

MR. MACIEVIC: It would be surrogate data.

CHAIRMAN GRIFFON: Surrogate data. Well, I guess they are just pointing it out for the Work Group's consideration.

MEMBER BEACH: So, this does question the in vivo data and the gaps. I think we captured that in some of our earlier --

CHAIRMAN GRIFFON: Yes, I think is more for, in my opinion, this is more for us as a Work Group to keep in mind when we're thinking of the equity issues, like if we did this for Nevada Test Site, is it very similar to what we are dealing with here?

I think I would just say to my co-Work Group Members, keep that in mind as we're looking through this. I don't think there's any action you're asking there.

MR. EVASKOVICH: No. That was more of a comment.

CHAIRMAN GRIFFON: Right, right.

Okay. Then, the last thing I will say is, Andrew, from the document you sent us a few days ago, if you have any further followup, you know, if you want to make some comments about that? Some of the things I know we covered today --

MR. EVASKOVICH: Yes.

CHAIRMAN GRIFFON: But maybe not all of them.

MR. EVASKOVICH: Well, I wasn't too clear about, I know the discussion came up concerning the Tiger Teams. And the reason I raised that issue as far as the findings in Tiger Teams is because you guys were saying you're going to rely on the RWPs and the checklists.

It seems that the findings are programmatic throughout LANL. So, I think it calls into question the reliability of the data in those documents, as to whether or not you can actually rely on what you're going to use them for.

And I heard some discussion of it, but it didn't seem like it was fully addressed.

CHAIRMAN GRIFFON: Could the Tiger Teams have findings around the RWPs and the

checklists?

MR. EVASKOVICH: Yes, that's what I've pointed out.

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: I think the discussion we had earlier was you really have to rely on maybe your modern-day procedures for controls as a means to decide this question of exposure or no exposure, in the absence of data.

I think you are expressing a cautionary note that it is a mixed bag. You might have experience, or whatnot, that management controls were not as rigorous as they needed to be at the time. You get these snapshots that raise some questions about that.

So, I think it is a cautionary note about necessarily reading procedures literally and assuming that they were followed

rigorously. I think it has to be healthy skepticism about actual implementation.

CHAIRMAN GRIFFON: Right, right.

MR. FITZGERALD: I think we accept that for sure, that you have to really question whether or not -- a checklist, for example, they're upstream, and whether they resulted in the bioassays is one thing we're going to look at, whether bioassays, in fact, were done as stipulated in the checklist. And I think we have to validate and verify when you can.

MR. EVASKOVICH: Well, not only that, but they did question the accuracy of the checklist because they said that they weren't always completed as they should have been. They weren't reviewed to make sure that they were completed properly, and sometimes they weren't even turned in. So, you may not even have a particular checklist that you may

need.

DR. NETON: Right, but you have got to look at we are not relying solely on the checklist as a means of reconstructing dose.

MR. EVASKOVICH: Well, yes.

DR. NETON: You've got to kind of segregate the difference between a compliance audit and the program as it existed, and is it sufficient to at least put an upper bound on the doses, is what we're trying to do.

So, there's a big difference between a compliance-driven audit and some criticisms of the program versus is it so bad that you know nothing about the exposures of the workers and you can't bound them. I guess that's sort of the issue.

MR. EVASKOVICH: Well, that's what I'm saying, is I'm questioning is the accuracy there. It's not just the checklist, but they

also do point out problems with the RWPs and the standard operating procedures.

So, that is kind of what I am saying. If you use that, you have to look at it to make sure that what you need is there.

MR. FITZGERALD: Yes.

MR. MACIEVIC: If you also look, though, in the checklist like we have, like I found basically six claimants that had the bioassay based on the checklist. As you start to look in more of this data, you find out that what they were requesting and what's in the files that we have or in the databases, when you start seeing that the majority of them are accurate, I mean you are going to find errors and problems in the thing, but if you can see that the bulk is holding tight, I mean of what you have, you can't dismiss it and say, because there are some problems, we have to ignore the bulk.

MR. FITZGERALD: I think that issue becomes increasingly important where you have less and less data and less and less operational evidence. I think when you are forced to rely on procedural compliance or management direction or practice, I think that's when you're -- I don't think there's any dispute about that.

