U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL
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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

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WORK GROUP ON LOS ALAMOS NATIONAL LABORATORY

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MONDAY
MAY 2, 2011

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The Work Group convened in the Frankfurt 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
ELIZABETH BRACKETT, ORAU Team*
ROBERT BURNS, ORAU Team*
ANDREW EVASKOVICH
JOE FITZGERALD, SC&A
JENNY LIN, HHS
GREG MACIEVIC, DCAS
CHRISTOPHER MILES, ORAU Team
JIM NETON, DCAS
MICHAEL RAFKY, HHS*
KATHY ROBERTSON-DEMERS, SC&A*
MATTHEW SMITH, ORAU Team*
DAN STEMPFLEY, ORAU Team*
DONALD STEWART, ORAU Team*

*Participating via telephone

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

9:02 a.m.

MR. KATZ: So good morning everybody. This is the Advisory Board on Radiation and Worker Health, the LANL Work Group. We will begin with roll call, Board Members beginning with the Chair, and since we are dealing with a site, please speak to conflict of interests too.

CHAIRMAN GRIFFON: Mark Griffon, chairing the LANL Work Group, no conflicts on LANL.

MEMBER LOCKEY: Jim Lockey, Work Group Member, no conflict.

MEMBER PRESLEY: Robert Presley, Work Group Member, no conflict.

MEMBER BEACH: Josie Beach, Work Group Member, no conflict with LANL.

MR. KATZ: And on the line, Board Members?

MEMBER MUNN: Wanda Munn, no conflict.

MR. KATZ: Good morning Wanda, it's early to you.

MEMBER MUNN: Thank you.

CHAIRMAN GRIFFON: Wanda, why aren't you here?

MR. KATZ: He's smiling Wanda.

CHAIRMAN GRIFFON: I miss you.

MEMBER MUNN: One never knows.

(Laughter.)

MR. KATZ: He wants your company, but okay. And NIOSH-ORAU team, in the room?

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

DR. MACIEVIC: Greg Macievic, NIOSH, no conflict.

MR. MILES: Chris Miles, ORAU team, no conflict.

MR. KATZ: And NIOSH-ORAU team on

the line?

MS. BRACKETT: Elizabeth Brackett, ORAU team, no conflict.

MR. BURNS: Bob Burns, ORAU team, no conflict.

MR. SMITH: Matthew Smith, ORAU team, no conflict.

MR. STEMPFLEY: Dan Stempfley, ORAU team, no conflict.

MR. KATZ: Thank you. SC&A team in the room?

MR. FITZGERALD: Joe Fitzgerald, no conflict.

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

MS. ROBERTSON-DEMERS: Kathy DeMers, no conflict.

MR. KATZ: Good morning Kathy. Any other SC&A on the line? Okay. Federal officials or contractors of the Feds in the room?

MS. LIN: Jenny Lin, HHS.

MR. KATZ: This is Ted Katz by the way, the Designated Federal Official of the Advisory Board. And on the line?

MR. RAFKY: Michael Rafky, HHS, no conflict.

MR. KATZ: Very good. And last but not least, members of the public, in the room?

MR. EVASKOVICH: Andrew Evaskovich, LANL petitioner.

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

(No response.)

Good, okay. There's an agenda for this meeting. It should be on the web and everybody should have received a copy too. And Mark?

CHAIRMAN GRIFFON: All right, I wish I new what the agenda -- I think the agenda is just to go from the matrix right?

MR. KATZ: Yes, it is.

CHAIRMAN GRIFFON: Okay.

MR. KATZ: Just issue by issues.

CHAIRMAN GRIFFON: Okay, yes. And I am still trying to log in, so I haven't got the matrix open yet.

But issue 1, yes, I think that is issue 1 in the matrix as well as I recall.

MR. KATZ: Yes.

CHAIRMAN GRIFFON: So, good. Okay. And I think actually this one we have a fairly substantial update from NIOSH, so maybe I can just turn it over to NIOSH to discuss issue 1 on the activation products and fission products, the methodologies.

DR. MACIEVIC: Okay, what we have done is the last time we discussed about using cesium-37 and why you can't use that for the LAMPF facility and a model for internal dose.

So what we have done is to come up

with a model for computing internal dose based on in vivo readings and coming up with modifying factors based on air sampling data and other data in the database, to correct those numbers to come up with a corrected or modified internal dose value.

And what we have, this is a relatively long section, and Liz Brackett is on the phone. For any of the specific details of it, I'll ask her on that.

But what we have done is looked at all the in vivo data in the databases that we have on page 3 of our responses if everybody has got a copy of this.

There's a table of the whole body counts for the individuals, the total number of counts and the total number of counts that were greater than the MDA per the years, and the radionuclides that are there.

We also went to, on page 4, the

air sample database and pulled from all these documents that are listed here in the SRDB, and you can see there is a full page of those documents.

Out of those documents there was culled down to a total of 820 air sampling records and the radionuclides that were reported are listed there and I won't go through all those because we could go to 3 o'clock listing all these radionuclides, many of these very short-lived, or most of them short-lived radionuclides.

And as it states in there that the most frequently detected radionuclide was beryllium-7 and it was reported in 500 of those 820 air samples, and so that is going to be the indicator radionuclide for a correction to the body counts, the lung counts.

Okay, the list was then reduced even further and by eliminating some of these

radionuclides and as you see in the report, that based on a very short half-life, not affecting the internal dose, that the activity was less than one percent of the beryllium-7 activity. That was also not included, and activity detected in less than five percent of the samples. Those samples were removed.

So you end up with a list of 31 radionuclides that are going to be considered, that are going to be major contributors to the internal dose.

So the ratio of those nuclides, relative to beryllium-7 were then plotted and mean and standard deviation were calculated and the next chart is the dose contribution from the radionuclides contributing greater than one percent of the dose and you now are culling it down to that 27 percent of the dose contribution comes from mercury-195, 27 percent from mercury-195m, essentially six

percent from mercury-197, mercury-203 is 31 percent contribution, osmium 2.2 and tantalum 1.9 percent.

So, then it further culled down to make sure that you got the greatest contributors to the organs on page 6 of the document, that no organs were underestimated by the elimination of anything that had a contributing less than one percent of the total effective dose.

So what you have down here is the radionuclide ratios to the indicator radionuclide, the ratio, and you see that mercury-195, the ratio is 1:40; mercury -- and the further one, the one forty twenty four and the lowest is the tantalum at a factor of two.

So these are the factors that are going to be applied to the dose for correction and it's a quick overview, but now I will ask Joe, because I am sure he has some questions

on that, and also Liz, if you would also join in on the commentary.

MR. FITZGERALD: Mark, do you have anything?

CHAIRMAN GRIFFON: No. I am still --

MR. FITZGERALD: Mike, I guess one, I think the -- I have less of a question on the method although others might. I think you know, given the number of these trace isotopes, it's you know, coming up with some kind of approach is probably -- is probably difficult and this is as good as any I've seen.

But on Table 1-1 on page 3, I guess my question, since you know, we are dealing with the time frame of '75 and beyond, it looks like most of the data starts in '81, so I am trying to figure out what does that mean.

There doesn't seem to be, other than for sodium-24 any data that predates '81 and is that literally when you start seeing some of the whole body counts and the records, and how would you square that with, you know, applying this estimation process for the prior six or seven years? Am I reading that table right? I am just curious about that.

MS. BRACKETT: This is Liz Brackett. I need to go back and look at this, but I think that that's - those would be the years that they first started reporting those nuclides, not that they were starting body counts.

And I am still looking at the database. It could be that they just didn't report -- well, you know how body counts work, there's a long list of nuclides and sometimes they only report something that they detect rather than anything that they looked for.

And so looking at these -- the years, I think it was that's just when started to consistently indicate things that they might have looked for but they didn't find anything.

MR. FITZGERALD: Okay, I'll tell you, the reason I am asking is I think this goes to maybe the root of our concern as far as this threshold question, which is you know, even though they -- the whole body counting technology came to the fore in what, '69/'70, and they started implementing it, we were concerned about when the actual detection protocol and record-keeping came into full-fledged use, and I think the issue, really, from our standpoint is probably somewhere between '75 and '85 where we were trying to figure out, you know, in fact, was it hit the ground running in the early '70s, when you did have not only the technical detection

capability, but you actually had the implementation use by the lab; or did it sort of phase in and you really didn't reach that threshold until the early '80s that you have reliable data?

So that's the reason I am asking because certainly this has suggested maybe that you really didn't have a full-fledged thing until the early '80s. But as you say it may just be an artefact. But if you can clarify that.

The methodology I think you know, again, it's a complex issue with this many trace element isotopes and I think this approach -- I didn't see anything wrong with it from a standpoint of simplification and trying to come up with an answer. But I think it's the source information that we have always gone back to and said, you know, can we be comfortable, can the Board be comfortable

about, you know, when this threshold in vivo, not just technology, but actual use, came into being, and I think, just trying to figure out if that's -- 1970, '75, '80, that's what we are trying to establish.

MS. ROBERTSON-DEMERS: This is Kathy DeMers. I have a couple of questions on the air sampling. When I look at your table of air monitoring data, most of these samples are for stack samples.

Can you point out which of these are actually workplace air samples and if you used only stack samples, can you kind of explain the stack sampling process for LAMPF, and where the filter occurs in that process?

MS. BRACKETT: I believe that these are stack samples. We didn't feel that it was necessary to have necessarily a breathing zone sample because we were looking at ratios. We weren't looking at the amount of

intake. We were just looking for ratios in this area. So that's -- and that's -- there were thousands of these samples available.

As far as how they were done, I would have to defer to Bob Burns. I think he might know more about that than I do. Sorry to put you on the spot Bob.

MR. BURNS: Well I guess the short answer is we just -- the summary information we have provided reflects what we have available in the Site Research Database.

That's by no means complete as far as what may still exist at LANL, but it reflects what we have -- what we could put our hands on in the near-term.

DR. MACIEVIC: And this is Greg Macievic. I would like to put in the comment also that you will see in some of the responses in this that LANL has basically, since early February, told us that they

weren't going to allow us to come on the site; because of budgetary problems they didn't have money to get anyone to work with us to collect more data samples.

So as of February, we had several things that we were going to the site to try to take a look at to confirm, but -- at this point, and they still are saying they do not have the money to let us -- to come in there and work with us to look for the samples.

So there are going to be some gaps in here and information like this, which requires going to the site, we had to rely on these responses on the SRDB and a thorough look at documentation that we have because further documentation couldn't be gotten at this time.

MR. FITZGERALD: What additional documentation would be sought on this issue?

DR. MACIEVIC: Well, on some of

these things we were going to look at -- as far as operations activities, human resource records, more person placements in different areas, activities like that associated with this, and with this, to take a look and see about more data on specific things, to look in some of the notebooks that might be present there, that we haven't looked at --

MR. FITZGERALD: At LANL.

DR. MACIEVIC: At LANL, that we hadn't been able to look at before, and go and look into those to verify some of the points we are trying to make there, but that process got stopped and unfortunately we have to drag that on because of not being able to get to the site at this point.

MEMBER BEACH: At what point will the funding be available, has that been worked out?

DR. MACIEVIC: That -- Chris was

this like last week with the emails that you sent me that --

MR. MILES: Yes.

DR. MACIEVIC: Or was that --

MR. MILES: Yes.

DR. MACIEVIC: As of last week they were still working the issue --

MR. MILES: I don't think they know.

DR. MACIEVIC: out and they don't know, so that's their -

MEMBER BEACH: Do they have some help with that or is that just LANL working it out?

DR. MACIEVIC: LANL also working with Greg --

MEMBER PRESLEY: Lewis.

DR. MACIEVIC: Greg Lewis too.

MR. FITZGERALD: Yes, we are having a similar question at Pantex. It's --

the money is being released but it's not clear how much and when, so it's difficult to plan with the site.

DR. MACIEVIC: Because several of these activities we had actually set up a group while the person that you had had for the lagoon question, they were in the process of setting up a group that was going to dig out the files because again, they said the files were there, and they were going to start pulling those out but then it got chopped right in the middle of it and that stopped dead, so we are still running against that.

So what you are seeing in here is a deeper investigation into the SRDB and what types of documents, and you will see in here there are many documents listed that were reviewed to come up with these numbers.

MR. FITZGERALD: Now, for this particular approach, I mean, you have switched

from cesium-137 to a new approach and I think, you know, it's very early but it looks like it has some merit.

But what you are saying is that it's almost like proof of principle, you have to go now and establish do you have the information that would feed a dose estimation --

DR. MACIEVIC: That's right.

MR. FITZGERALD: Or not and this is just again, a concept.

DR. MACIEVIC: Right, and the -- that's why I'm trying to look through my large files here. But in the last meeting, we also have on the listing of the quarterly reports, a summary on there.

There are discussions and I want to find the exact years, but that go back into the '70s, in those quarterly reports, that talk about lung counts being taken.

So the data is there. It's spoken of. But it might be that due to the collection we are seeing this, but that it's not that that data is not present.

So like I said, unfortunately we are still at this position where, yes, you haven't been able to pinpoint exactly everything you wanted yet.

MEMBER MUNN: This is Wanda. There still isn't any indication that you have seen so far that you are going to find more than five percent of the sample data as being indication of activity, right?

DR. MACIEVIC: Right I think -- right. I don't think you are going to see that there's -- it's going to stay in the same proportion as it is now. You will just find information referring to things occurring, but you are not going to find, if I understand what you are saying, you are not going to find

more either people being exposed, or any kind of -- that the 1980 data and beyond will be reflective -- that this data is reflective of what the earlier data is and that's what we have to show.

But I do not think you are going to see anything out of the proportion that says something odd was occurring in the '70s and now in the '80s, this is happening, but the '70s, there was something else happening, that these percentages will stay consistent.

MEMBER MUNN: And beryllium-7, the short life of radioactivity in beryllium-7 is still going to be your key and at the less than one percent?

DR. MACIEVIC: Yes, I believe so. It should stay the same.

MS. ROBERTSON-DEMERS: This is Kathy DeMers. I am just, if you are going to rely on stack sampling, then it would be nice

to know the exact process that is used in stack sampling because there may be for example, at SLAC there were hold-up tanks where they eliminated some radionuclides before it got passed through the filter.

So just some explanation of how that is done, where the filter is in the process, or where the charcoal is in the process, to make sure that you are collecting everything that is showing up in the workplace, unless of course you expect to go back to LANL and compare the data that you have with stack sampling to some of the data you have with workplace air sampling.

DR. MACIEVIC: Well if you are only looking for a, as Liz said, for ratios and not specifically to doses associated with the radionuclides, do you really need to go to pursue that, I mean, because you want to know in what proportion are you seeing these

radionuclides produced in the stack and you have that information.

But like you said, now if you are trying to compute a dose on a radionuclide that has come through but you don't know how that has gotten to the workplace, just based solely on that information yes, there would be a problem.

But if what you are trying to say is well, we are just going to assume that this is in the same proportion and give that factor, do you really need to have that information, because we are just --

MS. ROBERTSON-DEMERS: I guess what I am asking is at what point in your stack sampling system is the sample that you are analyzing for these radionuclides taken?

DR. NETON: I think Kathy raises a point that we probably need to go back and describe in some detail what the process is,

because I am not aware of these stack sampling systems myself, but if there were as you suggest, hold-up tanks or something to that effect, then it could influence the ratio of the materials.

MS. BRACKETT: But do you mean hold-up for decay, for shorter-lived nuclides, or for actually filtering out some of them?

MS. ROBERTSON-DEMERS: Well, and I am only talking SLAC you know, they purposely held it up before they put it into the filter system and that's to get rid of some of the very short-lived radionuclides.

MS. BRACKETT: Well, I know, I don't know what the process is but I can tell you that there were some very short-lived nuclides that did show up, so short in fact that they don't even have metabolic models for them because they don't meet the minimum 10-minute requirement.

MS. ROBERTSON-DEMERS: And I guess if the problem is at the beginning of the process that you are using to develop your ratios, then that is fine.

If it's somewhere later in the process, and some radionuclides get filtered out of the process, then you need to account for that and that is the only question I am asking, is where in the process?

DR. NETON: I don't see a problem with us having -- going back and looking at, if it helps stack sampling. That shouldn't be a problem I don't think.

MR. FITZGERALD: Yes, I would think that the ratios, you are going to have a range of half lives and with that many nuclides, you are going to have some that fall into a spectrum and I agree with Liz, some will be short life in years, but then there's going to be some that may be affected by hold-

up.

DR. NETON: My gut feeling is it probably won't make any difference --

MR. FITZGERALD: Yes.

DR. NETON: But certainly we should go out and describe it.

MS. ROBERTSON-DEMERS: And I'm just giving that, you know, SLAC as an example. It might be totally different at LAMPF. I just want to know at what point the sampling is taking place and what's happening before that.

DR. NETON: I got it.

MEMBER PRESLEY: This is Bob Presley.

MEMBER MUNN: It's been a long time since I have -- this is Wanda -- since I've looked at the TBD on this site. Do we have any indication at all in our original documents and the subsequent additions to them

that we have known hold-up activity for these samples at LAMPF?

DR. NETON: I doubt it Wanda. That's not something we would probably focus on in a TBD. We would be more interested in what was coming out the stack.

MEMBER MUNN: Yes, I wouldn't have expected it either but sometimes things still show up in the basic coverage. Thank you.

MEMBER PRESLEY: Bob Presley. One of the things you might want to do if you are going to go back in and do a little bit more looking, is to do a comparison.

If you do find a stack number and a room number, see if there are any breathing air samples for that, and that right there will help validate your stack monitoring.

DR. MACIEVIC: I would like to point out from the last meeting I have my list of -- from the quarterly reports, and have for

LAMPF in 1975 in the second quarter, that there were 909 laboratory air samples taken.

There were 204 laboratory swipes. There were 639 LAMPF laboratory alpha and LAMPF laboratory beta samples taken, and I only have one whole body count for that, in 1975, for 1977 we have -- let's see -- LAMPF - if I can get my fingers to work -- whole body counts, that's site-wide, urine samples, for some of these I don't have the --

Okay, surveys, 31, contamination survey -- well, I'm going to -- I'll look through this some more. I don't want to hold up the meeting on this but there are further listings of -- by the years for LAMPF, where there are several air and body counts in the '70s so that --

DR. NETON: Greg, those are samples that we know were taken but do we have those in the --

DR. MACIEVIC: Well, no, that's the trick. That's the problem. That's one of the things we would have to verify, right.

DR. NETON: We need to go back to the site and get those.

DR. MACIEVIC: And verify but yes according to the quarterly reports there were numbers of samples being taken in the lab, in the '70s so --

CHAIRMAN GRIFFON: I'll put that as sort of a carryover action. That was an original but I understand that you didn't have --

DR. MACIEVIC: Right and definitely -

CHAIRMAN GRIFFON: And that used -- I think that's not a bad idea. It can be used as part of the stack ratios and -

DR. MACIEVIC: Exactly, the stack and we can look at the laboratory sample.

CHAIRMAN GRIFFON: Right. Right.

MR. BURNS: This is Bob Burns. We have examples of workplaces air sampling data but it tends to be, at last from what I've seen it's either -- you know it's gross alpha and gross beta counts. It's not nuclide specifics. That's one of the reasons we have relied on the stack data and some of this other data.

CHAIRMAN GRIFFON: Yes, we said if available you can use it to compare, but it may not be available. Right, I'm actually looking on the -- so I have some actions on that which basically is for NIOSH to you know, still needs to collect the data which would support the model and that's what you did, a question of phase.

And although you have indication on the quarterly reports that the data is there, you just haven't had the opportunity to

collect it.

NIOSH will also investigate the stack sample system to determine whether the samples are being used for the ratio determinations is representative of workplace exposure as NIOSH will also investigate whether other workplace samples exist for comparison.

I am going back to the matrix to help me with issue 1 because I had set up sub-items a through h I think and I just want to be thorough here to make sure we don't skip over something.

MEMBER PRESLEY: What is the last date on the matrix?

CHAIRMAN GRIFFON: November third.

DR. NETON: Do you have a copy of the response because it's all coded by the matrix items.

MR. FITZGERALD: Yes. Yes.

CHAIRMAN GRIFFON: Is it?