CHAIRMAN GRIFFON: Right.

MR. FITZGERALD: I think the Tiger Teams are useful perhaps where they do overlap on the dosimetry program implementation, where it points out that you're not following your own procedures, and what have you, which is what they do. But if you're not following your own procedures, that is a significant enough issue that raises questions about whether you can rely on those procedures as part of delineating this thing.

So, certainly for those aspects of

the program where you don't have something to fall back on, and you're looking at procedural compliance, then you've got some issues there, I think.

Hopefully, we won't be in that realm too often, but that is another topic of discussion that I guess we are going to entertain in Santa Fe, which is what you do when you don't have much data and you have to look at some of this qualitative information.

CHAIRMAN GRIFFON: Okay. Other items?

MR. EVASKOVICH: Well, I think we addressed some of them today because I'm starting to see the data now as far as the way the discussion went at the last meeting and just the Evaluation Report and the way it appears it seemed like we're making the jump from, well, we don't have the bioassay data, so we're going to do this model.

And that is kind of what drove the reference in the first part, the regulations and the guidelines and stuff, is that was like, well, why are you making this leap, especially it appears that you don't have the room swipe and the air-monitoring data, by making this leap to the model? Because you're supposed to use this data before you actually start developing a model.

And it didn't seem like you could develop a model when you didn't have that data to begin with. It would seem to me that, in order to meet the compliance or the monitoring requirements, you would have to have that data. So, I didn't see how you were going to do a dose reconstruction with the model because it has to be based on something associated with the radionuclides of concern.

So, it seems like you are developing at least the room-monitoring data

and the process-monitoring data, and maybe that is a fault with the Evaluation Report. It seems like NIOSH says, "Well, we can do this," but you don't really explain yourselves. You say, "Well, we have the data and we can do this," but you don't really elaborate enough. I think that causes, at least it caused me concern, and probably others, too.

If I can, I'll refer back to my experience when I was in the Marine Corps. One of the tenets of the Marine Corps is leadership. Every Marine is considered to be a leader, and part of that development as a Marine, they give you instruction. And one of the things that sticks in my head for the last 20-some years is, if the student fails to learn, the instructor failed to teach.

Of course, the Marine has motivational means that they can achieve that

a lot easier than I think NIOSH can in dealing with the public.

(Laughter.)

MEMBER MUNN: That's true.

MR. EVASKOVICH: However, so we can't say that the failing is entirely on the instructor in this case.

But I have had this discussion with Larry Elliott. I mean, how do you explain sufficiently so that people understand? It's a failure to communicate.

I think I have managed to push you in the right direction. At least I think I did. What I have been doing is trying to get a little bit better -- I mean this is more of a broad concept than the Work Group itself, but that's my intention. If you can do dose reconstruction and not grant an SEC, explain how you are going to do it sufficiently so that people are satisfied with the answer. I

think that would eliminate a lot of problems.

I mean, granted, it's not an easy task, and it may not even be achievable, because I know how people are as far as levels of understanding. Or some people just they know what they think and that's it. So, I'm not asking for an absolute in this case. I'm just asking for a little help.

CHAIRMAN GRIFFON: Anything else for the record?

(No response.)

Okay. Ready to wrap it up?

I have an updated matrix which I'm going to email to Ted right now.

MR. KATZ: I will circulate it to everybody to have it.

CHAIRMAN GRIFFON: Yes, that would be great. Okay. And now it's out of my hands. I have no actions now.

(Laughter.)

The only action I don't know if I captured here as a specific listed action -- do you want to go through an action list separate from what I have listed in these?

MR. KATZ: Well, I think you've captured them.

CHAIRMAN GRIFFON: Yes.

MR. KATZ: And I think everybody, SC&A and DCAS could use your matrix.

CHAIRMAN GRIFFON: Right.

MR. KATZ: But I still would think, for discipline, we should put out those action item lists from SC&A. I think it's not LANL. So, you can pull it up. Copy and paste, but copy and paste to an email, so we have those.

MR. MILES: Can we see it soon?

MR. KATZ: You'll see it. You'll see it.

DR. NETON: Just make sure it's

consistent with what we've --

MR. KATZ: Yes, absolutely.