DR. NETON: Because that was 1a that we were just talking about, and now there's a response for 1b.

CHAIRMAN GRIFFON: 1b. Okay, okay.

DR. NETON: It was written just to coincide --

CHAIRMAN GRIFFON: Let me make sure -- okay, yes. Let me make sure I have that.

MS. ROBERTSON-DEMERS: This is Kathy DeMers. Mark, did you intend for your action item number 2 to include a description of the stack sampling process?

CHAIRMAN GRIFFON: Yes.

DR. NETON: I think to the extent that it demonstrates that it's representative of the workplace, the ratios that they use should be representative I think.

CHAIRMAN GRIFFON: Yes I thought I

captured that. This response was on the documents you put on the O: drive, right?

DR. MACIEVIC: Yes. Everything we are talking about being here should be in the O: drive and you have access to it.

CHAIRMAN GRIFFON: Under the five two documents for Work Group folder.

DR. MACIEVIC: I think that's just -- I think that was -- I emailed this part.

CHAIRMAN GRIFFON: So you emailed it.

DR. MACIEVIC: Because I don't think I put it out on the O: drive.

CHAIRMAN GRIFFON: Okay.

DR. MACIEVIC: Because I emailed it.

CHAIRMAN GRIFFON: I was just looking through the documents on the O: drive.

MEMBER BEACH: Are you talking about this one here?

DR. MACIEVIC: Yes

MR. KATZ: Although we should put everything on the O: drive too. Because that allows other Board Members to --

MEMBER BEACH: I think I got it on mine the last time.

MR. KATZ: To go to it.

CHAIRMAN GRIFFON: Let me open that up. I think -- so that covers 1a, then, if we can go on to 1b.

DR. NETON: Our response to 1b refers to our response to 1a.

MR. FITZGERALD: Well, we are on 1b now, right? Okay. Yes, my question there is less with the MAP, the mixed activation products, but switching to the mixed fission products, you know, the issue with the mixed fission products if we recall going back, was we had some problems with, I guess it was OTIB-54, and how that would be applied. I

think I got that number right. I think it's 54. It's based -- the ratio from the reactors.

And I think going back to the last meeting, we were questioning how that OTIB could be used for a facility like the chemical metallurgical building facility, CMR for example, because once you get away from reactoring into a non-reactor facility that is handling the mixed fission products, the ratios are going to be different.

And I think that was pretty much acknowledged at the table so what we were hoping to see would be an alternative approach or an approach beyond OTIB-54 that would apply to the non-reactor nuclear -- non-reactor, non-accelerator facilities, for MFPs.

And referring to 1a, you know, I don't think 1a would work obviously, we know that, and again, I would recognize that you would probably have to look for you know, some

on-site data or information that would kind of inform that question.

A CMR is sort of my poster child because if you can -- and CMR is a bad actor in terms of the source terms involved. If you can deal with CMR from the mixed fission product standpoint, then I think that issue would be a long ways to resolved as well.

So that's, to me, 1b, that's the essence of 1b, is can you come up with, if it's ratios, if it's some approach that would work for MFPs beyond the reactors. I think we felt the OTIB-54 would work for the reactors but then it wouldn't work beyond that.

MEMBER MUNN: Joe, this is Wanda, what you are saying is that the data that you get from the stacks releases is not even going to give you a clue, because of the ratio of concern, because so many of the activation products are so short-lived you wouldn't get

the effect?

MR. FITZGERALD: Oh, no, Wanda sort of switching from 1a to --

MEMBER MUNN: Yes, we are down in 1b.

MR. FITZGERALD: Ib, right.

MEMBER MUNN: Yes.

MR. FITZGERALD: And the response in 1b refers back to 1a and I just was making the point that I think, you know, we know where the concept is going for mixed activation products, MAPs, but the other side of the issue is mixed fission products.

And for mixed fission products, the original proposal was to apply OTIB-54, and from a ratio standpoint be able to figure out what the activity levels would be.

But the problem with that is that you have facilities at Los Alamos that were handling mixed fission products beyond the

reactors, and specifically we raised CMR, the chemical processing facility, and OTIB-54 wouldn't work. Clearly, the ratios would not be relevant for a non-reactor facility like CMR.

So we are away from mixed activation products and stack measurements, but talking more about you know, what would be an approach to doing dose estimation for mixed fission products at a facility like CMR, where OTIB-54 would not necessarily apply, and again, I think the response, referring back to 1a for mixed activation products, wouldn't be relevant.

MEMBER MUNN: Doesn't quite do it.

MR. FITZGERALD: Doesn't quite do it, yes.

MEMBER MUNN: I understand that. I was just trying to get clear in my mind why the data that we have, with or without OTIB-

54, calls to question whether or not it can be useful, because of the short-lived nature of what you are getting with this.

I guess I am trying to just square away in my mind where -

MR. FITZGERALD: I'm not so sure it's as much short-lived with the mixed fission products as it is just simply trying to figure out or trying to square the available data after '75 and whether there's a methodology to take that data and come up with a basis for bounding, you know, the dose estimations.

I -- you know, it may very well be feasible, but we are just pointing out that the OTIB that we do have for that purpose wouldn't work beyond the reactors at Los Alamos.

So I don't know, Greg, what's your sense on that?

DR. MACIEVIC: Well, I guess without actually seeing data from -- basically you've got the three facilities: the reactor; non-reactor; and then the LAMPF accelerator and then looking to see what you have got in each, we know that we are going to wipe out the -- we are not going to use the cesium for the accelerator facility so you have got the two options of reactor/non-reactor using -- look at the values from the CMR and see how close they are to, or can you use what you have for the reactor facilities for the CMR or not?

And if not, look at the -- how you would interpret that data, because do you have data to show -- the thing is, is what -- you know you have a question on it, but without having enough data to back it up, I would say yes, we have to go back, take a look specifically at the data coming from the CMR

to say that we can or can't use OTIB-54.

MR. FITZGERALD: Well, okay, I felt before you gave me the answer. I think, you know, if you look at it, mixed activation products, mixed fission products, I think on the mixed activation products, I think there's a pathway there.

DR. MACIEVIC: No, that's what I am saying.

MR. FITZGERALD: But separate -- take LAMPF off.

DR. MACIEVIC: Exactly.

MR. FITZGERALD: Okay, and just talk about you know, mixed fission products, you got the reactors --

DR. MACIEVIC: That's right.

MR. FITZGERALD: You have a couple, several facilities that maybe handle fission products in terms of chemical management, waste management whatever.

OTIB-54 is based on ratios that would make sense for a reactor, but --

DR. MACIEVIC: But you are saying that's not useable necessarily for that?

MR. FITZGERALD: Well yes, just once you, you know, once you go into a chemical processing operation, those ratios -- and I think this was even written somewhere and I can't remember exactly where I saw it, maybe it was in OTIB-54 -- but once you go into a non-reactor operation where chemically you mix and do all kinds of things to the solutions, those ratios wouldn't necessarily apply. So really --

DR. MACIEVIC: And that's the point, not necessarily apply and we have to show --

MR. FITZGERALD: Yes, we are just down to those facilities where you know, there might be some question that the ratios in

OTIB-54 would no longer hold and you are going to, I guess, validate that first, and if it is clear that, you know, okay, those ratios are not going to be much you can rely on because of the nature of the --

DR. MACIEVIC: Then you come up with a model.

MR. FITZGERALD: Then you have to come up with an alternative model. Okay.

DR. MACIEVIC: Right. I understand.

MR. FITZGERALD: Okay.

DR. MACIEVIC: I just said it in a different language.

MR. FITZGERALD: All right, I just wanted to make sure I -- because I think really that's what it comes down to on that one.

DR. MACIEVIC: Right, yes. Exactly. And it's again a proof of the --

showing the data to verify one way or the other.

MR. FITZGERALD: Right.

MEMBER MUNN: Am I detecting a sense that we do not have an existing procedure relative to the chemical separation portions of what is done at LANL?

Don't we have other -- I am really grasping here because it seems to me that I have seen somewhere something about the type of activities that we are discussing, but I don't know what procedures -

DR. MACIEVIC: The TBDs -

MEMBER MUNN: It seems to me, I guess what I am trying to say I thought that existed somewhere. I just --

DR. MACIEVIC: The TBDs do discuss it, but I cannot recall right now to exactly what extent they go into the information. So I would have to look at that, and that could

also be

MEMBER MUNN: Well all right, I am beating a dead horse here. I was just trying to get my own thinking process in line.

DR. MACIEVIC: I think we have to -- if it is answerable, we have to look also back to the TBDs to see what is discussed there and look at that issue, and if that is not sufficient, then get information or develop a new model based on what we find.

MEMBER MUNN: Okay, identify what the significant players are, their aspect of what needs to be looked at. All right.

DR. MACIEVIC: But definitely a re-review of what we have to see if it discussed -- if we had actually talked about it.

MR. FITZGERALD: And just going back to the origin of this issue, you know, again the SEC, I think it's 0050 or whatever,

the one that brings us up to 1975 at Los Alamos, hinges on the ability to dose reconstruct against mixed activation and mixed fission products, and the question is, post-'75, is there sufficient data and an approach to use that data to come up with a dose estimation for the MAPs and MFPs, and I think, you know, again, these are sort of the central questions with respect to the threshold of 1975.

And of course the cesium-137 question we raised on mixed activation products, I think we beat that one on 1a, and this is sort of the twin in 1b which is OTIB-54, doesn't work beyond reactors, so, and that is what we are trying to resolve now.

CHAIRMAN GRIFFON: That's a good bottom line summary. So really it's back to the data is what you are saying, we have to look at the data from the various facilities

and determine whether or not -- it works or not.

MR. FITZGERALD: Well the data is there.

DR. MACIEVIC: Right, look at what we have got. Does it explain what you are asking. If it doesn't, then how are we going to explain it, basically.

CHAIRMAN GRIFFON: Okay, and then I finally got your document, thank you Ted, so 1c on the matrix referred to 1f anyway, so we are going to skip 1c.

And issue 1d talks about the episodic nature of exposures to activation products and fission products.

DR. MACIEVIC: Okay, we, for the issue, there are, let's see, page 7, 8 and 9 are the quarterly reports, and the SRDB numbers and also larger documents that were used in gathering information and it actually

goes on to page 10 as well and 11, and there are a number of documents that were used, and the periodic health physics summary reports, they include information on the number of health physics -- employee health physics checklist completed, reviews.

And in the last meeting we had also, I gave the examples of what is in those checklists, and referred it to people in NOCTS, claimants in NOCTS, reviews and updates regarding the procedure and implementation, airborne, effluent data, radiological occurrences, summary of the monitoring activities.

Page 12, radioactive source inventory, personnel for whom body counts were requested, urinalysis requested, the radiation surveys reformed, then there is a listing of procedures and go on to describe other activities for the LAMPF radiological safety

procedures and what was discussed in those documents.

And it goes on to, well let's see, I am not going to read the whole thing, it goes on for 14, 15, and down to 16, page 16.

Basically to show that there was the periodic reports from the LAMPF health physics group also include summary information on air sampling activities performed and that really this is all to show that there was a coherent system with processes being done, analysis being done, samples being taken covering this, internal monitoring, external monitoring, air monitoring running for the whole facility.

Bob, did you have anything you want to add to this particular item?

MR. BURNS: Well, I think you just summarized it, but the point was to show that there was a robust program in place, that they

had a good handle on their nuclide mix and the variability in their nuclide mix, it certainly wasn't static, and that they recognized that, you know, that there were procedures in place, it's just all the elements of a good radiation protection program you would want to see were in place during this time.

DR. MACIEVIC: Right. And these are documents also from the '70s and '80s so it's not like this is restricted to a later time period after into the '90s or something like that.

So this covers the entire period of where we are basically hardest hit, which is the '70s and early '80s, that the questions come up about the program being robust.

MR. MILES: Yes this is Chris Miles. Another key issue I think here is that out of this program, they did identify individuals requiring bioassay, and we did a

check I think somewhere later in here.

I think that's an important point to make, is that they did have a program to identify individuals that needed specific bioassay and they did indeed have those individuals you know, had the bioassays done on them, so you know, they didn't have OTIB-54 back then, but they did have a process in place to identify which nuclides they need to look for and who they need to send for whole body counts, for what specific nuclides and so forth, so.

MEMBER BEACH: And do you have the records of those bioassays, the actual data for the individuals?

MR. MILES: I believe we do, don't we Liz, are you listening here? The question is do we have those actual bioassay data for--

MS. BRACKETT: For specific people? I mean we have a database with in vivo

results. I'm not -

MR. MILES: Well, I think I have jumped ahead a little bit, but I will mention, I think there were like 50 --

DR. MACIEVIC: Yes, the next issue, 1e actually talks about the checklist information, Appendix B that I had before we had the number of NOCTS claimants where we showed here's what the checklist required for bioassay, and then we showed that -- and from their bioassay records, they actually left those samples.

And what we did in this next issue is to take -- because the question was you know, does that apply across the board, and what we did was randomly take 50 people from those checklists.

Now, we only had the checklists from 1977 and '78 that we had there, so we took 50 from that -- those sample, random

sample who were not claimants, looked their data up and the data is there, there are bioassay samples associated with the checklist saying they needed to leave bioassay samples.

So that basically answers that question, to say yes, they did use the checklist, the checklist was implemented, they did do bioassay sampling based on the checklist and other activities that went on from RWPs and things like that.

But you do have sampling in the period that they are saying they need to do the sampling. So that --

MR. MILES: And we do have those data?

DR. MACIEVIC: And those data is there, yes, and that is in, what do I have -- if you look at page 17, the update of Appendix B is in the Board's folder. The SEC 109 document 5211 Work Group meeting file and that

updated folder is in that. It's an Excel spreadsheet that I put in there that has that information in there so you can peruse that.

MR. FITZGERALD: I am a little confused about the answer, because I went back to the transcripts, but just to clarify, you know, where we were headed with that one.

I think it's a very -- it is sort of a step even before -- you actually went further I think to some extent. Sorry. I think it was a question of, you know, we were sort of diving into this discussion on MAPs, MFPs, exotics, and there was a sort of a question within the Work Group about the -- the potential exposure pathways. Basically, they had this episodic nature of exposures apparently to these various sort of other nuclides and the question was, can -- and it was addressed in a general way in the Site Profile and in the ER, but there wasn't a good

handle on, you know, where -- we are talking MAPs pretty much, short-lived and not a real big deal, I think we kind of covered this anyway on MAPs just at the table today.

MFPs, you know, you had a reactor maybe and then maybe the CMR, but for mixed fission products, you know, maybe there's only one or two bad actors that you have to focus on and the exposure pathway is pretty clear for what those might have been.

For neptunium, maybe exposure pathway was confined to a couple of campaigns in the 1980s or something. But there was a question at the table at the last meeting, you know, it's kind of hard to get your arms around all these dogs and cats as far as this episodic releases of these things, do they matter -- and I've heard Wanda say it too -- do they matter, which ones do matter in terms of an exposure pathway that would be

meaningful, just to kind of have that as a backdrop for this discussion so you know, you don't have this list of 85 you know, trace isotopes of which maybe a handful would be relevant for dose reconstruction, whereas in MFPs maybe you have a couple that are actually pretty significant and maybe for the rest of them, neptunium but it's only on an episodic campaign by campaign.

I think that was the sense because again on the ER and the Site Profile, it just really wasn't clear what those exposure pathways were, how meaningful they were and just to kind of focus the group.

And like I said, I went back, looked at the transcripts but I know there was a flow of discussion, that's what I got from the transcripts, that it was more of a question of what these potential -- which ones were from an exposure potential standpoint

particularly relevant for the Board to focus on, just being able to go through what is a laundry list of nuclides.

MEMBER BEACH: It's also where.

MR. FITZGERALD: Well, it was where, it was sort of the what, how much and where type of -- the usual questions.

DR. MACIEVIC: But I think that was, if I can recall six months ago without --

MR. FITZGERALD: That's why I had transcripts.

DR. MACIEVIC: When we were talking about the checklists and their capability of capturing things, that was I thought part of the reason why we went back to check the checklist, because we had looked and talked about just claimants that we -- because on those checklists, they do describe what kind of samples they are going to take and there are statements about mixed fission

products and other kinds of things in there that they are looking at.

So that is -- that was the point to go and say when they worked up checklists for a particular worker to do something, they always said they are going to be working with this type of material and then said whether or not they needed to do a bioassay or whatever types of activities they had to do, and ours was to go back and verify that they actually did it, it was to show that the program was complete, that they didn't just go and say hey, you work with that stuff but -- and then nothing happens.

CHAIRMAN GRIFFON: Not just a procedure that was never followed.

DR. MACIEVIC: That's right, yes, that they actually implemented it, you got results back that reflect something they did, and this 50 was to show that yes, they

actually looked at what the person was going to be involved in and said well, you are going to need to do this and this, and then by showing these results we are saying yes, they did do what they said they were going to do and it reflects back that the program was whole and now we are not saying obviously that every person had every bioassay for everything, but that in the bulk, in looking at these samples, they had a program, the program had a procedure, the procedure was carried out, the sampling was done and reflects back, and that's really what we were trying to reflect in here with that addition to the d, which does go to that question, what was the person exposed to and here they are saying yes.

MR. FITZGERALD: And it goes to the question but I think that question comes in, is it 1e, I think 1d, going back to the

transcripts, and again, it's five or six months, but going back to the transcripts, I think -- and we can obviously check the transcripts since they are already posted -- but I think the discussion on this particular topic was just simply to get a better potential exposure characterization for MAPs, MFPs and exotics, that those categories.

And then we went into the checklist, which resulted in another action, which was to do some comparisons which is, I think, 1e.

DR. MACIEVIC: Well, but we do then talk about, I think it's further on one of the questions is going to be about the discussions of the exotics and we start talking about where you located the areas that exotics were involved in.

MR. FITZGERALD: Oh, I'm just trying to clarify, that, you know, I was

confused on this too, and went back to the transcripts to try and figure out, you know, because I know your response was in a different direction and I think that clarified for me what the Work Group was discussing at the time and it then went to checklist.

And we can go back and validate that but I think at the time it was more of a question of trying to get a handle of these various components of this sort of proving and knowing that --

MEMBER MUNN: And what's really significant.

MR. FITZGERALD: Well what's significant -- and where -- it's information, sort of backdrop information that you would typically get in a TBD, but I think the Site Profile was a little bit more general and it was kind of hard to know that information, or get some handle on it.

I mean I think just in the discussions we have had, I think we are beginning to map that out, but I think the -

DR. MACIEVIC: But the Work Group --

MR. FITZGERALD: I want to use the word road map.

DR. MACIEVIC: issue is NIOSH do analysis, linking the checklist -- but whatever was said, the actual summary that we came up with was -- and these aren't my words -- they are NIOSH do analysis linking checklist information as in Appendix B to the LANL dosimetry data to determine to what extent the data that is available to NIOSH will post to the access database with LANL in vivo and in vitro data on the O: drive and is what we did. We got that posted. We did go back to those checklists and do it.

And now I agree that maybe we

should make --

(Simultaneous speaking.)

DR. MACIEVIC: That that was for 1e and I think we need to --

CHAIRMAN GRIFFON: But d is on -- d, which is --

DR. MACIEVIC: Oh, you get, well yes, we -- because that flowed -- the question flowed into from d into e.

MR. FITZGERALD: Yes we don't have to, you know, sort of -- I mean if the Work Group wants to -- we, you know, this is -- if this is useful perspective, quite apart from trying to define or go back to the transcript and try to figure out what was actually said, this is useful information. The Work Group could make that request again, I mean, it's --

DR. MACIEVIC: Sure.

MR. FITZGERALD: Again, I think it's more of an extension of the TBD to give

it a little bit more granularity on this whole area, then they all use MFPs and you know, what's important?

Well, I think it's easy, talking in these -- looking at these isotopes and everything, you can sort of lose sight of, you know, in the end, some exposure potential, you know, what are worried about and can we kind of have that as a backdrop before we got into, you know, diving in on MFPs for example at CMR and I am worried about two or three particular nuclides, then that would make it a little easier to look at the issue.

DR. NETON: I'm not sure that's possible, though, I mean that's the problem at Los Alamos, isn't it, that there is sort of a periodic table of potential exposure.

MR. FITZGERALD: I think that is why we raised it.

DR. NETON: Well, right, exactly,

and that's why this response I think speaks to the fact that they had a fairly robust monitoring program where they identified the hazards on a case by case basis, and at least if they followed all these procedures that are listed here, these people were pretty well monitored.

And then, so do we have -- the question then, is did they do the monitoring if they, you know, did they identify the hazards properly, were people properly monitored, and do we have the data?

And if you can show that, then I don't know if this sort of bending and saying well there's only two or three little areas that are important is really going to work here, because you are always going to have that question in the back of your mind, well there was some special experiment with osmium whatever, or I'm not sure that --

MR. FITZGERALD: Well, I'll defer to Work Group because again I think, for the transcripts, that's where the question originally came from in 1d, but you know, if that's fine then we can let it go.

CHAIRMAN GRIFFON: Well I think when I wrote, looking at the way I wrote that summary, episodic nature is also in there.

The episodic nature of the exposure, I think what I was getting at was sort of what Jim was saying, that you know that there's not routine monitoring for all these nuclides over time, so we wanted to know, did they establish something to catch the significant ones at the time, and did they follow up on it on, right?

DR. NETON: And I think if you look through all the laundry list of procedures and reports and stuff it looks like they did.

DR. MACIEVIC: And they by going with the Appendix B, with the bioassay followup, that just adds on that for them, to cover the program the way you are saying in that if you have some episodic nature, they went in with a checklist to describe what this worker is going to be working with, and the types of facilities, and that would be one of the key documents to say what do you need to do, and if you have that procedure, you have bioassay to back that procedure up, to say they were doing it, I think it is. I think it completes a loop.

And we do talk about -- I mean, further on, we start getting into the actinium, curium, protactinium and all that, there's further discussion about these exotics and that in further questions here.

And it's not all in one piece that you know, is answered by that one question. By

looking through several of these, you will see that many of these radionuclides that you are talking about were -- at least they were under consideration, knew they existed, documentation talks about well, we'll get onto that in a couple of, one or two down I think we will get into issue 2, and there's a discussion about the exotics and how that was handled in each different facility, and which goes to that point too, where were these things, what kind of nature -- would you take that information knowing where the activity was occurring, and then have people involved with checklists to carry out the procedure to the workplace. That starts to show that there is a robust program, to me at least.

CHAIRMAN GRIFFON: I guess the other question for me would be, you know, if, as Jim was describing, if you have that kind of system in place, then you come up with a,

you know, you have -- for certain individuals you may have bioassay for certain nuclides, but then do you extend that, do you say okay, I have other workers in that same area, same time period, they don't have bioassay for that nuclide, do I apply some sort of coworker model for that exposure or do I assume it was all task based kind of a, you know, that -- I guess that's a question for --

DR. MACIEVIC: Well, here that was one of the things we wanted to take a look at by going to the facility, and then I picked several of the workers out from these checklists that I was going to go specifically through what their activities, if I can find what the activities were, to link them to particular sites and different activities, so that now you would be able to say not only bioassay, but if you have got service personnel, pipe fitters and all that as well

as the scientists and other people, how, to try to see how were the individuals treated and are they all covered in the checklist as well?

And that would have been something you've got to go to the actual work site to try to dig deeper into their personnel records and to put them in places that match what is on these sheets, and at that point that is where the hole is that sits, because it would be nice to have -- that would have solidified it even further, to say I know these five different Work Groups that go from the people that are being discussed in the SEC to the people who are you know, the support services versus the chem operators and all the others, and see how they were all treated in a particular situation, so that you can see they all are covered or not.

MEMBER BEACH: So you are saying

you didn't close that loop and it was back to the funding, that funding issue?

DR. MACIEVIC: That part didn't -- yes, that's right, that's --

MEMBER BEACH: Because that's part of data adequacy we always have SC&A followup on and we haven't done that yet either, have we, in this case?

MR. FITZGERALD: Not, probably because they haven't got the data.

MEMBER BEACH: You haven't got the data, so that's just something that is still hanging that we --

DR. MACIEVIC: That is a hole that has to be patched, yes.

MEMBER BEACH: Because all the procedures in place, I mean, I work in a nuclear facility and we have lots of procedure, but that doesn't always mean it's done.

DR. MACIEVIC: Exactly.

MEMBER BEACH: You need the proof.

DR. MACIEVIC: Exactly.

CHAIRMAN GRIFFON: And I haven't looked that closely at these, you know, you gave a lot of documents, I'm not sure SC&A has time to go through all of this.

MR. FITZGERALD: No, I mean -

CHAIRMAN GRIFFON: The next step -

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DR. MACIEVIC: Right and it would be nice to be able to -- and the next is to place the end of the types of the Work Groups with their data back to the procedure and show that the whole thing fits together and it was all covered.

CHAIRMAN GRIFFON: Yes, and I'm not sure how things were done at LANL but I know in some circumstances like this, you might have a job where a health physicist

makes the decision to bioassay two people out of the eight that were doing -- you know, assuming they were the worst case, you know, and then the question becomes, well what do you do with these other six if they are claimants, you know, do you -- yes, so that's the question you have to follow up on, right?

DR. MACIEVIC: Exactly, because that would -- I think that would get to answer several of these questions.

CHAIRMAN GRIFFON: Well, I think the next action might be for SC&A to look at what you have provided on this to see if they think at least from the one standpoint that it's -- you know, is there sufficient data there to demonstrate that they indeed, that they identified the most significant exposures of interest in this time period and had a monitoring program in place, and in e, that it was carried through in the sampling right, I

guess is the two parts of that.

MR. FITZGERALD: I guess going back to Josie's question, it's whether you actually have the data or not yet, I mean it sounds like we have progress reports, we have the in vitro, in vivo but --

MR. MILES: Well I think for those 50 individuals, don't we have the data?

DR. MACIEVIC: Yes, 50 individuals, that's actually their bioassay. That comes from randomly picked 50 from a couple of years I guess, '77, '78, and for those 50 years that followed through -- or 50 individuals, there are bioassay data.

MR. FITZGERALD: Yes but I guess tracking down to that --

MR. MILES: So the data does exist but I think it seems like, to me the question is was their whole program effective in that it identified all the individuals that really

should have had bioassay for --

MR. FITZGERALD: MAPs, MFPs, exotics.

MR. MILES: Right.

MR. FITZGERALD: You know, my concern on this of course is that -- I scanned the checklist and this is getting into 1e to some extent, but clearly if the checklist points to plutonium at Los Alamos, you'd get bioassay.

So if I see 50 checklisted items for plutonium, I would expect to find 50 for 50 in terms of bioassay. Now, if a portion of those actually were driven by exotics, that would help answer the question that we are trying to answer on this whole arena of exotics.

You know, validating -- I don't think we have been debating plutonium, you know, validating that doesn't do much for us.

MR. MILES: No, but we've got a table here that lists the number of LAMPF individuals that were identified and all the various radionuclides that were assayed for, so I mean they -- whether those individuals were put on a checklist, maybe we don't know that, but --

MR. FITZGERALD: But do you see why I'm going at it? In terms of the validation I think that you are asking for, what we would need to establish is the linkage between the checklist for this body of nuclides that we are talking about --

DR. MACIEVIC: Yes, exactly.

CHAIRMAN GRIFFON: Well, that does get into e a little bit, right you are getting -- but I guess the point is maybe a truly random sample might not be the way to go. You might want a more biased sample --

DR. MACIEVIC: Exactly, you'd have

to go to --

CHAIRMAN GRIFFON: You'd focus on the exotics and the others --

DR. MACIEVIC: Those exotics and look at people who are working with specific things that you want to see go to it, but also if part of the thing is is our checklists are from '77/'78, so you are with the people that were only checklisted at that period, right?

We'd have to get other checklists, to search through those, to get the kind of information that you want to see, because this is just for the two-year period there that you have.

MEMBER PRESLEY: This is Bob Presley. Did they not have a random sampling program early on?

DR. MACIEVIC: I don't think it was random sampling. They had specific groups of people that they targeted and also health

physics --

MEMBER PRESLEY: Did they not have a random sampling program?

DR. NETON: By early on how early, in the '70s?

MEMBER PRESLEY: In the '70s?

DR. NETON: I wouldn't say that based on the procedure list that I look through here. They are pretty specific. RWP-driven. You could have both. Well maybe you had both. I don't see any evidence in those procedure lists of a random --

DR. MACIEVIC: No, they usually -- the discussion such as handling procedures in laying off who gets bioassays specifically targeted to how they want to go, it's not -- they don't just pull here and there and say well, let's do some of the guards to make sure they are being covered.

MEMBER PRESLEY: Well I know they

did the specific. I would be really surprised if Los Alamos didn't have a random sampling program also.

DR. MACIEVIC: It's not stated in any place obvious that we have seen so far, so they may have done it on you know, a periodic basis for their own purpose, but there's nothing, you know, stating this is how you will do a random program.

MS. ROBERTSON-DEMERS: This is Kathy DeMers. Are we moving on to 1e?

CHAIRMAN GRIFFON: Yes, we are kind of just mixing it's 1d and e, yes.

MS. ROBERTSON-DEMERS: I have a couple of questions on these checklists.

CHAIRMAN GRIFFON: Sure.

MS. ROBERTSON-DEMERS: Okay, first of all NIOSH, you have created Appendix B, and it seems to me like it is broken down into four subsets in the spreadsheet.

One is the personal identifier. The second is the bioassay schedule, and if I look at a particular spreadsheet or a particular checklist, there's a box which talks about initial urinalysis kit issued and routine kits to be issued.

Is that what you are calling the bioassay schedule?

MEMBER PRESLEY: Yes.

MS. ROBERTSON-DEMERS: Okay, then you have something called isotopic exposures, then there's a box on the checklist that is called radioactive materials to be handled or sources of radiation exposure.

Is that what you are calling isotopic exposure?

DR. MACIEVIC: I don't have a copy of my table right here, but what -- the files that are in there, are not everything that are on a checklist.

Those groups that are picked out are the radionuclides on the left of the chart that would say these are the things that would be required based on the checklist, and then on the far right are the bioassays to whether a sample was given or not for that particular request.

MS. ROBERTSON-DEMERS: And the bioassay samples 77 through 78, that is coming from the in vivo database?

DR. MACIEVIC: That --

MS. ROBERTSON-DEMERS: Or in vitro database, I'm sorry?

DR. MACIEVIC: Yes, that's coming from the in vitro database, and -- well, the -- well yes they are all in the in vitro database but the original report from last meeting was taken from the NOCTS database, because those were only claimants on the first one, the Appendix B of the last meeting for

November 3rd.

So that data, we looked in the NOCTS database for the claimants who were on the checklist and looked to see the bioassay that they got based on what the checklist said they should have, and that was on the list.

And now this second one, are 50 random samples and those are taken from the in vitro database and matched up against these random people to say these are the samples they are supposed to get the right end, these are the samples that they got from the database.

MS. ROBERTSON-DEMERS: Okay, now I am going to switch to the actual employee health physics checklist for questions, okay? You have a section in there on personal data, which includes, there's the E number, your job title, your work location, okay, and other things.

You have another section which says basically did you receive previous exposure at a site other than LANL. And that is just a yes or no question.

You have another section which says radioactive material to be handled or sources of radiation exposure. That includes from the internal standpoint, uranium, plutonium, tritium, fission products, induced activity and others.

And then there's some external boxes okay? Then you have two boxes which are sitting side by side. The first box talks about whether you got a visitor film badge or that you require a permanent film badge, the film badge evaluation method, has something called N film to be reviewed, which I am assuming is neutron film to be read okay?

Whether you were issued a PNAD, whether you were issued finger rings. Towards

the bottom it says -- it has an area for chest count and whole body count and then of course, respirator fit and HP indoctrination.

Now from the internal standpoint, what piques my interest is of course the chest count and the whole body count. Okay, next to that box is another box which says should an initial urinalysis count be issued?

And then under that it says routine kits to be issued. It lists the types, and the frequencies. Under type it's plutonium, uranium-235, uranium natural or 238, tritium, gamma spec., and other.

And then in some of these lists, it will give a frequency because if you are on a plutonium bioassay, it might give one year.

Many, many, many of these checklists are filled out with NR, which is not required in that box, okay? My concern is that I am seeing radionuclides to be handled

marked but no requirement for bioassay on this checklist.

The other thing I'm seeing is that they mark neutrons, yet they indicate that the N film does not have to be read. It seems to me that a lot of these checklists are incomplete, too and that it is highly dependent upon who is filling them out.

So this is not giving me a good feeling that we can rely on these checklists.

DR. MACIEVIC: The data -- what we were looking for on there, and the data that was put in, is in regarding to the in vitro data associated with the sampling for the different people.

There are several activities on there which were put in to show these are the titles that are on the board but we did not enter all data for every particular activity because our specific thing was here for the

bioassay requirements.

So what I would have to do is go back to the checklists and have -- because the person that was doing the form, there's lots and lots of data to cull out of this -- the databases.

So we were specifically targeting to look at the bioassay, so if you are not seeing something that's on there or it's not recorded, you also have to look -- see this is where you would then have to go back and find out whether or not a bioassay would be required for the type of work they were doing with that radionuclide, because not every radionuclide is going to be a bioassay hazard.

So you are not -- to use the checklist for that, I would now have to go back and do modifications to the checklist to get you more, but the whole point was to be bioassay required was bioassay there, for that

particular year, particular person.

And all that other data in there is not -- not -- wasn't key to the question I was trying to answer.

CHAIRMAN GRIFFON: And it wasn't what you were tasked with by the Work Group anyway but it does, I mean, what Kathy is raising, may raise questions about the --

DR. MACIEVIC: And exactly.

CHAIRMAN GRIFFON: Program adequacy.

DR. MACIEVIC: Right.

CHAIRMAN GRIFFON: May raise questions.

DR. MACIEVIC: But the point was to show that these are all the questions that are on these bioassay checklists, what we were specifically looking at the bioassay data to see.

And you are going to of course,

you're going to see there's not a lot of things that are going to go to the exotics, because that's the whole reason we are in where we are, is because the exotics were not something that you are going to see a lot of activity where there was a large bioassay program to cover all these different things, that they did have them periodically but taking 50 random samples is not going to show you -- as we said, we are going to have to do, instead of a random test, you have got to go back specifically to particular things based on Work Groups that we get data from where these people were and see how the bioassay goes with the checklist, to how they left the samples and how an exotic was handled from a checklist for a worker working in a particular area, and that is that piece that has to be filled in more.

MS. ROBERTSON-DEMERS: I think it

would be helpful for, in Appendix B, if you told us you know there's four major areas in that spreadsheet. If you told us exactly where from the checklist you are pulling that data, and in the case of the bioassay sample, you know, where you are pulling that data.

But in addition to that, on the checklist there's chest counts and whole body counts and it would also be helpful to add those two items to your Appendix B.

CHAIRMAN GRIFFON: In other words if it's a chest count and body count required, then follow up on that to see that it was done, is that what you are saying?

MS. ROBERTSON-DEMERS: Right.

DR. MACIEVIC: You got to remember though, when you are looking at this -- those titles, are everything possible that could be requested, if there's -- where we would put that is if there's an x on their whole body

count to have, but not just because you know it was on the checklist. So yes, I agree.

MR. FITZGERALD: Yes, I guess what troubles me still, you know, going back to the origin of this issue, there is little data, bioassay data. We do have some data points coming out of the in vivo program but it's not clear that there's enough of that data.

And I think what you were suggesting as I recall from the very beginning, was let's see is there was a mechanism for the checklist that would indicate that the program was conscious of these so-called mixed activation, mixed fission products and exotics, and would be in fact demonstrably calling for a bioassay.

But it still doesn't get to the issue of how adequate is the data, do we have the data, and can you use the data? I mean this is sort of a surrogate saying the program

was up and running, because there was some question, you know, even though there was in vivo technology in '70, was the program up and running, did you find procedures that actually were driving bioassays for these elements?

And when I look at the random sampling, the first question I have is I'm not sure what that is going to answer, because what you are really looking at is were they demonstrably trying to bioassay against these nuclides or not, upstream.

Now downstream, we still have questions and I think what we are trying to do is go upstream and see if they were actually looking for and requesting bioassays.

But that still doesn't obviate the issue that I think we still have some questions as to whether or not we see a difference in the data post '75 for these isotopes, which were the reason for the SEC

being given pre-'75.

So we are trying to figure out what changed and you know, we get sort of tangled into the checklist, I am a little concerned that we are losing sight of the original issue, which is you know, is the data adequate, can you use it?

DR. MACIEVIC: Well, the checklists to me are a key thing to going with this, but the checklist is what the person is using and the health physics person is supposed to be using to analyze what a job is, and what kind of activities they are going to be working under.

MR. FITZGERALD: Who is the person?

DR. MACIEVIC: Well, the health physics, the technicians and other people, though either the supervisors or -

MR. FITZGERALD: Because I'm

concerned about that too, I mean if we are talking about health physics checklists filled out by rad tech or HPs that's one issue.

But if this is a checklist for programmatic people, then I could see some, you know, they are not going to be familiar enough, perhaps, to be able to fill that out.

I am just trying to figure out how much weight, and this is part of the question I think we have been grappling with, how much weight to give the checklist, that are reliable enough as a surrogate in a way, a program surrogate, for the bioassay that you feel like the program was there or not.

DR. MACIEVIC: Well, it's going to have to be somebody intimately familiar with the job, because you are not going to give some high-level person who has never been in the facility -- these are associated with the health physics organization, and as you see in

the quarterly report, they talk about the number of health physics checklists that have been given out by health physics.

So this would be the health physics technician level, someone in the job associated with it, and I think we actually have that in here, one of the comments further on in one of the answers to this question where there is a specific procedural training on health physics checklists and then implementing those things in the field.

So it's not a high-level thing, because yes, I would agree, if it's a -- you know, someone who is in charge of the facility, writing the procedure for it, having worked at Fernald, I know how that can work because the higher levels can sometimes think that there are no hazards in the workplace.

But you are talking a lower level of activity here with the health physics

technicians in the field as to a person coming in, what they are going to be assigned.

MR. FITZGERALD: Okay, but I want to make sure, though, that we don't lose perspective of what is driving the issue. What is driving the issue is a question on the adequacy and completeness of the records for MFPs, MAPs, exotics, post-'75, that period right after '75, you know, supposedly new technology, the in vivo counters are up and running, supposedly it's being implemented in the radiation protection program and the rigorous ways that we are identifying these and they are being bioassayed.

However, I think there's some question about that, which is the reason we are here, and the checklist has been raised as an upstream means and a rad protection program that suggests that the program was up and running when these things were being

identified.

I think, when we get into checklists, it's going to come down to questions of reliability: were they in fact being used in a way that would give you in fact a confidence that the program was driving these bioassays, and certainly the second thing in my mind is just scanning checklist data; the information so far, it's pretty clear that plutonium was a driver, that's no surprise. But I think we are going to have to, you know, in addition to looking at the random, I think you kind of agree that we are going to have to look at whether or not in fact the exotics and what have you were drivers -- beyond the reliability, whether they were drivers that get you to bioassay --

DR. MACIEVIC: But remember what we also said about what we were deploying to -- what we are saying why this SEC is that yes,

plutonium is a driver and we are showing that by the monitoring of plutonium and the activities involved with alpha activity and working with that, that that is also going to be sufficient to -- that other radionuclides would be swept up into the net by the fact that they are doing the monitoring for the plutonium and have a rigorous program there.

MR. FITZGERALD: That would answer a question as to whether or not the plutonium bioassays were sweeping up the exotics. It wouldn't answer the question whether or not the exotics on their own were being driven by the checklist.

In other words, you know, I would like to see a checklist at LAMPF that says you know, these people need to go over and have the whole body counting done for these kinds of activities at LAMPF.

Maybe the guy was doing target

changeouts or something, or maintenance on the target, you know, they need to get counted. In 1976, they needed to be sent over, and be counted.

That would give me assurance that the checklist in that program was driving bioassays for the nuclides of interest that we have.

If I get 50 for 50, you know, validation that the plutonium drivers were giving you bioassays, and oh, by the way, we are picking up a couple of counts over here for you know, whatever, I would say well, okay, that means, you know, they have the capability of seeing these other things. It doesn't tell me that they are actually looking for them.