MR. MACIEVIC: Can we just say, I mean as far as we've read this over and --

MR. KATZ: No, you'll send --

MR. MACIEVIC: You want an official --

MR. KATZ: I want an official --

DR. NETON: We can do that.

MEMBER BEACH: So, what about time frames of when --

MR. KATZ: That's what we need to talk about now.

CHAIRMAN GRIFFON: When to meet again?

MR. KATZ: Yes.

CHAIRMAN GRIFFON: Yes.

MEMBER MUNN: I'm assuming that you have all the information you need for the report in Santa Fe.

MR. KATZ: Yes, do you need to have any discussion about what to report?

CHAIRMAN GRIFFON: No.

MR. KATZ: Or are you good on that?

CHAIRMAN GRIFFON: Yes, I can give an update.

But when the meeting is might be -- I mean it's dependent. You have the majority of the actions; Joe has two, right, or three?

(Laughter.)

MR. MACIEVIC: Yes.

MR. FITZGERALD: Three.

CHAIRMAN GRIFFON: And I have one, which is to hit Send here in a second.

(Laughter.)

MR. KATZ: So, I mean, they're not going to be able to answer very quickly --

MR. MACIEVIC: Do we know when

we're going --

MR. KATZ: Do you have a crude sense of how much work is ahead of you?

CHAIRMAN GRIFFON: Yes.

DR. NETON: It will be months. It's not going to be weeks.

MR. KATZ: That was my sense.

DR. NETON: Yes.

CHAIRMAN GRIFFON: I imagine we're looking around the February time frame?

MR. KATZ: So, we're talking about before the next Board meeting, I guess?

DR. NETON: I think we should be prepared to do something before the next Board meeting. We may not have all of them, but --

MR. MACIEVIC: We are going to have some of them.

DR. NETON: I would hope to have --

CHAIRMAN GRIFFON: Do we want to

look at calendars?

MR. KATZ: Well, why don't we look at calendars then? Yes, let's just do it that way. Let's look at February.

CHAIRMAN GRIFFON: February, yes.

DR. NETON: You can get your name on the list first.

MEMBER MUNN: We have a telecon in January, and our meeting in February doesn't start until the 23rd.

CHAIRMAN GRIFFON: Our meeting is February 23rd?

MEMBER LOCKEY: When is it?

MEMBER MUNN: February 23rd in Augusta.

MEMBER LOCKEY: Augusta? A tough place to get to.

MEMBER MUNN: Yes, hard in February, too.

MR. KATZ: Flying to Atlanta and

driving, but flying to Augusta directly --

MEMBER LOCKEY: Yes, it's a two-hour drive.

DR. NETON: There used to be a direct flight into --

MR. KATZ: You could fly into Augusta, whatever.

MEMBER LOCKEY: No, no, you get stuck in Augusta forever.

CHAIRMAN GRIFFON: Is there another meeting here?

MR. KATZ: There is one other meeting already set, which is, I'm thinking for some reason that it's a Procedures meeting.

MEMBER MUNN: Procedures in January on the 5th.

MR. KATZ: Oh, that's earlier. Okay.

MEMBER BEACH: We have a Worker

Outreach. Oh, no, that's December. Never mind.

CHAIRMAN GRIFFON: How about January 31? Or one of those Mondays? The 31st, the 7th, or the 14th would be good for me.

MEMBER LOCKEY: What day is that?

CHAIRMAN GRIFFON: January 31, it's a Monday.

MR. KATZ: Monday, the 14th, is Valentine's Day. That's fine.

MEMBER MUNN: It's Valentine's Day. We don't want to do that.

MR. KATZ: How's the 14th for everybody?

MEMBER LOCKEY: What day is that?

MR. KATZ: It's a Monday.

MEMBER MUNN: The only bad thing about the 14th is that that's the week before the meeting.

CHAIRMAN GRIFFON: Yes, it is the week before the meeting.

MR. KATZ: Oh, yes.

MEMBER MUNN: And the week before the meeting --

CHAIRMAN GRIFFON: You're probably right, yes.

MEMBER MUNN: Yes.

MEMBER BEACH: Well, and that's coming in on a Sunday, too.

MEMBER LOCKEY: And it forces people to travel on a weekend, too.

MEMBER BEACH: So, I don't want to do it.