So that's the concern I have, beyond the reliability, that they have questions that I think Kathy has raised as

well, is whether the checklist -- we are not talking RWPs, we are talking checklists, okay, so this is -- you know, I have, you know, I have some questions on that. But beyond that, I don't know if we really understand whether these are drivers or not, and in the end, we are going to get down to you know, is the data sufficient or not and you know, the program reliability questions, the robustness of the program, is a useful backdrop for that question, but it doesn't supplant that issue that needs to be answered from the SEC.

DR. MACIEVIC: Well, and I think unfortunately, with LANL not giving us -- I think we could have put to rest several of these questions, had we been able to go in and get what I wanted to get.

If you start giving specific -- too specific tasks, that you could associate with the facility, with the task, with the

people, back to the checklist, and show it all working in there. Right now, there are three out of the five that you have, and we are inferring that the other are there and we need to fill the hole completely --

MR. FITZGERALD: Okay, it sounds like we agree. All right.

DR. MACIEVIC: -- and I think that kind of thing would be, yes, we would have to show.

CHAIRMAN GRIFFON: Okay, that sounds like the action item. I think you summarized -- I rolled together d and e in that discussion and I just summarized the action, so --

DR. MACIEVIC: Have the transcript also attached to this so you don't --

MR. FITZGERALD: I was -- definitely had to go back and figure out where we came out on that one.

CHAIRMAN GRIFFON: I appreciate Joe going back to the transcript.

MR. FITZGERALD: It was six months ago, so --

MEMBER MUNN: And so Mark, for those of you who were not able to quite follow, did we get the right people putting together the right questions, and have we, or have we not opportunity to ever prove that the appropriate people were monitored, for the appropriate thing at the appropriate time?

Would you please review for us what your action item now is going to be out of that?

CHAIRMAN GRIFFON: Yes, I'm going to review that --

MEMBER MUNN: What can you prove?

CHAIRMAN GRIFFON: I'm going to review after we take a break, because I want to get on the spot with Joe and Greg and look

at my words and I will review it after we take a break.

MR. FITZGERALD: Well we only have two subsets from -

CHAIRMAN GRIFFON: I think where we stand is everything is going to the Procedures Subcommittee. No, just kidding.

MEMBER MUNN: I have a one-word answer for that.

(Laughter.)

CHAIRMAN GRIFFON: Let's take a -- let me offer a 10-minute break right now, and, Wanda, I'll come back and summarize the actions for those two, for d and e, because I want to make sure I go over it with these guys first before we go around in circles again.

MEMBER BEACH: And make sure we didn't lose anything out of these.

CHAIRMAN GRIFFON: All right, so take a 10-minute and we will come back to you,

Wanda.

MEMBER MUNN: Thank you.

(Whereupon, the above-entitled matter went off the record at 10:35 a.m. and resumed at 10:48 a.m.)

MR. KATZ: We're reconvening after a short break. This is the LANL Work Group.

CHAIRMAN GRIFFON: All right, Wanda, after some deliberation we did decide to send it to your Subcommittee.

MEMBER MUNN: You're in deep --

(Laughter.)

CHAIRMAN GRIFFON: Okay, just to summarize for d and e, the action items going forward, and they are a little wordy but we want it to be clear, so that when we look back at this in several months we'll know what we meant.

For item d, I have: SC&A will review materials that NIOSH compiled to

determine whether program in place was effective in identifying significant hazards in individuals who needed bioassay, parentheses, (for non-accelerator, non-reactor MAP, MFP, exotics.)

And then for item e, this is a longer one: NIOSH will do biased sampling of checklist, parentheses, (driven by exotics, MAP and MFP,) and determine whether individuals identified to receive bioassay samples actually had bioassay samples taken.

NIOSH will also determine whether all workers associated with these project-driven bioassay sampling efforts did receive bioassay, and if not, determine an approach for assigning the dose.

And NIOSH will also review the checklist to determine if workers were designated for bioassay, exotics, MAP, MFP, when a significant internal hazard existed,

parentheses, (based on location and hazard type identified in other cells in the checklist).

That was the -- the last part was the question that Kathy was getting at when you had a hazard checked off on the checklist but they ended up not bioassaying and was there a good reason for that, or was it, you know?

So I think that covers everything. Did you capture that, Wanda?

MEMBER MUNN: Not really, I followed it but I didn't capture it. If -- I am assuming we are going to have an addition to the matrix --

CHAIRMAN GRIFFON: Yes, I --

MEMBER MUNN: -- before very long anyway, so --

CHAIRMAN GRIFFON: I'll send it out right at the end of the meeting. I'll send

out an updated matrix so we have it.

MEMBER MUNN: That's great. All right. Thank you.

CHAIRMAN GRIFFON: Okay. All right, then I think we are ready to go on to item f. Yes, 1f. We are still on issue 1. That's all right. We always pick up our pace.

MR. FITZGERALD: That one was ours. This was the issue of the memorandum that we circulated in an earlier Work Group meeting that spoke to a Los Alamos area office audit that was done, I believe it was 2001.

And it raised questions about -- LANL in vivo program was found to be deficient in that it had not maintained its reference library for various LAMPF radionuclides as well as thorium-232.

And we had a discussion about, you know, the implications of that and whether that would be sort of a significant issue that

would inform this deliberation.

And I think the action was to go back and see if we could shed some light on exactly you know, what the basis for the audit finding had been, and what the kind of response to it there was, and in general, just was it significant, does it speak to the capability of the program itself to monitor for the exotics and what have you.

We checked back with -- this is always a wonderful process -- we checked back with the area office and the lab, and tracked down -- it turned out the author had left the site and could not be found and we did find the supervisor, who signed off on it, and I personally made two or three phone calls. None of them were returned, so I guess I would report that we could not find any first-hand accounts about what this was all about.

Now, we have not gone back to the

lab, who obviously would have to respond to the finding, to see, you know, if there's some information in the file.

This is fairly recent, so this is not like digging historic stuff, I mean, just going back and talking to the internal dosimetry program and finding out, you know, in their records, you know, what this meant, and shed some perspective on it.

So we haven't done that part of it, and we certainly could do that but that is going to require, you know, going back to the lab, and going through the same hoops that Greg has been talking about.

So I would just offer, that's where we came out on that action but to do any more, we would probably have to do research -- or not research really -- inquiry with the laboratory HP program on this.

I will leave it up to the Work

Group, if you want to pursue this memorandum and its implications or not.

DR. MACIEVIC: Why should you be exempt from being abused?

(Laughter.)

MEMBER MUNN: Have we determined what are and are not significant radionuclides already? And if we have done that, then why continue on this particular route?

MR. FITZGERALD: Well, this one was, I think, relevant because the area office was dinging the lab for not maintaining its reference library and, in particular, for the nuclides at LAMPF.

And the discussion we had about that was, you know, I think there was people at the table who said well, you know, not having your reference library up to date, not having this in your system for a facility, would not preclude you from seeing these

isotopes anyway.

But then there was this question, well, is this a -- was this a recurring issue and did this affect, you know, the readings that they would have done for facilities like LAMPF or not?

And this is sort of a basic question and I think it would have been settled pretty quickly if we could have talked to any of the principals on that audit.

But we couldn't locate them, and so I will just bring that back, that we had found on data capture this memorandum, this audit, this finding, and we can pursue it further or not. I mean, I think it's just a question for the Work Group.

CHAIRMAN GRIFFON: Did they have a time period in this thing?

MR. FITZGERALD: It was 2001 --

CHAIRMAN GRIFFON: 2001.

MR. FITZGERALD: -- that the audit was done and that the deficiency -- it was not just the LAMPF source terms, there was also thorium-232, so --

MEMBER MUNN: So essentially your, SC&A's, primary concern focuses around the thorium, right?

MR. FITZGERALD: No, actually as much the LAMPF, because obviously LAMPF was a big player in terms of your in vivo counting, so not to have the LAMPF source terms in your reference library sort of struck us as being unusual, to say the least.

And I guess the -- Wanda, the question kind of revolves around, you know, how significant is this, and would it have impaired the counting program at all?

And I think we probably can, you know, I mean, put this up, we could probably do a conference call with the internal

dosimetry program with some advance notice and just do it that way.

I just don't see extending the resources, going after this thing, unless we can do it in a very cost-effective way, and maybe that --

CHAIRMAN GRIFFON: I think that's the cure.

MEMBER MUNN: Nor do I.

CHAIRMAN GRIFFON: That's what I was going to ask next, was what's the extent?

MEMBER MUNN: If it's possible to do a conference call to resolve the basic question you have, then --

MR. FITZGERALD: Yes, and I would like to participate, and we just would find out. I mean, I just want to -- it's sort of a loose end and it's kind of bothersome to have an audit finding as late in the game as 2001 on something like that.

It may not even be significant after we discuss it with the internal dosimetry program at LANL.

CHAIRMAN GRIFFON: So SC&A and NIOSH will set up the conference call --

MR. FITZGERALD: Yes, we will take it --

CHAIRMAN GRIFFON: -- with the internal dosimetry group --

MR. FITZGERALD: We will take the action to run it through the DOE and make arrangements with the right people to be on the other end of the line and give them advance notice so that they can dig up what they did with the audit. We'll take that next step.

MEMBER MUNN: Sounds simple enough.

MR. FITZGERALD: It won't be.

(Laughter.)

MEMBER MUNN: It sounds simple enough. We all know what "sound" means.

CHAIRMAN GRIFFON: Sounds real simple, yes.

MR. FITZGERALD: That was like my making the phone calls.

MEMBER MUNN: Yes, choosing the right detergent, yes.

CHAIRMAN GRIFFON: Okay, item g.

MR. FITZGERALD: I think that was satisfied.

CHAIRMAN GRIFFON: Yes, that was closed. Yes.

MR. FITZGERALD: I think NIOSH went ahead and posted that information.

CHAIRMAN GRIFFON: And then we are on to issue number 2. Look at that.

MEMBER MUNN: Excellent.

CHAIRMAN GRIFFON: Progress. Okay, so 2, issue 2, number 1, this is focused on

the exotic --

MEMBER MUNN: -- by location.

CHAIRMAN GRIFFON: Yes. Right.

DR. MACIEVIC: Well, our basic response to this question is we went through and the different documents to show where these LANL -- the exotic items are mentioned, and different references to that, and there are also a narrative that discusses each one of these activities, the point being that if you look at the time periods that are involved, you have got '43 to '50, '46, '45 to '72, '45 to '72, 1952.

On page 19, '59 -- I am just taking these randomly through here. '52 to '68, '67 to '72, early '90s, '65 to '72, where you are discussing all these radionuclides that we are calling exotic.

But there is a specific -- there are specific programs and activities and

knowing that they were working with these particular materials in these particular areas.

So that is the point of that, and then the descriptions on the next pages, from pages, what do we have, 20 through twenty --

CHAIRMAN GRIFFON: And I guess the other takeaway from that table is that not many of them fall into this time period, right?

DR. MACIEVIC: Right. A lot of this work was done -- yes. Well, the descriptions talk about it and when they ended and things like that, so this is not -- this again backs up what we are trying to say is that these exotics exist but they are not existing in any kind of quantity that would have been requiring a full-time bioassay program or other sampling for it, that their monitoring efforts, there's a document that I

will -- in one of the other questions that I will refer to, where they were doing monitoring and the air monitoring limit for the plutonium and the curium are the same number.

So they were monitoring to the same level for both of those radionuclides, and it's a 1950-something document. When we get there, I will point it out.

But the fact that they were -- newly had the problem but their air monitoring is requiring the same air level in this, that they were monitoring -- basically, by keeping control of plutonium, you are also keeping control of the curium, if it is curium, I will have to look at the sheet when you get there.

But they are controlling to that particular number and these are not in the descriptions, which I am not going to go through for the sake of time, but these

descriptions all talk about when the programs were evolved, what they did in what buildings, different time values, so you can read through them when we go through neptunium, thorium and yes. It goes down through page 25, so pages 20 through 25 do the description of these different radionuclides they were calling exotic, and how they were handled, where they were handled and the people involved.

So this is a knowledge of them and, to me, that speaks to the program knowing where their problems were, and dealing with them.

MR. FITZGERALD: Okay, I guess we would like a little clarification, because I think there's some inconsistencies that we are trying to, I guess, understand and kind of harmonize.

If you go back to the Evaluation Report for the prior petition, which is

SEC-51, and that ER notes for thorium, actinium, curium, neptunium and protactinium --

CHAIRMAN GRIFFON: Protactinium.

MR. FITZGERALD: Yes, that's a tough one -- that and this is -- I'll use a quote because I want to make sure that I got it straight -- "there are numerous references in site documentation regarding the use of these radionuclides as well as the apparent absence or unsuccessful development of a bioassay program. These references began in the early 1950s and remained a concern through the early 1990s."

And beyond that, the Tiger Team report, '91, elaborates on a particular issue that they felt strongly about, the team did, in terms of thorium-232 and its decay products. This was in building SM-66, with workers that were unaware of radiological

hazards and with no bioassay being made available despite handling gram quantities of dispersible thorium oxide powders.

MR. MILES: Gram quantities?

MR. FITZGERALD: Of dispersible thorium oxide powders. That's right from the Tiger Team report. And that was in the '89 time frame, '89, '90 time frame that that was identified.

In addition to that, and I am just trying to get a handle on two things really. I think, from the table that you presented, what you just said, that from a time frame standpoint you see most of the exotics figuring in this pre-'75 time frame.

But I am seeing exceptions, certainly that observation, what was said in the previous ER, and also, we have done some data capture, some of this is classified for some of these other source terms, whether it's

neptunium or thorium or whatever, and they certainly fall in the '80s and '90s.

So from a time frame standpoint, I guess I am not clear how one can make the conclusion that it's pretty much weighted in that early days.

I think there's actually some evidence that it figured -- some of this figured in campaigns and processes in the '80s and '90s.

And in terms of facilities, obviously these occurred in different locations at Los Alamos as well. And there isn't any monitoring data for these particular sources and these operations.

So they may have known about the activity, but they certainly didn't bioassay for it. And that is, of course, I think that's the biggest concern we have at this point, that there were certain operations that

clearly took place, we have the time frames, we have the operations identified.

They didn't do bioassay, in fact they got dinged for it in a snapshot audit the Tiger Team did in '89, and you know that is kind of what I am trying to get to as far as this overarching question, you know, did they know where the source terms were, did any of them fall after '75 in a meaningful or significant way, and did they actually conduct bioassay?

And I think there's some real question on that, so I'm not quite clear, you know, where you'd come up with the bottom line on this thing.

I look at the table as well, that the dates, it's suggestive of this thing being pretty much a 1940s to early 1970s issue, but I think the four or five instances -- or even more actually -- that we have identified, fall

well into the '80s and '90s as well.

We do have CMR identified as early '90s, but most of these are not much beyond '72, so I think the table -- I have some questions whether the table is complete from a time frame standpoint as well as an operational facility standpoint.

MS. ROBERTSON-DEMERS: This is Kathy DeMers. I echo Joe's concern as far as completeness, and let me just give you one example. Can you guys hear me?

MR. FITZGERALD: Yes.

MS. ROBERTSON-DEMERS: Okay. You don't have polonium present at Los Alamos, you know, in 2007/2008, but you do have bioassay for it. So it -- you know, that kind of made me wonder, okay, are we missing some stuff in this table? Are we missing even polonium prior to '07?

You know, I know you have gone

through what you have. Is there -- are there other documents that need to be reviewed?

MR. FITZGERALD: Or even going back to the basis for the 050 Petition ER, which seems to indicate that it was recognized that the sources continued well into the '90s, is I think what was in there.

So it's a little bit of a --

CHAIRMAN GRIFFON: But this thing is a little vague too. It says -- it's talking about all exotics and then neptunium on their table does extend into the '90s.

MR. FITZGERALD: Well, I'm just trying to --

CHAIRMAN GRIFFON: Certainly. Right.

MR. FITZGERALD: I'm just trying to, you know, I think the sense from the table and the discussion is that this was mostly a pre-early '70s --

DR. MACIEVIC: Well, that is not -- was not the intent, to say that this is a pre-'75 activity, that they don't exist, and we know they do exist and there's documentation that talks about the activities with actinium later on, that talks about it.

And it's a function of how much you are talking about. These are many major campaigns that were defined in the documents using these types of materials, but we are not -- we're not inferring that these things disappear after 1975.

MR. FITZGERALD: Because I would say you had major campaigns after '75, you know, a proportion, but nonetheless there were some major sources, some of which I think would entail a classified review because again some of the campaigns I think are -- there's documentation but it's secure documentation.

MEMBER MUNN: Some of it was

picked up, with respect especially to thorium, some of it was picked up in a commentary in the written dialogue that follows, but I was a little surprised, Joe, to hear you say protactinium because I didn't see that.

MR. FITZGERALD: Well, that was -- again, I just sort of read from the previous Evaluation Report of Los Alamos, yes.

MEMBER MUNN: From the Tiger Team, yes.

CHAIRMAN GRIFFON: I was actually going to ask if there was any -- if we could at least come out of this, are there some that we could drop --

MR. FITZGERALD: Yes.

CHAIRMAN GRIFFON: -- because they were earlier campaigns, you know, and then maybe pursue the others as well.

MR. FITZGERALD: Yes.

CHAIRMAN GRIFFON: And I was going

to offer up as a first one polonium, but after Kathy's statement I am not sure that's the likely agenda --

MR. FITZGERALD: Yes, I was ready to do the same, and then I thought, well, okay, I guess that's a little bit of a question on that one, but that was an early weapons component.

CHAIRMAN GRIFFON: Right. I thought it would have lined up with the early, you know --

MR. FITZGERALD: So I guess there's an asterisk on polonium. I do have a listing if we want to go through that, would that be helpful?

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: All right. Except for Kathy's comment, I was ready to say polonium looked pretty good. So I guess I'll take that back.

So I guess we sort of had that question on polonium but, in general, it was an early weapons component, so I would have expected most of the exposure before '75.

Actinium-227, I am just going to go through the listing because this follows your table. Actinium-227, what I have is: NIOSH needs to clarify the basis of its conclusion that potential exposure was limited to TA-21 and TA-54 prior to '72, given statements in the SEC-00051 Evaluation Report.

And just trying to make sure that the information for actinium would limit it in terms of the operational sense before '72, and I guess the reason I hedge is because with CMR and some of the other facilities handling and chemical processing, I am not really sure you can make that statement without doing some more field capture of data, because Los Alamos is complicated and I think the resources that

the -- even though the operational phase may have been pre-'75, I think it was at the plant or at the lab still.

CHAIRMAN GRIFFON: So can you summarize that in a quick -- actinium-227 --

CHAIRMAN GRIFFON: I would say review as part of site, what would you call that, returning to the site for field data. I mean, if you are going to look at CMR I think you could also look at whether actinium, as an operational phase as well as a chemical processing phase, was over and done with by '75. I mean, I think that should be something that can be answered.

Because what confuses me is when I am going back to the basis for the ER up to '75, it seems to leave it kind of vague and open, as you were saying, Mark, and I don't have a warm and fuzzy that you can limit it to -- you cite TA-21 and TA-54 as being the

locations where actinium would have been handled, but I think it would have been broader in that task.

MEMBER BEACH: That was my next question is, do we agree with the areas in the buildings?

MR. FITZGERALD: Right, I just don't have a good feeling or basis for saying it was limited to that. Now, we haven't done data capture of CMR either but I would say as part of going back, that might be something to settle out pretty quick for that.

Is that enough for -- berkelium, I agree that it's more likely to be bench scale and not a plausible exposure potential, that's kind of what I wrote down.

If anyone has any other viewpoints, Kathy or anyone else, but that's kind of my take on berkelium.

MEMBER MUNN: Not likely that it

would be anything other than bench top, is it?

MR. FITZGERALD: No, that's kind of what my conclusion would be on that one.

MEMBER MUNN: Yes, Where are you going to get it?

MR. FITZGERALD: Yes, right. Californium-252, on that one in the table you could identify potential exposure hazard but you didn't really cite location or time periods. I wasn't sure if that was something you were going to fill in?

DR. MACIEVIC: Californium-252?

MR. FITZGERALD: Yes.

DR. MACIEVIC: A particular building as opposed to the area? I don't think we were able to find much about it.

MR. FITZGERALD: It just says unclear what it was used for, however procedures indicate it was a potential hazard. No details have been found. It was probably

processed in '48-1, this is on the narrative description.

What makes this kind of interesting, scanning the checklist, I saw one the few exotics that were cited was californium which I was actually surprised to see show up. Somebody thought it should be listed as a checklist item.

MEMBER MUNN: Well, it's pretty unusual.

MR. FITZGERALD: Yes, I wouldn't expect to see that on the checklist, but certainly in one instance that showed up.

MEMBER MUNN: Unless they were doing some kind of calibration with it or something.

(Simultaneous speaking.)

MR. MILES: -- neutron source.

MR. FITZGERALD: I don't know, it was just kind of odd, so I don't --

CHAIRMAN GRIFFON: So, Joe, you skipped curium and americium. Is there a reason?

MR. FITZGERALD: No, I must have had it out of order.

CHAIRMAN GRIFFON: Are you going--

MR. FITZGERALD: I must have had it in a different order, I'm sorry. I thought I had it in order but I don't.

CHAIRMAN GRIFFON: Okay. I am just looking back at the --

MR. FITZGERALD: You know, I was going through the narrative list, not the table list, that's why.

CHAIRMAN GRIFFON: Oh, okay.

MR. FITZGERALD: Curium comes after californium in the narrative.

CHAIRMAN GRIFFON: All right, go ahead, I am sorry. So for californium, what --

MR. FITZGERALD: No, I'm just

saying, I'm just going with what's -- what Greg and company have cited in the narrative, which is it looks like it was a hazard, but there's not really any information on it, and I am just adding that -- in looking at the checklist, it actually showed up, so who knows? Plus, like with Wanda, I am a little surprised that, you know, I'm not quite sure what the application would have been.

CHAIRMAN GRIFFON: Right.

MR. MILES: Well, they did a lot of neutron dosimetry research and that's a common source for neutrons.

CHAIRMAN GRIFFON: Yes, maybe.

MEMBER MUNN: Yes, that's why I said maybe.

MR. MILES: Maybe they were making sources or --

MEMBER MUNN: Yes. As a source term.

CHAIRMAN GRIFFON: So, I mean, is there a further follow-up on californium?

MR. FITZGERALD: Certainly, like I said, there's -- it's up to the Work Group, but I don't have anything more to add than what Greg has put in as a narrative, that it looks like it was a potential hazard, but there's not a clear idea of why and where.

MEMBER MUNN: Well, and no indication of it actually having been used, so that's --

MR. FITZGERALD: Well, it showed up on the checklist, so it was being used, but it's just not clear why and how. I'm not sure it's going to be that significant.

MEMBER MUNN: Yes, had to have been expensive.

CHAIRMAN GRIFFON: Okay. So are you into --

MR. FITZGERALD: Yes, curium, what

I -- I just wrote some notes down. NIOSH cites exposure pathways of significance only prior to 1972.

And I was trying to square that again with the SEC-00051 Evaluation Report, because again that was cited as amongst the group that might have been an issue up through the '90s.

What records exist for curium are incomplete in all cases. The only qualitative measurements are without actual dates and worker identities.

NIOSH's conclusion is: given that no information has been found to confirm use or handling of curium at LANL other than activities related to actinide chemistry or at the medical laboratory, and since the one-time release is noted as occurring prior to '67, the only source term of concern would be in the burial ground.

MEMBER MUNN: Less than one curie.

MR. FITZGERALD: I'm not sure about one curie.

MEMBER MUNN: Well, that's what it says in the table.

MS. ROBERTSON-DEMERS: Wanda, it says greater than one curie.

MEMBER MUNN: Oh, it does? Other radionuclides listed at greater than one.

CHAIRMAN GRIFFON: Greater than or equal to one curie.

MEMBER MUNN: Do I read that to mean that it is included in other nuclides listed at greater than one curie?

CHAIRMAN GRIFFON: Yes, I'm not sure --

MEMBER MUNN: That's all right. Neglect that question.

DR. MACIEVIC: That's referring to the other ones, that parenthesis, not to

curie.

MR. FITZGERALD: I guess this seems to fall in that category that there isn't a whole lot of information on how it was used at the lab. I guess I wouldn't be comfortable, and again this is just without any data capture of our own, concluding that the only curium issue post-'75 would be in the burial ground. I think, and the Work Group can look at this, but I would like to pin it down a little better as far as any handling of curium including CMR post-'75, because I don't think one can just consign it to the burial ground without a little bit more information on this.

MS. ROBERTSON-DEMERS: This is Kathy DeMers. I kind of want to insert something here. I can't say much about this, but there is another radionuclide of curium that was handled at LANL, I believe in the

'80s. Also, this project included americium and neptunium and I would highly recommend that NIOSH look at a document that is now at DOE headquarters called Alternative Nuclear Material, and that will give you some general, additional information.

MR. FITZGERALD: So this sort of goes to focusing on post-'75 for sources that were clearly at the lab, both on a classified data capture as well as a --

CHAIRMAN GRIFFON: All right. Go ahead down your list Joe.

MR. FITZGERALD: Americium, I would agree that the in vivo records exist and the coworker model could be constructed so I don't think americium is an issue.

And neptunium, I think NIOSH observes an exposure potential for neptunium can be found at LANL operations into the '90s, however, no new field data was found to

support dose reconstruction. You know, what's being proposed is again the substitute nuclide approach using plutonium.

I guess, you know, we went through the substitute nuclide issue at the last meeting, but beyond that question of applying a substitute, I think our biggest concern with the substitute was the -- whether or not one could normalize against the location, time periods and the workers that would be involved.

And what I would suggest on this one is similar to what Kathy was suggesting, is consult with Sam Glover on the source term issue at LANL that we can't discuss but I would do that.

And I would also look at some of the documentation in Germantown that deals with that activity. So --

CHAIRMAN GRIFFON: This is for

neptunium?

MR. FITZGERALD: For neptunium, yes, and leave it at that. But I think you know, there's some source term issues beyond '75 that I think ought to be addressed, that whether or not one can calibrate against the workers, the time frames, the facilities, that would even enable you to apply a substitute like plutonium. I think that would be the first thing that would be useful to do before we get into that discussion.

But I think for neptunium, there's an acknowledgment that the operations went into the '90s. I think now the question is, can you calibrate against exact operations and significance of those operations?

The next one is thorium and I would just start with the DOE audit finding on the thorium oxide exposure issue for those workers that were not bioassayed.

And this had been going on for some time, so that's, you know, I don't know what they did and whether they went retrospective. It certainly raises some questions about, you know, a missing dose for at least the workers involved in that particular operation, and I would think, given the specifics of the Tiger Team audit finding, that should be -- there should be a pretty good paper trail.

But I would start there for thorium as far as that issue. The other thing --

MR. MILES: But they did measure, there was a very low quantity, I mean --

MR. FITZGERALD: Yes, but I am just saying that --

MR. MILES: -- gram quantity if you are talking about tenths of --

MR. FITZGERALD: But I think the

question they were raising was the form of it and whether or not -- what the workers' exposure might have been and whether or not -- so my question is for thorium, if they weren't bioassaying in 1990 for that kind of a source term I'd be concerned about other operations.

Another operation that we found actually during data capture for Hanford, was Hanford was shipping large amounts of thorium scrap to Los Alamos, and I can give you the -- this was in the 1980s for evaluation.

And you need to look at the SRDB, and here's the number, 066599, and that's again a Hanford documentation, but --

CHAIRMAN GRIFFON: 0665 --

MR. FITZGERALD: 066599 and that speaks to this contaminated material that contained thorium. I think we just want to just pin down exactly how the lab handled thorium and if bioassay wasn't being done, at

least in one case that was audited, can we at least ascertain what the sources were post-'75 and whether similarly or unsimilarly, bioassay was being done and if there's any way to address that from a dose estimation standpoint.

My guess, in the instance we just talked about, I think they went back and probably assigned something. I'm not positive but -- and it may not have been very much, but in terms of the other thorium exposures, I would want to know, at least in this one SRDB, could they address that as well?

So that would be our take on thorium but I think there are some source terms that are clearly identified in the '80s and perhaps '90s, mostly the '80s and were those evaluated and addressed from a bioassay standpoint.

So overall, Mark, I think all we

were trying to do is just, in terms of completing this issue, as to whether the matrix, I think, that Greg and company started developing, you know, as far as whether it's reflecting --

CHAIRMAN GRIFFON: And how about -- you skipped over protactinium-231 I think, unless I missed that. I might have missed it.

MR. FITZGERALD: Did I skip that? Protactinium. Probably because it wasn't in the narrative, right?

CHAIRMAN GRIFFON: It was in the table, though, yes.

MR. FITZGERALD: It was in the table, though. What does NOS stand for?

CHAIRMAN GRIFFON: Not otherwise specified.

MR. FITZGERALD: Okay. Yes, I don't really have any views, I know protactinium was prominent, as was polonium in

the early days. But --

CHAIRMAN GRIFFON: Kathy, do you have any questions on protactinium? Was it just -- actually, in this table, you don't really specify time frames on it.

MR. FITZGERALD: There wasn't much data.

CHAIRMAN GRIFFON: Yes. So I don't know what we can conclude from this other than that it was low quantities, right?

MEMBER MUNN: Yes, low quantity, laboratory amount.

CHAIRMAN GRIFFON: Kathy?

MS. ROBERTSON-DEMERS: Nothing is jumping out. I'm thinking here.

CHAIRMAN GRIFFON: Okay.

MS. ROBERTSON-DEMERS: I don't think that this was a part of that document I'm talking about.

MR. FITZGERALD: Yes, I was just

going back to Mound and where protactinium figured there, and that seemed to be in the early days.

CHAIRMAN GRIFFON: And that's what I thought with polonium too, but --

MR. FITZGERALD: Yes, I know, and so you know, it's --

CHAIRMAN GRIFFON: I think the 2007 might have been a typo, too, or something like that, I don't know.

MS. ROBERTSON-DEMERS: Well, it was a typo and a lot of different --

CHAIRMAN GRIFFON: Really? Okay, all right. All right. Or well, it might have been something you know, related to burial ground work too or whatever, I don't know. Who knows?

MR. FITZGERALD: But maybe it could be put to bed just with the additional data capture anyway. I mean, some of this, the

source term information, if you're going to look at CMR I guess you could -- my sense is almost everything went through CMR at one point or another, so if you can establish when CMR was done with it, I think that pretty much is the end point, except for the burial grounds.

DR. MACIEVIC: Oh, Kathy, what was the date you said about the polonium?

CHAIRMAN GRIFFON: 2007, wasn't it?

DR. MACIEVIC: 2007.

MS. ROBERTSON-DEMERS: There are urinalysis samples in 2007/2008 in the database.

DR. NETON: Could have been legacy follow-ups on intakes that occurred years ago, I mean that's after --

MS. ROBERTSON-DEMERS: I don't know. It's got a pretty short half-life.

MR. MILES: What year was it that the guy was murdered with the --

CHAIRMAN GRIFFON: Oh yes.

MR. MILES: -- the polonium?

CHAIRMAN GRIFFON: Oh yes, when the --

MR. MILES: By the poison?

CHAIRMAN GRIFFON: That poisoned him, yes.

MR. KATZ: That was around then.

MR. MILES: Was that around then? That is something that -- about 2007.

MR. MILES: Just some follow-up on that or something.

CHAIRMAN GRIFFON: All right.

MEMBER MUNN: That was a long way away.

MR. KATZ: Yes, that was in London and well, and overseas. It was on a plane.

MEMBER MUNN: Yes.

CHAIRMAN GRIFFON: Okay. Well, I detailed all that in a subset for SC&A's concerns on that table, so -- there was a second part of that number one, let me just flip back up to the matrix.

Maybe this is in your narrative -- I was reading through the table mainly -- but we also asked about the type of monitoring data for each of those.

You know, you give us a table indicating the use and locations, how much -- to what extent do you know about monitoring or available data for --

Okay. In some cases it may be moot if it's like, you know, laboratory quantities or if it was not in use in this time period, you know, but all right. We will add that. We will carry that over.

MEMBER MUNN: It wouldn't be expected to be of high significance in terms

of dose.

MS. ROBERTSON-DEMERS: Mark, I might be able to shed some light on that.

CHAIRMAN GRIFFON: Okay.

MS. ROBERTSON-DEMERS: I went through the in vivo and the in vitro database that they had and I pulled out all the non-common radionuclides.

Curium-244 isn't listed in the in vivo database, at least for I guess some people; I don't know how many at this point. And if I remember correctly, the only quote-unquote "exotic" that I pulled out of the in vitro was that polonium-210.

CHAIRMAN GRIFFON: And I think that's why we were asking about other, you know, was there air sampling -- was there other monitoring data too, air, so --

MS. ROBERTSON-DEMERS: Now I know that in the -- also in the in vivo count,

there was americium-241, obviously.

CHAIRMAN GRIFFON: Right. Okay. We'll leave that as a carryover action, though. How about item 2 for issue 2?

DR. MACIEVIC: Okay, Don Stewart, are you on the line?

MR. STEWART: Yes, Greg, I am here.

DR. MACIEVIC: I thought so. I am going to -- well, I thought maybe since you developed the chart that you should go through this one, but the point on this is that we did a calculation for all the exotic radionuclides for an internal dose model to come up with what the doses would be for these different radionuclides using the coworker intake for plutonium and 238 and 239, to come up with these values and you will see through here that pretty much the Super S for plutonium-239 covers everything and there's also

actinium is a key player in it.

And Don, if you could just give a little quick overview of the table and what your -- the conclusion is on it.

MR. STEWART: Sure, Greg. This was kind of -- and it's several years old at this point. We were contemplating the use of the coworker dose, coworker plutonium intakes, to use the surrogate radionuclides for any potential exotics exposure.

So we wanted to look at the relative values of the doses that came from those. So we did a bunch of IMBA runs for a number of different organs, and the results you see in the table are relative doses.

What we usually found was that the Super S model resulted in the highest dose. Actinium resulted in some very high doses as well. Trying to -- just going beyond that, I think it's all summarized in the verbiage.

DR. MACIEVIC: Right, right.

MR. STEWART: Yes, this is really just an effort to see, okay, what is the big hitter as far as these exotics go, what is going to give me the largest dose, such that if I could simply say that any exotic exposure could be bounded by a single radionuclide, would it be possible to use that radionuclide? And this is an attempt to do that.

MR. FITZGERALD: Don, I have a question on the table. There's a couple of places, if I am applying this right, where it doesn't seem like either Pu-238 or curium or Pu-239 for everything else is necessarily bounding. I was wondering if I was just not reading this right.

If you go from Pu-239 M solubility for the lung, it's .063, and if you go to actinium, it's, as you were pointing out, actinium is pretty high, it's .194.

As I recall, you were going to use the intakes for Pu-239 as bounding for everything but curium. Is this an exception? I just -- I am trying to figure out. Would you apply Super S instead of the M? I am just going M to M, for example, for Pu-239 actinium-227. It looks like it's higher. I just don't know if I am reading it right.

MR. STEWART: What's the organ again, the lung?

MR. FITZGERALD: Yes, the lung but you could also choose the other organs. They all seem to be higher than the Pu-239 M.

MR. STEWART: Right. Well, in fact, in that case the highest dose on that line for the lung is Pu-239 type Super S, right?

MR. FITZGERALD: Oh, I know, I'm just trying to figure out how to use the table. So you are saying if, you know, you

don't use the solubility class, you just use Super S on plutonium as the bounding value?

MR. STEWART: We don't base our assumptions for absorption type necessarily on data from the TBD. When we are doing dose reconstructions, we use the most claimant-favorable assumption, and it's been a feature of our program for some time now.

MR. FITZGERALD: Okay, so you are saying you would basically choose the higher value irregardless of the solubility class?

MR. STEWART: That is correct, unless we have very solid data to justify another choice, and typically that is not the case, as you know.

MR. FITZGERALD: Right, so in this case if you are using Pu-239 as the primary for actinium you would go with perhaps 20.2, which would be S class, as the bounding?

MR. STEWART: Well, again, we have

to make the most claimant-favorable assumption, which in this case would be Super S.

MR. FITZGERALD: Okay, the most -- the most claimant-favorable. Okay.

MR. STEWART: Correct, and it's been a feature of our program for some time now.

MR. FITZGERALD: But if you didn't -- excuse me, bear with me for a second -- if you didn't know what your -- you didn't have any data for your actinium or some of these exotics, and you are using Pu as a primary, how would you know what would be the most claimant-favorable solubility class that you have listed, because there wouldn't be any comparison point?

MR. STEWART: How would you know which was the most claimant-favorable on a given claim?

MR. FITZGERALD: Well, I'm just saying you know, I am just trying to understand this table, because clearly you could pick the more claimant-favorable Pu-239 class because you have the values for these exotics, but I guess the -- if I am not mistaken, the whole approach is based on using the primary because you don't have the values for the exotics.

DR. MACIEVIC: Well, what you're trying to is you are going to take the intakes from plutonium --

MR. FITZGERALD: Right.

DR. MACIEVIC: -- stick them all into all these different radionuclides and see which give you the most claimant-favorable. So you --

MR. STEWART: That's correct, Joe. What's happening here is in each -- I should explain this. The assumption here was that we

took that coworker dose intake for plutonium and we assumed that the intake of each of the other radionuclides at that same level.

And this is the dose for that organ under those assumptions. Now, when you run an individual case, you may find that, unexpectedly, some other absorption type will result in a higher dose.

But you know for these cases here, the highest dose -- I'm sorry, in the example you cited the highest dose was plutonium Super S, assuming an equal intake of all the others, and that's for that organ only.

MEMBER MUNN: And if I'm following the asterisk correctly, if for example you were dealing with the kidney, you would in that case, in the individual case, actually run the calculation of the Super S dose to see what it gave you.

MR. STEWART: Yes, we would, I

didn't run all of these out for the Super S.

MEMBER MUNN: Yes. That's understandable. There's no reason for you to do; I just wanted to make sure I was understanding.

MR. STEWART: Right, yes in a given case we don't -- we won't just assume oh wow, Super S is probably limiting in this case so we are just going to use it.

MEMBER MUNN: Right.

MR. STEWART: It's a matter of several IMBA runs in the case before we send it.

DR. MACIEVIC: This is also for unmonitored workers, so that you are applying this when you have no other data to work with.

MEMBER LOCKEY: If you have equal intake, is there always -- plutonium-238 Super S is always, would always be the highest value?

CHAIRMAN GRIFFON: There's some exceptions. Actinium seems to be the main exception.

DR. NETON: But the whole idea was that if they controlled their intakes of the other exotic nuclides with the same radiation protection program, but the plutonium then -- the 50th percentile intake for plutonium, the actual intake of radioactive material would bound the intakes of all these other exotics. That was the concept that was outlined in the ER.

Now, that assumes that the conditions under which the workers were exposed were similar.

CHAIRMAN GRIFFON: Well I think, hearing this silence, I think, Joe, you might want a little more time to spend with this response.

MR. FITZGERALD: Well I think I

understand better what was done.

CHAIRMAN GRIFFON: Yes.

MR. FITZGERALD: But, yes, I think the original request was to, as a proof of principle, to show how you would actually bound doses to the various exotics and I think that's what this table does.

I don't think we have ever seen this before, so I think it's helpful to have the table.

DR. MACIEVIC: Well, the table -- this was -- this information, if I am not mistaken, Don, was in the -- we did sample dose reconstructions and I think this information was with that. Was it, Don, or no?

MR. STEWART: I think it was in a former response to an SEC petition. Dan, maybe you can fill me in there. My memory is a little foggy on the substance.

CHAIRMAN GRIFFON: I mean the

original -- at the last meeting we said that you would go through claimant files with data for exotics to determine if this would be bounding, so you might have some examples --

DR. MACIEVIC: Well I think what it is, is yes, this is a full table. What we did was a specific DR and used this method to show that here's your bounding dose based on the intakes. It wasn't this table, so that's right.

CHAIRMAN GRIFFON: Why don't I say that SC&A will review this table and provided examples and then if they can't find them --

MR. FITZGERALD: Well, you know, I think the methodology has been one that NIOSH has used a lot, going to different sites and everything. I think the issue we are grappling with is sort of this normalization with what Jim was talking about, whether you can make the assumption that the actual program, health

physics program, the handling, glove-boxing perhaps of these materials, that all of that was consistent so you would have a basis for applying it.