MEMBER LOCKEY: I don't think it's good, yes.

MEMBER MUNN: Well, I don't mind that, but the 31st should be okay.

MR. KATZ: The 31st, it may not be so much time --

MEMBER BEACH: That's a Monday again.

MR. KATZ: I mean you have holidays in December, too, that are going to cut out of our DCAS progress.

MEMBER LOCKEY: It means you have to travel Sunday.

MEMBER BEACH: I don't want to do that.

MEMBER LOCKEY: Yes, I know, we don't want to do that. It's all right with me because I'm in town.

MR. KATZ: I think Mark was trying to find dates that work --

CHAIRMAN GRIFFON: Yes, I was trying to find one end or the other of the week. How about Thursday maybe, the 3rd or 10th?

MR. KATZ: How about the 10th?

MEMBER LOCKEY: I can't do

Thursdays.

CHAIRMAN GRIFFON: How about Friday?

MR. KATZ: How about Friday?

MEMBER PRESLEY: Friday's good for me.

CHAIRMAN GRIFFON: The 4th or the 11th?

MEMBER MUNN: Let's do the 4th.

CHAIRMAN GRIFFON: So, then, you're traveling home on the weekend, right?

MEMBER BEACH: No, I just leave after the meeting.

CHAIRMAN GRIFFON: Oh, okay. The 4th?

MR. KATZ: Well, for having more time, I would suggest the 11th.

MR. MACIEVIC: Yes, I would like to have -- well, it depends on how much you expect. If you want a response to all these

things we're digging up data on --

CHAIRMAN GRIFFON: Well, the more, the better, obviously.

MR. KATZ: Which is why I would say the 11th, if that works with everybody, instead of the 4th.

MEMBER MUNN: That's great.

CHAIRMAN GRIFFON: The 11th is okay, yes.

MR. KATZ: February 11th?

MEMBER PRESLEY: That's good for me.

MEMBER MUNN: Good. Will you come?

(No response.)

MR. KATZ: We haven't picked a Mound date.

MEMBER MUNN: Bob, that was addressed at you?

(No response.)

MR. KATZ: Or by phone is good, too.

Are we adjourned?

CHAIRMAN GRIFFON: No. The only thing in the action items that I didn't address, and I'm trying to tuck it in here somewhere, is to ask NIOSH to post that database on the O: drive, the dosimetry database.

MR. FITZGERALD: The bioassay?

CHAIRMAN GRIFFON: Not that we're all going to go through and do the matching, but just so we have access to it.

MR. MACIEVIC: Oh, yes, the bioassay.

CHAIRMAN GRIFFON: Yes, the bioassay database. I don't know if you've gone through that --

MR. MACIEVIC: Was that the in vivo one we were talking about?

CHAIRMAN GRIFFON: Well, in vivo is when it comes for exotics --

DR. NETON: Yes, I got the impression that Liz actually pulled out, queried and pulled out something.

CHAIRMAN GRIFFON: Right.

DR. NETON: I don't know what kind of --

CHAIRMAN GRIFFON: Right.

DR. NETON: We need to look at it. I don't know if it's Access or --

CHAIRMAN GRIFFON: Okay, if possible.

MR. MACIEVIC: Is that Liz? Are you on there, Liz?

MS. BRACKETT: Yes, this is Liz.

We do have an Access database that has in vitro and in vivo separate tables.

CHAIRMAN GRIFFON: Okay.

DR. NETON: I think people know

how to use Access.

CHAIRMAN GRIFFON: That would be great, yes. Yes.

MEMBER MUNN: Now that Mark has so much free time, he can look at it.

CHAIRMAN GRIFFON: Yes, I'll glance through that on the next oil rig.

(Laughter.)

MR. KATZ: Put that on your action list.

DR. NETON: Have you got that down?

MR. KATZ: Do you have that down?

CHAIRMAN GRIFFON: I'm looking for a place to put it in the matrix.

But I think we can adjourn now.

MEMBER PRESLEY: All right, see you all later.

CHAIRMAN GRIFFON: All right.

MR. KATZ: Thank you, everyone

who's hung in on the line.

CHAIRMAN GRIFFON: The meeting is adjourned.

Thanks.

(Whereupon, at 3:14 p.m., the above-entitled matter went off the record.)