I think that was the part that we were questioning. Can you make that broad assumption for all these particular exotics? And going back to what was in the ER and the first meeting, we got a rather extensive literature survey which pointed to some reports that suggested that, you know, for example, I guess neptunium was handled in a glove box, so was plutonium, and so I think that's where we left the issue, that it was kind of -- I guess it was very subjective but you know, can the Work Group accept that as a basis for saying yes, okay, you can do these substitute nuclides because the handling was that much similar for everything.

MS. ROBERTSON-DEMERS: This is

Kathy DeMers. I need to ask another question on this table, and that's under the systemic organs. If you have cancer to the bone, how are you going to assign a missed dose?

MR. STEWART: You wouldn't assign a missed dose on an unmonitored worker.

DR. NETON: No, right. If he was unmonitored and we believe he should have been monitored then he would, more than likely, get the 50^{th} percentile of the plutonium intake.

MS. ROBERTSON-DEMERS: But the plutonium intake in this case will underestimate if he was exposed to actinium.

CHAIRMAN GRIFFON: This is the actinium exception, right, that it's not bounding?

MS. ROBERTSON-DEMERS: There's a couple of them.

CHAIRMAN GRIFFON: Yes.

MS. ROBERTSON-DEMERS: I'm just

trying to --

MR. STEWART: My thinking and my hope in this was that at some point we could declare a literature search successful by saying actinium was unlikely to be a significant hazard in the post-'75 period.

So by being an exception, I was hoping that we could consider the plutonium bounding after '75.

MS. ROBERTSON-DEMERS: Okay, so what you are assuming is that anyone who worked with actinium-227 after '75 would have been monitored?

MR. STEWART: I have not yet found circumstances where people would have been exposed to actinium in the post-'75 period, except for the incident when the process of decommissioning the filter building.

That's based on what I have been able to find in the SRDB and other open

literature.

MS. ROBERTSON-DEMERS: Okay, I'm just a little confused here. So if you had an individual who was unmonitored but likely exposed to actinium, he would get the 50th percentile for plutonium?

DR. NETON: See, I think there's some misconception here. I thought that the way this approach was going to be was that you would give the 50th percentile of the plutonium intake and then you would calculate the actinium dose that resulted from that, so there's no issue here.

DR. MACIEVIC: We're not using -- we're taking --

(Simultaneous speaking.)

DR. MACIEVIC: -- number and then applying it to the radionuclides and saying --

DR. NETON: It's almost like we answered a question that didn't make any

sense, is the way I am reading this thing.

CHAIRMAN GRIFFON: So really the question goes back to Joe's question.

MR. FITZGERALD: I was trying to understand the table and I think I got my answer. But going back to original principles though, where this came from, I think it goes to, again, the assumption that Jim talked about, that you have to assume that the operations were similar, and I guess, you know, this ties back to the earlier action item, where we raised some questions that you know, maybe for thorium for example, it sounds like the handling was a little loosey-goosey.

At least even though they were gram quantities, my question is, it doesn't sound like they were handling thorium in a way that would be analogous to plutonium.

So there, you know, this normalization may not hold. I'm not sure -- I

think for the rest of them, neptunium would -- the others I think may not be as much.

But I would think as part of the looking at the source terms onsite, that would answer the question whether Jim's assumption that he articulated earlier, whether you can assume that these were all operations that would be analogous to plutonium, glove boxes, you know, pretty secure handling.

I'd want that nailed down because I think that was the original issue we had, which is, okay, we understand we are coming from a substitute, but that assumes that you can make that assumption about handling and the rigor of the health physics practice that governed the exposure potential, the intake potential.

And for thorium, I would say no. I guess you couldn't, at least for that one instance, because they had no protection, they

were exposed directly to thorium oxide and to do -- to apply the plutonium intakes for that situation, they would be yards apart, so you couldn't do it for at least the thorium in that instance.

So I'd want to be clear where this holds, and where the handling, I think it holds for some but I'm not sure if it holds for all.

MEMBER MUNN: But these are circumstances that are known in the individual case when you are looking at it, right?

MR. FITZGERALD: Well, these are actually operations and campaigns, I mean there's numbers of workers involved and --

DR. MACIEVIC: Well, one of the things we have to keep in mind is that the SEC is for service workers and basically people who come and go and it's not an operational activity. I mean, this is --

MEMBER MUNN: Yes, people who are just walking through.

DR. MACIEVIC: Right, so, what, we are talking about security guards, firefighters, people who come through the building, walk in and out, who -- applying this method to a worker like that is going to get a much larger dose than you would expect an operator who is actually working on the material eight hours a day, 40 hours a week, and has this potential as opposed to the guy passing through.

Now, that person working on the material, we need to check that out for that particular issue, but someone walking through a facility where that is going on, and is getting a worker's intake applied to it, that to me, I would think, is going to be highly conservative for that particular type of person, not necessarily for the guy working,

like you were saying, on the thorium, where if it's not being watched for, you could end up having a larger --

(Simultaneous speaking.)

DR. MACIEVIC: But the person passing through --

MR. FITZGERALD: I wouldn't want to be the guy who is handling the thorium scrap from Hanford or the person who may have been supporting the thorium oxide issue.

So I guess I would tend to agree with you that for the glove box operations that are analogous to plutonium, I think we are on pretty firm ground.

I would want to just check across this table and make sure that is the case for thorium. I am not sure about actinium. I guess that was the question that Stewart was raising, was, you know, where does that come out.

So it really is kind of validating this table and making sure that what Jim had said earlier, that you can make the assumption that the handling regime is very much the same or analogous to plutonium, and that makes this -- the use of the substitute intakes support or --

DR. MACIEVIC: Can we say it in a way, like with the thorium, that if you can show examples where, from some documentation, that it was not monitored correctly, then you modify this.

But if you -- it's more difficult, I mean, if we go through it, and everything looks like it's all kosher through the whole line, but then we say well, but there may have been -- I need to basically -- the examples, show the example where it didn't hold.

MR. FITZGERALD: Yes, the substitute intake process works for everything

that -- I'll just put it this way: a glove box handled that securely.

If it ends up that -- and I'm just, again, we have some examples, but we haven't nailed it down, but it ends up that thorium may have been the exception that just wasn't considered in that same vein. It was pretty loose.

And I guess I would say that that one finding suggests it wasn't handled like plutonium. Yes, so I'm just saying, you know, do we know -- do we know that the operations were consistent, that's all.

MR. MILES: Again Joe, gram quantities of thorium oxide, you know, as an HP, that may be a bench top operation not in a glove box whatsoever and maybe bioassay studies were required.

MR. FITZGERALD: Maybe it was, maybe it wasn't, I'm just saying that --

MR. MILES: Take some small fraction of a gram of thorium, and assume the person inhales it, you are talking about a minuscule dose.

MR. FITZGERALD: You would not handle plutonium-239 in the way that was described here.

MR. MILES: No.

MR. FITZGERALD: Okay, so let's leave it at that, okay?

MR. MILES: That's absolutely right.

MR. FITZGERALD: So therefore all I am saying is that, you know, there may be some exceptions that --

DR. NETON: But I think the concept is a little different than that. It's that they would have controlled the exposures to the same level of rigor for example as if it -- you know, plutonium was controlled to be

below certain levels of exposure and therefore the other radionuclides, why would there be any reason to believe that they didn't control the exposures?

MR. FITZGERALD: Because we had examples where they were --

DR. NETON: Well, prime example we don't know, I mean that was an example that said it was a gram quantity, that could have been exposed, I might have to see the findings.

MR. FITZGERALD: Yes, yes, I'm not -- I'm saying that I understand the concept, I think it works as long as you can demonstrate that the -- that it was secured and handled to that level of rigor and I think, in a couple of cases, we have some questions. I mean --

DR. MACIEVIC: Well, and that is what I would like to do, is look at, as an action item, to look at the specific cases as

opposed to trying to prove some general principles or --

MR. FITZGERALD: No, that's why I've gone to the trouble of pointing to SRDB numbers, and examples and just saying --

DR. MACIEVIC: Look how well we fit in with what we have in the --

MR. FITZGERALD: Right, exactly, that's exactly where we are coming from, I'm saying we have some qualms but you know, again, I think if you look at it, it either fits this regime or it doesn't and if it doesn't, then you might have to do a different approach to that particular source, that's all.

DR. MACIEVIC: Correct.

MR. FITZGERALD: Okay.

MR. STEWART: Yes this is Don Stewart. I just want to clarify one thing and it should have been covered in my briefing. My

apologies.

What the DR would do was if in the case of the suspected exotics exposure, they would go through all of them, and if actinium were highest for that organ, that is what they would assign.

I didn't make that clear before and I understand Kathy's confusion. But that is definitely the case. I forget exactly what the TBD says, but they are considered to -- they are supposed to consider the entire suite of exotics and assign the highest dose from each, unless they have data that can show them otherwise.

CHAIRMAN GRIFFON: Okay. All clear now. I am just updating my notes here.

MR. KATZ: 2-2. So is the summary action that SC&A is going to review this table and --

MR. FITZGERALD: I don't think we

have any -- we have no issues on the table at all. I think it's more of a question of the assumptions that enable this table to be used.

CHAIRMAN GRIFFON: I mean, part of my action includes that SC&A will provide some more information on these examples or some, you know, areas where you feel there may be exceptions.

MR. FITZGERALD: Well, I think we offered two examples on thorium, neptunium you will have to go behind the screen.

CHAIRMAN GRIFFON: Right, but also curium, the one that Kathy mentioned in the last section, that's another class of -- you know, whatever.

MR. FITZGERALD: So if we have any additional ones we will forward that, but I think that's --

MR. KATZ: So then is the action just with DCAS?

DR. MACIEVIC: Well, could we get the -- have you got a listing, or do your responses -- I know you gave the -- could we have you send us the --

MR. FITZGERALD: Yes, we can send you --

DR. MACIEVIC: -- exact SRDB number or the listing or something, so that we then will use that as the jump-off.

MR. FITZGERALD: Yes, yes.

DR. MACIEVIC: So we don't have to --

CHAIRMAN GRIFFON: That's the way I figured it, that SC&A would give a little more specifics on these examples. And then NIOSH will follow up on those examples to assure they fit in the plutonium regime.

MR. FITZGERALD: I think we have neptunium, thorium, curium --

CHAIRMAN GRIFFON: And I put

actinium as a question --

MR. FITZGERALD: Actinium was a question mark that Kathy agrees to. I think those ones.

CHAIRMAN GRIFFON: Yes, so I put those down and you can --

MR. FITZGERALD: All right.

CHAIRMAN GRIFFON: -- provide that to NIOSH and they will follow up on it.

MR. FITZGERALD: All right.

CHAIRMAN GRIFFON: What time have we got? Can we get through this item before we go to lunch? You only have one more section on this, right?

MR. FITZGERALD: Yes, well, three, there's no action on it.

CHAIRMAN GRIFFON: Yes, three was no further actions. So four -- four was just what?

DR. MACIEVIC: Four is really --

MEMBER BEACH: Four goes back to budget, it looks like.

DR. MACIEVIC: Yes this is the one where we were going to try to get the actual documents on there, but I listed several different things about the checklist, about the -- and these documents are all on the O: drive there -- that talk about the exotics and basically run though there that example. I talk about health physics, back from January or March 1981, radiation protection, their quarterly report.

They talk about the health physics checklist indoctrination and a total of 211 Los Alamos employees received radiation safety orientations as part of the HP checklist procedures when the employee starts a new job as a radiation worker.

So that is part of their indoctrination that they run through with the

health physics going in, and then everything else in here are just references to what these documents are on the different exotic radionuclides with curium, neptunium, all the actinides and they run through several different years as for the discussion.

And the one thing I had mentioned about the 12 monthly reports from '55 and '56 for the CMR area, air levels for contamination, are discussed for plutonium, americium, curium, polonium, uranium -- and, well, I had curium.

Plutonium and curium had the same air concentration and they had the alpha air data that is shown. So these numbers that they have in these lists are linked to a plutonium action number for their air sampling that they were monitoring. So if you were monitoring the plutonium, you couldn't exceed the plutonium action level for the air, that was

the same one for the curium that they had as well.

So, on these actual survey forms, they have the numbers that are written in and filled out for the particular rooms: the reports of what they were.

So that is one thing that I found through the SRDB that links that directly, showing how they were controlling to plutonium level 4 the curium in that.

And then the rest of these are just example documents that discuss all that. So --

CHAIRMAN GRIFFON: But as far as the fundamental question showing job types and exotics, you still have to --

DR. MACIEVIC: They have to go and get them, yes. Because this is sort of filling that in about that, but there's no -- it's not specific.

CHAIRMAN GRIFFON: Can I -- so that'll be a carryover action.

DR. MACIEVIC: I would refer that back to the other one.

CHAIRMAN GRIFFON: Yes, that's fine, yes. But can I ask one question on your item 4?

DR. MACIEVIC: Absolutely not.

CHAIRMAN GRIFFON: I'll ask anyway. Los Alamos airborne releases by facility and isotope. You say that none of the exotics are listed which supports the idea that they were not of much significance, but then the last line says the air monitoring includes alpha counting in such places as T-48, known for work with curium and neptunium.

So was it the -- I guess those two statements are not contradictory?

DR. MACIEVIC: Well, in these particular reports, they have only specific

ones where they picked out that they actually talked about the curium and neptunium. All the other listings in there do not have them in there, so this general, long listing of air sampling, there's very little --

CHAIRMAN GRIFFON: So this is like the one exception you are saying --

DR. MACIEVIC: Right, right, that it's an exception to it a little bit in there, but the bulk of it is not referring to the actinides.

CHAIRMAN GRIFFON: Okay. Joe, any follow-up on that? I'll list that as a carryover action really from the last meeting.

MR. FITZGERALD: No, not really.

MEMBER BEACH: Well, I had a question when I read this if SC&A had anything -- did you get anything of value or did you have time to look at any of those documents that they list here?

MR. FITZGERALD: Oh, no.

MEMBER BEACH: Or are we just --

MR. FITZGERALD: No. We have had about a week and a half, and it was a lot to go through. We have scanned it -- we need to look at the documentation, but, again, there's a lot here.

MEMBER BEACH: So I mean that might be an action while waiting for that --

CHAIRMAN GRIFFON: Yes, for SC&A to review the provided documents, right.

MEMBER MUNN: And we're putting this together because the original question was what? That there was a question as to whether or not training was adequate?

MEMBER BEACH: I think the original question was NIOSH should provide a matrix from the checklist data --

MEMBER MUNN: I'm reading that. That doesn't tell me what originated this

question.

CHAIRMAN GRIFFON: Yes, I know what your question is, Wanda.

MEMBER BEACH: Isn't that kind of trying to put the workers and the job types, and what they were monitored for in those locations?

DR. MACIEVIC: Right, and because we couldn't, that's the thing, we were trying to do, that got stopped, they tried to fill in with some of these things to talk about different laboratories and procedures in areas where this material is discussed, but I was not able to go and get a detailed look at new information.

So this was like a substitute just to say well, since I couldn't get that, here are several documents where this is actually discussed in different facilities, procedures from different activities, procedures from

different facilities, and how the work is done, to give you a feel for it but not the full-blown analysis.

MEMBER MUNN: It just seems that we continue to search for perfect data, and knowing from the outset that such a thing does not exist in nature, it's difficult to see how, once we have this matrix put together, we can say anything other than well there it is.

It's -- whether the information is going to be meaningful is questionable, it seems. It will be interesting information, but I guess the real question that should be foremost would be and does this in fact actually help the dose reconstruction process in a way that is concrete, or does it simply add one more item which may or may not be of any consequence when it comes to calculating doses?

CHAIRMAN GRIFFON: Well I think

part of the -- I'm trying to remember why exactly we wanted the job types, but I think part of the rationale was to make a determination whether it was still going to be bounding for all classes of workers, if we had to do coworker approaches.

MEMBER MUNN: Yes, I guess I said that badly. What I really and truly was trying to say was, since the argument -- the counter-argument is always you can't tell that the job description tells you anything at all about where they were, that's a continual counter-argument that we get in every site we approach, then if that is going to be the case, then I guess what I am trying to say is if we are not going to be able to use this information, why are we pressuring the agency to provide it?

CHAIRMAN GRIFFON: No, I'm actually trying to remember why exactly we

asked for job type on this table. There was probably a good reason at the time.

MEMBER MUNN: Well, there was a time when it was generally assumed that job type would have some relationship to the ability to do dose reconstructions and to do surrogate data information.

But since, as I said, in every site that we approach, the counter-argument after the data is presented is almost inevitably the same, which is, yes, but you can't prove otherwise.

And if we are not going to use the information, then how useful is it really to promote further presentation of it, that it seems a valid question.

CHAIRMAN GRIFFON: I think part of it with the exotics, though, I can't really -- I am trying to track back through the matrix responses, and I would hate to have to go back

to the transcript, but I think, you know, part of my thought process here is that if it -- if these were in fact lab quantities, then if you track back and you see it's always lab techs or scientists that are monitored, then it sort of supports that argument that it was bench top work only, you know, and if you see operational, you know, so that's one reason to look at the job types anyway.

I know what you are saying -- well I know exactly what you are saying, Wanda, I just --

MEMBER MUNN: Yes, I think there's good reason to look at it, as long as it's going to be useful information that is permitted to be used. That's my point.

CHAIRMAN GRIFFON: Yes. Yes. Well, we have used that argument in the past. We have definitely used the argument of lab quantities being sort of exempted from SECs,

you know, cite the Y-12 SEC.

Anyway, we will leave it there, and I think that's where the action will stand. And I think we are ready to break for lunch.

All right, we will break for lunch until 10 after 1, I guess.

(Whereupon the above-entitled matter went off the record at 12:11 p.m. and resumed at 1:16 p.m.)

A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

1:16 p.m.

MR. KATZ: So good afternoon everyone. This is the Advisory Board on Radiation and Worker Health, LANL Work Group. We are just reconvening after lunch. Let me check on the line and see if we have Wanda on the line?

MEMBER MUNN: Yes, you do.

MR. KATZ: Great. And Mark, you can get going.

CHAIRMAN GRIFFON: All right. We are up to issue 3 on the matrix. And 3-1.1. My numbering system switched over the whole matrix, so 1 and 3 is at 1.1. Yes, yes.

And I'll turn that over to NIOSH to explain.

DR. MACIEVIC: We increased the database from '88 to 2005 and that is out there.

CHAIRMAN GRIFFON: Okay. That's probably complete, right?

DR. MACIEVIC: Right, right.

CHAIRMAN GRIFFON: Right, go ahead on to, I'll just update my notes here, but you can go ahead on to the next item, unless Joe, you have any questions on that?

MR. FITZGERALD: No, no. That takes care of that one.

MEMBER BEACH: Are we going to close that one?

CHAIRMAN GRIFFON: Yes.

DR. MACIEVIC: Okay, issue 2 is 312, it's 1.2, is an issue that is going to require us getting to the sites of that being left open.

MEMBER LOCKEY: It's three point -- 3-2?

DR. MACIEVIC: Three dash -- yes, 3-1.2, on page 31.

CHAIRMAN GRIFFON: Okay, 1.3.

DR. MACIEVIC: Three and four both, well three, 1.3 refers back to item 2, we don't want to go back there. And 1.4 refers back to item 1 in the matrix. So those discussions are there and consider whatever the results from that discussion for this, these issues.

CHAIRMAN GRIFFON: I am just recapping on that. Oh, and I had had that same note before, right? See item 2 in the matrix, see item 1 in the matrix.

DR. MACIEVIC: Right, see item 1.

CHAIRMAN GRIFFON: So those are the same.

DR. MACIEVIC: Right.

MR. KATZ: So is it easier just to cut these out if they are --

CHAIRMAN GRIFFON: Yes. Yes.

MR. KATZ: If they are completely

referential, then why track them?

MEMBER PRESLEY: I would think so. It would make it easier on somebody.

CHAIRMAN GRIFFON: Yes.

MEMBER BEACH: So we just need to make sure that we don't lose anything.

CHAIRMAN GRIFFON: I don't think we are losing anything, as long as we cover the issue, the fundamental issue in there, which I think we will, right, it's adequacy, reliability, yes.

DR. MACIEVIC: Because we had pretty -- issued 1 and 2 pretty hard so these references were --

(Simultaneous speaking.)

CHAIRMAN GRIFFON: Okay. Then go down to item 2 then.

DR. MACIEVIC: Okay, 3-2. Again that's a site issue where we will have to get information.

MEMBER BEACH: Is that something we could coordinate, that when you do get on the site with SC&A at the same time, to save resources and time, is that something we could work out?

DR. MACIEVIC: As far as --

MR. KATZ: Well there always is communications about these, whether SC&A actually needs a particular data capture, visitor --

MR. FITZGERALD: You know, that's a separate question.

MR. KATZ: The process is always to, when there is going to be a data capture, to let the other party know.

MR. FITZGERALD: Right.

MR. KATZ: It works both ways. SC&A does that too.

DR. MACIEVIC: So when it opens up we can send out an email that is has opened up

and we are going to start pursuing these issues.

MR. KATZ: Do we have a sense as to how long we are going to be in this holding pattern of --

DR. MACIEVIC: Not from what I saw the other day on the last week's emails from them, it's still in a discussion.

MR. KATZ: But Stu's communicating with --

DR. NETON: Yes, I'll bring it up. We have our every other weekly interagency call, and I brought up the before to the other agencies concerning them and --

MS. ROBERTSON-DEMERS: This is Kathy DeMers.

MR. KATZ: Hi Kathy.

MS. ROBERTSON-DEMERS: I've been in contact with Greg at least over the Pantex situation, and he had mentioned the money was

going to start flowing he thought May 18th.

MR. KATZ: That's what Pantex says specifically, is that what you are saying?

MS. ROBERTSON-DEMERS: Well in general, to the EEOICPA program.

MR. KATZ: I see. So this maybe was all tied up with the continuing resolution problems?

MS. ROBERTSON-DEMERS: Sounds like it.

MR. KATZ: Yes, okay. Thanks Kathy.

CHAIRMAN GRIFFON: Can, just for my, just as a reminder can you clarify what item 2 was? It was -- explain the drop-off in bioassay data. Oh, okay, we -- so there were a lot less samples taken over a certain period of time.

DR. MACIEVIC: Right, and then --

CHAIRMAN GRIFFON: And it was --

right.

DR. MACIEVIC: It was to look and see if --

CHAIRMAN GRIFFON: Got it.

DR. MACIEVIC: There was a process change or operations change.

CHAIRMAN GRIFFON: Okay. Okay. I misread that when I first read it. Okay.

MR. FITZGERALD: That was particularly relevant to the guards and the service workers, because that's a time when they are backing people out of bioassay.

CHAIRMAN GRIFFON: Right, which happened at a lot of the sites. All right. Item 3.

DR. MACIEVIC: Item three. Oh, go ahead.

CHAIRMAN GRIFFON: Go ahead. So is going back to items 1 and 2 in the --

DR. MACIEVIC: Yes. Three and four

refer back to one and two.

CHAIRMAN GRIFFON: Okay, so we will drop them from this part of the matrix as well I think, yes. Okay. Anything else for that item, Joe or --

MR. FITZGERALD: No, I think was just basically --

CHAIRMAN GRIFFON: It's all mostly covered in the first, yes, first one and two, sections one and two. Okay, up to item 4, moving right along.

DR. MACIEVIC: On item 4, we are looking at the issue of applying N/P ratios back from -- in for data from '80 to '82 and using that to apply it from '76 onward to 1979.

And what I did was use the SRDB reference 27261, which is the -- all the annual beta, gamma, neutron exposure by person, by year, for the development of the

ratios.

And what I did was the assumptions or the reasoning that I can use annual doses because this was not the monthly or the quarterly or whatever their exposure monitoring period was, it was the annual dose, annual summary for each one of these, because that is all we had available in the database also, is the annual.

That one is that neutrons, according to our TBD and what was there, is the neutron badges were given to those persons most likely to be exposed to neutrons, one; that the short period from '80 to '82, since we have the worry about moving from job to job and other things if you are using too prolonged an extended period, that the short period from '80 to '82 reduces the possibility that a worker would move to a new job, so that N/P ratio at least would remain consistent for

an individual on a yearly basis.

And the question of the job location versus N/P ratio will be considered below which is where I did a makeshift look at job positions for the claimant, from the claimant files, to get a little bit of feel about operational activities and possible changes based on that.

And also, that only positive, and in this analysis I used only positive neutron and proton doses throughout so that we are not bringing up or lowering any averages based on zeroes.

So what we have is, on the tables, on page 33, you have the LANL N/P ratios for the years in question, and you have the average and standard deviation for the ratios.

I also put in the number of employees to get a feel for using that also as a transition or an idea to point to the

potential for changes in activities.

By hiring more and more people it means your activities at the site would be increasing. If it stays relatively constant, my assumption is, is that you are staying relatively constant in what you are doing as well, and obviously that is not a tremendous indicator, but until we can go to the site and look at activities, I use that as sort of a surrogate down there.

From the previous report that I gave last time, I also put the table four two, which is the average dose standard deviation and the standard plus -- the average and the standard deviation together and the total number of positive readings from the claimant, just the claimant.

And again, to show that when you get to the period of '79, 1980, the number of positive doses increases the actual dose

amount itself, the average dose does not increase as much.

There's a period in 1986 which we will look at on the next chart, on the next page, that will look like there is a transition in operations there, but --

So the whole point of this is that these averages in the N/P ratios, from `80, `81 to `82, where you have got N/P ratios of 4.89, or I'm sorry, that's the standard deviation, but the average of 2.79, 2.01 and 2.49 are the three averages and they have got their standard deviations, that that could be combined to go back and apply to the values from '76 through '79 which you see the N/P ratios there are much lower during that period of time.

And I should also note that one of the things that in looking through the TBD, from the external dose portion, there was

going to be a question that is discussed in one of the next issues about the use of a dose correction factor.

The TBD does a very good job of showing for the different facilities the breakout of energy and also the N/P ratios for facilities as LAMPF, the reactors and other sites that have neutron potential.

So we feel that is a good indicator of how the neutron dose is broken out by energy to get a feel for any corrections that would be based, that TBD basically would not have to be corrected for that.

But what you can do is use these TBDs' N/P ratios in the TBD and make a modification using these values over the ones that are there.

In figure four one, I picked, you can see that the number of the N/P ratio takes

a jump from 1985 to 1986 and I believe at that point is when you do have some form of transition occurring in the workplace and other activities are coming in, because there is a major jump at that period.

And while if you look from 1980 to 1982, it is pretty well constant, and from '76 through '79, it's also constant, or relatively constant with that, and you could apply the ratio from '80 to '81 to the '82 and apply that to the early years, you would not take those years that go past '85, because that is too wide a spread and something has occurred in that period which you have to find what type of activities have occurred.

So I think that would be valid to use that period in there and using the ratios that you have. And the next -- one of the things that is in the file, the Work Group file for 5211 is a folder that has an Excel

file that looks at job title versus average neutron dose and average photon dose, and also have an N/P ratio develop from that.

And if you look at all the job titles in there, the highest ratio that you would have is 7.67 and by taking a look at the standard deviation plus the average for the '80 to '82, that comes up to 7.68.

So if we were going to apply something, if anything you would want to maybe use some kind of distribution for the N/P ratio to apply as opposed to a one value during that period of time to apply back for the other period between '76 and 1980.

Also, the values of the neutron dose, let's see, okay that's not on here, let me ignore that then, the last part of this sentence there is with the number of N/P ratio values average per year was for 19 -- to use for the average -- '76 was 248, '77 482 and

that shows you the number of values that were used in order to get that average and standard deviation in that other table, so there is a significant number of values that were used to develop these numbers.

So, the information presented here, I would think, by incorporating this would then have to be incorporated into the TBD and followed so that you could then upgrade the TBD and produce a modified section in the external for using those ratios.

MS. ROBERTSON-DEMERS: This is Kathy DeMers. Can I ask a clarifying question?

DR. MACIEVIC: Sure.

MS. ROBERTSON-DEMERS: So you have, say, a photon dose in the record of 100 millirem, and you are going to try and apply this against correction factor to that dose.

Are you saying that you are going to multiply, let me get it right here, for

1980 by 2.79 or are you going to multiply by 7.68?

DR. MACIEVIC: Well, that would be my preference and what I want to do is to have a distribution that you would apply this to, to multiply the number by, because in looking at one of the things that will be noted in the Excel file for the job titles, is that that N/P ratio does vary with the particular job titles that are there.

So if you go with a hard number, you are going to have to know the area it's from, which is probably not going to be able to use, so my approach would be for these particular years you would give that spread to cover what the value would be for an application of those N/P ratios.

So that way you are covering the potential for the high and the low to run with the average, a number generated based on that

distribution.

MS. ROBERTSON-DEMERS: Okay, so what would get put into the IREP model? I am confused.

DR. MACIEVIC: For --

MS. ROBERTSON-DEMERS: Say you had a 100 millirem photon.

DR. MACIEVIC: 100 millirem photon? Well you would run this against the doses and you would have -- that distribution would have to be put into the IREP model for that dose.

MS. ROBERTSON-DEMERS: So, instead of selecting a constant, you would select a log normal or?

DR. MACIEVIC: Right.

MS. ROBERTSON-DEMERS: Okay.

DR. MACIEVIC: Because you can develop with this -- yes, right.

MS. ROBERTSON-DEMERS: Okay.

DR. MACIEVIC: Because otherwise you run the potential as looking at that chart of leaving not actually covering the potential whole group that you are talking about.

Now, after we do a further study of the site by getting more information potentially for different job classes, we may be able to just fix it to a particular number, if you can spread the number of job classes out enough so that it would cover the majority of the people on the site, otherwise you would have to stick with some kind of spread.

MR. FITZGERALD: Okay.

CHAIRMAN GRIFFON: There's a lot there but go ahead Joe.

MR. FITZGERALD: Yes, my question is more for clarification as well, that you know, this thing originally came up because of the proposed use of N/P ratios with 10 years going back --

DR. MACIEVIC: Right.

MR. FITZGERALD: And so that was kind of long and could that be shortened and come back with the '80 to '82, applying backwards, and then the only postscript to that was, it's an assurance that the operations hadn't shifted.

And I guess looking at this table, I think 1978 gave me some pause, but this just furthers the need, I guess, of what you are going to be doing, which is just looking at operational changes and just kind of crossing the t that nothing was going on that would change that assumption between '76 and '79 and '80 to '82.

The other issue has to do with, NTA was in use through '80 or '79 --

DR. MACIEVIC: Yes. It came -- well --

MR. FITZGERALD: I thought it was

the end of the '70s was NTA.

DR. MACIEVIC: Well, it did, yes. They went completely over into -- MR. FITZGERALD: Right. So the only question I would have is when you do N/P ratio comparisons, you are comparing --

DR. MACIEVIC: Well, NTA ran up to the late '80s. They used a -- to get that spread and they used desiccant and --

MR. FITZGERALD: Because of TLD, energy dependence and the desiccant issue, right.

DR. MACIEVIC: Right.

MR. FITZGERALD: But I am just trying to figure out in terms of apples versus apples, whether the N/P ratios for '80 to '82 are based on TLD measurements necessarily, as compared with the '76 to '79 NTA measurements. What do you sense, I mean, is that what we are talking about as far as the neutron data?

DR. MACIEVIC: Well, you are going to be applying it to the gamma dose for the --

MR. FITZGERALD: You are talking about the neutron --

DR. MACIEVIC: Right, but you are going to be applying the ratio to the gamma dose.

MR. FITZGERALD: Right.

DR. MACIEVIC: And the assumption is, is that you are pretty much, your gamma dose on the film and the TLD are pretty much the same, you are not getting any big spread, so that where it was acting haywire is the neutron portion.

So if you are developing a good ratio from those numbers, which TLD also responds and I will refer that in another issue that comes up, because it shows that the TLDs in a couple workplaces are -- that it does over-respond, you, by applying this N/P

ratio back onto those years, you are not really, you are taking away the effect of the under-response of the NTA film for those periods of time, because this is based -- only taking the film and the TLD and doing that, that number is staying -- not constant, but with film and TLD for photon being your base, that is going to stay numbers -- there are going to be modifications for --

MR. FITZGERALD: I mean I was trying -- you know I see where this is going but I'm just trying to think if the energy dependence is just a TLD as well, whether that's somehow going to --

DR. MACIEVIC: Well, but see, the TBD and I'll ask Don on this one here, because when I looked over before coming to this, the TBD does a decent job of splitting out the energy dependence, because you are getting the dose fractions from the different energies and

they talk about LAMPF and all that, and so I would think that frankly gets applied after the effect as to correcting for any kind --

MR. FITZGERALD: And that already is folded into your table?

DR. MACIEVIC: Right.

MR. FITZGERALD: And your graph.

DR. MACIEVIC: Right, well, these numbers, I mean for what we do, this is -- that would be folded in using what we do for the TBD to correct the neutron and photon dose --

MR. FITZGERALD: Before you put it in the table.

DR. MACIEVIC: Right. These numbers are obviously straight from the site, and the ratios are done, and I have not applied energy corrections to the numbers in the stacks here. That would then come as the next step, to say what correction do you

apply to this based on energy.

MR. FITZGERALD: And then the only question, once you have made those adjustments and you can feel that you have got a correct value, adjusted appropriately, is whether it's bounding for specific locations and job categories.

DR. MACIEVIC: Right.

MR. FITZGERALD: It's the part that you can't provide right now.

DR. MACIEVIC: Right, and that's why I'm saying unless we can provide something that splits it out, that to use a distribution from a list of workers that are in all varieties of work and then use that N/P ratio to apply it, that you would cover these situations.

MR. FITZGERALD: Otherwise you would have to go with the max.

DR. MACIEVIC: Right, which is

what I was saying.

MR. FITZGERALD: So, really the site work is to see if it's feasible to have a distribution, whether there is enough information to support it?

DR. MACIEVIC: Right.

MR. FITZGERALD: Okay.

DR. MACIEVIC: Which is why I didn't start developing a whole big thing here because until I get further information there's no point.

MR. FITZGERALD: But the fallback is the seven point whatever max.

CHAIRMAN GRIFFON: And that highest -- all this -- I'm looking at the Excel spreadsheet -- all these ratios are based on, I may be rehashing some of what Joe is already asking, but all these ratios are based on TLD measurements or no?

DR. MACIEVIC: Yes, the --

CHAIRMAN GRIFFON: Seventy six -- it's got the individual job titles with ratios?

DR. MACIEVIC: Right.

MR. FITZGERALD: So two components is what we just talked about plus some assurance on the operational side?

DR. MACIEVIC: Right.

MR. FITZGERALD: Which I am not sure there's a straightforward way to do that, I guess just to validate the neutron generating facilities, that nothing dramatic is happening at that time. But you did point out something in '86, '78 is a minor blip, but --

DR. MACIEVIC: Yes, I think that even is stated in here which I didn't go through, but there's --

MR. FITZGERALD: The average for standard deviation is kind of interesting, 361

through 78 though, that sort of stands out. It's a 35 percent increase. But anyway, just maybe bolsters the case for taking a look to make sure there is not too much going on.

DR. MACIEVIC: Right, well that's the key yes. Because it definitely looks as you get to `86, something big --

MR. FITZGERALD: Eighty six is an obvious one. '70, '80 is --

DR. MACIEVIC: Well, and one of the points I want to make is that the TLD changes and seventy -- they go with the desiccant --

MR. FITZGERALD: It was ninety with the desiccant, but before that they had two TLDs and they all had their energy-dependent --

DR. MACIEVIC: And that it is -- that this occurs not because of them using desiccant, that jump, but that's actually

something else occurring.

MR. FITZGERALD: An operational issue of some sort, right. So Mark, I think the prior action for look see on the operational side, some site work for job category/operational basis for enveloping it, I think that's it. So it's not really anything new.

MEMBER BEACH: And that's going back to the document that is listed in here, that is in the file?

MR. FITZGERALD: No, I think you have to sort of look at some site data just to --

MEMBER BEACH: Okay.

DR. MACIEVIC: Because there's got to be other -- I mean, most of the stuff that's data capture is all referring to health physics type things, we need to also take a look at what kind of operational documents

that there are to say, you know, shipments of something increased, activities here increased and are not related just to the health physics, but to go and say they were -- because you will see, which I don't have, but I think on the spreadsheet that's out there, there's the number of employees also starts going up as you get into the late '80s and '90s, it starts going into the eight, nine and ten thousand employees, so you start having much larger numbers of people.

MR. FITZGERALD: What's interesting about this table, it's relatively constant until you get to the mid-'80s or so.

DR. MACIEVIC: Right.

MR. FITZGERALD: But you look at the positive readings, versus the average --

MEMBER BEACH: I was looking at that too --

MR. FITZGERALD: In some cases,

like I said, '78 catches my eye because the number of positive readings is actually relatively low compared to the other years, but the average plus standard deviation is relatively high, so you start wondering, there might have been something going on.

But you would find out pretty quickly where the source of those exposures -- and those type of things are good pointers as to the type of years you want to look to.

MEMBER MUNN: Yes, that 1986 operational activity, it's got to be easy to identify.

DR. MACIEVIC: Oh yes, definitely.

CHAIRMAN GRIFFON: And did I hear you say the idea is to use a distribution N/P ratios?

DR. MACIEVIC: Right unless we can show -- we can't find something in the documents at the site to be able to say here's

you know, that could fix an N/P ratio with a constant, I would say that then you can't associate it with people and that's going to be more difficult, the other option would be to have a spread that showed the distribution would apply to these doses for these periods.

CHAIRMAN GRIFFON: Okay. I think we can go to item 2, right, or are you --

MR. FITZGERALD: Yes no, I --

CHAIRMAN GRIFFON: I captured that -- item 2 talks about adjusting for fading, '80 to '90.

DR. MACIEVIC: And this, the response is based out of this memorandum that basically they did an analysis unfortunately only for the neutron. They didn't also look at gamma dose in this, so you could get a straight N/P ratio.

But an analysis of neutron dose versus -- the actual neutron dose versus the

TLD dose and what they find is in table four three, which is, is that for these different areas, the correction factor, you would divide by this number.

So there would be a multiplication factor of between 1.2 and three -- TLD over-response by 1.2 at 3.5 times the value of what was actually measured.

So to me that already, wound in with other conservative activity approaches you have with TBD, that that over-response of the TLD to these different neutrons for the measure would take, reduce the effect of any kind of fading on the TLD, I mean from the NTA film.

And act as the correction factor so that we would not have to do a fading correction to the TLDs based on the fact that these TLD doses are over-responding as they are, and then applying that with a

distribution and this, that it's already over-responding, you will not -- my judgement -- underestimate the neutron dose.

MR. FITZGERALD: So again, use the ratios in applying it backwards as we discussed in the first one that will also accommodate that.

MEMBER MUNN: Say that again Joe?

MR. FITZGERALD: No, I was just saying, this sort of ties to the discussion we had on the first issue, which is by coming up with the N/P ratio distribution and applying it for the '76 to '79 era, when you are using NTA, you can address the fading by virtue of the correction factors that you are using for the response.

MEMBER MUNN: Yes, essentially. You don't want to double correction factors and get outside the realm of reality.

MS. ROBERTSON-DEMERS: This is

Kathy DeMers. Can I ask a question?

CHAIRMAN GRIFFON: Sure.

MS. ROBERTSON-DEMERS: How did you determine the time integrated response of the rem meter?

DR. MACIEVIC: That is in the discussion with the paper that is there. I did not determine a time response, but this is -- if you go to that document it describes what they did with the instrument and how they came up with doses.

MS. ROBERTSON-DEMERS: Okay.

DR. MACIEVIC: Honestly, off the top of my head I can't remember the exact details.

CHAIRMAN GRIFFON: Well, based on that comment, you may want a little more time to look at it --

MR. FITZGERALD: We might want to look at the reference but otherwise I think

the approach sounds about right and it will be fine.

CHAIRMAN GRIFFON: Okay, I just have that as an SC&A action to follow.

MR. FITZGERALD: Well, we need to go through the references. There's a number of references in that response that we haven't got caught up to yet.

CHAIRMAN GRIFFON: Okay.

MR. FITZGERALD: But I think the approach sounds --

CHAIRMAN GRIFFON: Seems okay.

MR. FITZGERALD: Yes.

DR. MACIEVIC: Can I ask, when you know, instead of -- is this maybe to speed up our process for the next one, is when you read it, you know, and come up to questions, can we do it so that you can send me the questions right away and we can start a discussion back and forth, that way you know, I give you a

response here and then go back and have to --

MR. FITZGERALD: I was going to say this does not mean there's actually a problem with the reference.

DR. MACIEVIC: No, no.

MR. FITZGERALD: Just that given the time we have had, we haven't had a chance to go through all the references.

What you go through on presenting issues I agree, that would be a good thing to have a technical call, or just send you an email and just say, you know --

MR. KATZ: Send a memo and send it through the Work Groups so that everybody has it.

DR. MACIEVIC: And we can -- because I think again, this isn't a criticism, I just thought of this now and it's not a criticism of reading/not reading documents yet, but I think the process could -- I think

the reason it is so long in going with some of these things is that if we can hit some of these points early on, when you get to this meeting, we can we have the -- a pretty much worked out end result of how things are going.

MR. FITZGERALD: Yes, that's what we kind of did with the memo I sent February 2nd, which was just saying okay, here's what we came up with and there's -- gives certainly some time for you to take a look at that and see if there's any way to respond to some of the questions we have in there so yes, same idea.

CHAIRMAN GRIFFON: And that's not a problem. The only thing we always ask is that you don't assume that it is closed just because you and Joe --

DR. MACIEVIC: Oh no --

(Simultaneous speaking.)

CHAIRMAN GRIFFON: That's fine.

Okay moving on. Item 5.

DR. MACIEVIC: Item 5, one through four, are all referring back to item 4. And with the dose correction that's the use of only one neutron correction factor for all the -- for all LAMPF workers in question.

In going through the TBD, the correction factor is being based on the energies that are expected and the distribution of the energies, I wouldn't think that you would need several neutron correction factors for the facility, because the facility itself, with the type of radiation that is produced in the neutron, if you know the energy distribution that you are talking about, which we do have in the TBD and there is some other discussion again about the N/P ratios and other things with it, that that would be a relatively solid number to work with by using -- knowing what the neutron

energies are and applying those corrections to the fraction that you are giving to each of those energy bands.

So what other kind of things do you want to see as far as neutron correction factors beyond what is already in the external doses of TBD?

MR. FITZGERALD: Well, I think you hit it right. I think by location I mean I think LANSCE was one where they have sort of a distinct, you know, dose conversion factor and have other neutron sources I mean the whole thing about Los Alamos was they literally had different DCS because they had so much energy differences, energy spectrum differences.

So maybe a sampling of that two or three divergent operations that had distinctly different neutron, photon ratios. I think that would help and I think that would -- you know, it wouldn't have to be exhaustive but it would

be representative of the spread you are dealing with at Los Alamos.

DR. MACIEVIC: Right.

MR. FITZGERALD: LANSCE is clearly one. I don't know the other two off hand. Maybe something to do with Pu operation or something, but something that would give you some indication of how this would work for all --

DR. MACIEVIC: Well, I am going to go back over the TBD and see how the information is there that I can bring out and that would be useful to show, just as a summary of what we do have --

MR. FITZGERALD: Right.

DR. MACIEVIC: Without -- because I don't think this is going to require any kind of digging through anything to --

MR. FITZGERALD: Well, LANSCE would be on the high end --

DR. MACIEVIC: Right.

MR. FITZGERALD: And I think it would be several that would be lower down in terms of the levels.

DR. MACIEVIC: Oh yes. Right.

CHAIRMAN GRIFFON: So the idea -- I just moved all these to item -- issue 4. Were you just going to have that example as part of your response to issue 4, right?

MR. FITZGERALD: Yes, LANSCE was a peculiar, a particular situation with the higher energy neutrons but you have several other lower energy examples that, you know, you want to apply the ratio to and see what you got.

DR. MACIEVIC: But you are going to do that anyway, if you are going to do a distribution, you are going to have to do that.

MR. FITZGERALD: Right, exactly.

CHAIRMAN GRIFFON: Okay. Now number 2 on this.

DR. MACIEVIC: Yes, that was another issue that we used a contact from SC&A that -- about the lagoon question and data for the lagoon and that got stopped cold.

CHAIRMAN GRIFFON: Okay.

MR. FITZGERALD: And you had no problems with his allowing access -- we interviewed him at the time and it didn't seem like it was any issue and then all of a sudden we couldn't get it.

DR. MACIEVIC: Well, I know Scott Walker from a long time before so I threatened him with physical violence and he -- but he --

(Laughter.)

-- it worked until his boss told him he couldn't talk to me anymore.

But no, we had actually he was going to -- he got a group of people together

for me. We were going to go and discuss what years we wanted to look at, pull data out, he was pretty sure where all this data was, and go through it.

But then it, right at that point, got stopped. So it's -- he really didn't, he was being quite helpful.

MR. FITZGERALD: Yes, he sounded like he had the right information, which was you know, if you can have some characterization information regarding the concentrations of tritium in the pond you can go from there to come up with some kind of immersion dose, which is the answer to whatever the -- whatever you can come up with on that.

MEMBER BEACH: And that just went back to budget as well?

DR. MACIEVIC: Yes. All they want was to --

MEMBER BEACH: Making sure it was budget and not something else.

DR. MACIEVIC: No, not the death threats.

(Laughter)

No, it was a day after he agreed to that, I got an email in the morning saying "I don't know what happened but they told me cease and desist on all activities." So it went right back to the budget and then we started talking and found out what the problem was.

CHAIRMAN GRIFFON: Okay, so moving on to item 6.

DR. MACIEVIC: Okay, this one is --

CHAIRMAN GRIFFON: Special tritium compounds.

DR. MACIEVIC: Special tritium compounds. What I would like to do is, Bob

Burns are you out there? Bob?

MR. BURNS: Yes.

DR. MACIEVIC: Since this is a 27-page one, could you -- if you read this it does start on page 37 and ends up on page 44, and instead of reading through this, could you give just a summary of the type of things that show that basically that these tritium questions would not be a -- would not have been a problem from a radiological control standpoint due to these activities.

So could you just give a little run through there, Bob?

MR. BURNS: Okay, well what I attempted to do was to summarize, since it's hard to -- we haven't had, as we have discussed numerous times, we haven't had the opportunity to go back to LANL and really run these things to ground.

So I had to approach it more

generically with the information we had and just applying references. But at LANL you have both operations with tritide salts and special tritium compounds and you also had tritium gas facilities.

So I just tried to give a general overview of the types of materials you would expect at those kinds of facilities. Then in addition I looked at how the -- like at Mound for instance, where they had -- how they handled the issue of potential special tritium compounds being a component of their general contamination if you will, general tritium contamination. That's basically the summary of all this.

MR. FITZGERALD: Okay, Kathy do you want to weigh in on this?

DR. MACIEVIC: Do you want to go through the whole seven pages?

MR. FITZGERALD: Kathy, do you

want to weigh in on this or are you on the line?

She may not be on the line. Okay, basically our concern is that the less soluble STCs, tritides were handled in specific parts of the weapons complex, and we know Mound figured prominently, on the fabrication side and so did Los Alamos as well, and there is information in Germantown, but because it is secure information, as far as source terms, and the identity of some of the compounds that would be of concern.

And it's not so much tritium operations writ large that's the issue, as much as just being aware of the operations that handled the specific compounds and like with Mound, being able to identify the --

MS. ROBERTSON-DEMERS: Hi, Joe I got cut off.

MR. FITZGERALD: Oh. Well I will

give you first right to refusal since you have probably looked into this a bit more than I have, if you want to sort of outline the tritide issue.

MS. ROBERTSON-DEMERS: Well, the way that I broke it down was that there's really two processes that result in, let's say, special tritium compounds.

The first is actual work like Bob says, actual operations with special tritium compounds including stable metal tritides at LANL.

The second part of this is in facilities that handle a great throughput of tritium, diffusion and reactivity can produce special tritium compounds, and I guess I have a question as far as the write-up that was produced by NIOSH, and that question is that you are saying that the relative production associated with diffusion and reactivity is

very small.

My question to you is does that mean you are not going to calculate the dose for that?

MR. BURNS: Well I can answer the -- well I can't answer whether or not we are going to calculate dose. That's not my call. But if we want to discuss -- I have some ideas or suggestions on how we would do that if anyone cares.

But as far as assigning that dose or not is not my call.

MEMBER MUNN: We always care.

MS. ROBERTSON-DEMERS: Well, Greg do you have any feeling for that because you know, a lot of this write-up is that it's less than one percent, which we really haven't had an opportunity to dig it all the literature available on diffusion and reactivity.

So we have been told by Savannah

River folks that this is a big issue, and we have an interview summary that is going to come out from our LANL interviews shortly, and they also discuss the problems with handling a lot of tritium and production of tritium particulate as a result of corrosion of metal products, and they talk about the fact that really, up until the '90s, they weren't paying attention to this. They didn't understand it. They didn't have it well characterized and they are still developing the capacity to deal with this.

So do you have any feel for whether it is --

DR. MACIEVIC: Well, there's two things, one is that because the issue also, some of the things are going to be classified in this work, that we would have to go and look at classified documents to also get a better handle on that question.

But the second thing is, again, because this SEC is involved with the group of people that it is involved with, what is the potential dose in looking at these standards and how things were controlled that you were going to have the tritide be a major component to -- exposure to the Class of workers that we are talking about in this SEC, because again, that would be a tritium worker who we do need to go and take a look at the classified stuff.

But as far as the other group of unmonitored workers who would be a person passing through or someone spending a short time in there compared to the full-time worker in that area, is this -- is the issue large for that person?

That's -- that to me is where I think the controls apply much more to this Class of workers at the SEC, the SEC.

DR. NETON: Well, let me just say,

if there is a dose there, to be estimated, it needs to be included whether it's large or not. That's the way we operate in the end. We can't ignore doses even if it's one percent of the dose. We need to account for it in some fashion.

DR. MACIEVIC: Well I do believe in the TBD we do compute tritium doses, so it would be what, how much are you extending the --

DR. NETON: It would be an estimate of what -- yes.

DR. MACIEVIC: -- because of that.

DR. NETON: I think Kathy's original question was were we going to add it or not, and the question is we will, at some amount of dose.

DR. MACIEVIC: Right, right.

MR. FITZGERALD: It sort of sure sounds like this is sort of, again, a classic

exposure potential inquiry, meaning that you are just trying to characterize the source term in terms of what was there, what could have been the source of exposure, was it meaningful and who might have been exposed?

I mean just answering that basic question at least would get you to the point where you are going to know what you are going to need for that, or what you can do about it.

I think we are still at the early process and not quite --

DR. MACIEVIC: Well, yes exactly, I mean as far as characterizing the dose for this, for a full-time worker in a tritium facility for these tritides, we don't have a handle on it yet, that we would have to go back to the site and dig up more information on that.

The trick to me is going to be, then, going from that and saying okay, this

guy who was working here all the time and gets x, how are you applying it to these people passing through?

MR. FITZGERALD: Well, at Mound we started there and then established a -- who the relevant workers are, and not surprisingly, the operators were one part of it, but the maintenance and support personnel were another part of it.

So actually I would argue that they could be a more relevant part of it, so it's -- without going through and characterizing it is hard to know what the significance is to what worker population.

DR. MACIEVIC: Well, and yes, you would have to go in and we would have to take a look at these classified documents at the site on specific things that they were doing to find out what -- the extent of the problem.

MR. FITZGERALD: Right, and this

was flagged throughout the DOE complex as a big deal, because of the dosimetry implications, and it's arguably a big deal when you don't have sealed components, which we wouldn't have in a laboratory environment either on the front end or the back end of this, either in the fabrication or in the research and dismantlement or whatever.

So, I think Mound and Los Alamos represent the two poles of this question that needs to be addressed and --

MS. ROBERTSON-DEMERS: And I think with diffusion and reactivity, the biggest concern there is actually when you get into maintenance and D&D, because now you start tearing things apart that were once contained.

MR. FITZGERALD: And that's part of the characterization and exposure math.

MS. ROBERTSON-DEMERS: With -- now the other, I guess, question I had, was I got

done reading your input and I wasn't sure how you were going to assign dose from STCs.

DR. MACIEVIC: That is not discussed in this section, the actual application of dose, because we don't have all the information yet on that particular issue, as far as what contribution you would have through those other documents.

CHAIRMAN GRIFFON: That's actually item 2 on this, but I don't think you get to -- right.

MR. FITZGERALD: Right.

CHAIRMAN GRIFFON: We haven't had issue 2 yet.

MR. FITZGERALD: Dosimetric approach yes.

MS. ROBERTSON-DEMERS: So we don't have a dose reconstruction process for this yet?

MR. FITZGERALD: Yes, what Mark

was saying, that was the second part of the set of actions from November 3rd but the first part is the actual treatment of exposure and normal operations so that part has to happen first.

MEMBER BEACH: Except for this says see six one five four. On page 45 of NIOSH's write-up. It just referred to that for the first time.

DR. MACIEVIC: Well, obviously this has to be linked to actual going to the site and doing more work with this, is part of getting a perspective on this dose.

MR. FITZGERALD: Yes.

MR. BURNS: I think what they did at Mound, as I understand it, was essentially they would assign two intakes. They would use their surface contamination data and relate that to air concentration through resuspension factors or whatever, but they would treat that

as the tritide component of the intake and then they would use the urinalysis results as is, if you will, and then assign them -- assign that intake as the soluble component.

MS. ROBERTSON-DEMERS: I don't think that message has been agreed upon.

DR. NETON: No, that's --

MR. FITZGERALD: That's in draft.

DR. NETON: -- draft form.

MR. FITZGERALD: That's the first time we have heard it.

CHAIRMAN GRIFFON: Yes, it sounds very interesting though.

MEMBER BEACH: I was just going to say, that doesn't sound --

DR. NETON: I don't think that's going to be --

(Simultaneous speaking.)

MR. FITZGERALD: That method has been proposed though in Pantex.

CHAIRMAN GRIFFON: Yes.

(Simultaneous speaking.)

MEMBER MUNN: Well, it's a lot of tritium.

MR. FITZGERALD: Well, that might be something to talk about.

MEMBER MUNN: Yes.

DR. MACIEVIC: You've got six two also involved because that talks about six one referring back there.

MEMBER BEACH: So back to Kathy's question, the dose reconstruction, you are going to defer back to Kathy and have a site visit and --

DR. MACIEVIC: Yes.

MEMBER BEACH: -- it's actually part of one instead of two?

MS. ROBERTSON-DEMERS: Can I make one other comment, and that is that there's a couple of documents at DOE headquarters from

LANL that should be reviewed and I am just letting you know that they are there.

CHAIRMAN GRIFFON: Do you have a document, or descriptions of -- where are you saying these are at?

MS. ROBERTSON-DEMERS: They are related to tritium.

MEMBER BEACH: In Germantown?

MS. ROBERTSON-DEMERS: And they are in Germantown.

DR. MACIEVIC: Should I just ask for those documents that Kathy says?

MS. ROBERTSON-DEMERS: Isn't there an inventory?

MR. FITZGERALD: Yes, there is an inventory but what I can do is I am close to Germantown, is just get it into a folder for Greg so he doesn't have to ask a bunch of questions about where it is. We will just put it in a folder and have your name on it

something.

I will work with you Kathy, to make sure I am not missing anything.

MS. ROBERTSON-DEMERS: The easiest thing to do is to search for the LANL documents.

MR. KATZ: And there's a data capture visit in June already, so I don't know if that works for you but that might be --

MEMBER BEACH: I was going to suggest that I -- this group might want to look at that since most of us will already be there.

CHAIRMAN GRIFFON: Yes, I think there's a lot of overlap.

MR. KATZ: I was just saying that for Greg's benefit because he is not involved in Pantex.

CHAIRMAN GRIFFON: All right.

DR. NETON: Just for the record, I

just remembered, that surface contamination issue was proposed at Pinellas, not Pantex.

MR. FITZGERALD: Where?

DR. NETON: Pinellas.

CHAIRMAN GRIFFON: Okay, we can move on to item 7.

DR. MACIEVIC: Referring back to item 3, action item 2. So the issue, yes issue 3, action item 2, that is referring back to -- unmonitored exposures for service personnel.

CHAIRMAN GRIFFON: And we -- I just don't want to lose this one. Is it -- covered in issue three and two? Drop off in bioassay? Is that the right issue?

MR. FITZGERALD: Yes.

DR. MACIEVIC: Yes, drop off in bioassay and that refers back to the site again.

CHAIRMAN GRIFFON: And this is the

same issue or at least a subset of that issue, right, I guess?

MR. FITZGERALD: Right, it's a subset of the issue. You know, we did a sampling and we found the bioassays but the number of bioassays decreased markedly with the backing off of the support workers and the guards from routine bioassays, so --

MEMBER BEACH: '76 to 2005.

CHAIRMAN GRIFFON: All right as long as everybody is agreed, I'll assume it's part of the other item.

MEMBER MUNN: And so all we are trying to do is identify why? I wondered about that when we were talking about three. The only question is, why was there a reduction in the number of assay reports, correct?

MR. FITZGERALD: It may be as basic as looking at whether it's an 835, you know, you're going to be assumed less than 100

millirem per year type of threshold and therefore you are not going to be monitored or something, I don't know. It's just certainly when LANL made the decision as did a lot of other DOE sites, they had a basis for deciding who wasn't the bioassay, and I think that's just a review to see what the rationale was and on what basis data did they use to say somebody was -- a group of workers was going to be below 100 millirem.

MEMBER MUNN: That was pretty common, wasn't that in --

MR. FITZGERALD: Yes it was, and I think this is just a check on that since it was a pretty big drop off -- I think the guards went back on, didn't they bioassay? A couple of years ago, so they are maybe revisiting some of these decisions.

MEMBER MUNN: I'm just surprised that's not easily identifiable information.

MR. FITZGERALD: Yes, I thought this was just additional -- it says here additional follow up on the basis for the bioassay program with that as a backdrop, so I don't think it was anything more significant.

MEMBER MUNN: It's not really a technical issue. I think it's an administrative one.

MR. FITZGERALD: Yes, just -- I think it was a question that was raised in the last Work Group meeting and it wasn't a ready answer and so I think it was just one just to cross that t.

CHAIRMAN GRIFFON: Okay, and we are into the last section of the matrix now, which is the petitioner raised questions, and I think this is where we tried to summarize some of Andrew's and the ones that were in the petition itself and ones that you have raised since then. I think we tried to capture them

in the matrix.

Do you have those in your response, Greg? Yes, you have at least some of them, yes. So item 1 is -- this is about a discrepancy in an SEC report.

DR. MACIEVIC: Well, we had -- per that eleven three statement that no further action was -- the issue was clarified.

MR. EVASKOVICH: Yes, we resolved that the last time. Basically I think it was one report said it was dealing with TuPo data, but one report said 1980 and one said 1990, but since all the data is there, and it's available, that's why we it was resolved that way.

CHAIRMAN GRIFFON: All right then the second item which I list here now as 1.2 in the matrix.

DR. MACIEVIC: We say see NIOSH issued a response to -- response to issue 2,

item 1, which is that issue about the exotics and the descriptions of the exotics. But I don't believe, in looking through here, the firing site is mentioned in the listing of buildings that is on here, my quick look back over this.

So I think we need to revise what we are talking about in issue 2.1, but also throw the firing sites into that issue and specifically say it because I thought we had addressed it here but it's not in there, through all the different sites or buildings.

CHAIRMAN GRIFFON: Okay so that is a follow up action, and I will go back to that exotic discussion, right?

DR. MACIEVIC: Right.

CHAIRMAN GRIFFON: 1.3 now.

DR. MACIEVIC: Let's see, 1.3. Our response was that the SRDB was reviewed to

determine whether there is information showing that access to specific areas of Los Alamos site was controlled by the electronic badges. There's no documents describing such practices as a general program at Los Alamos. So there wasn't any there. So I'm trying to remember exactly what the badge access to it -- and whether we were saying -- do you remember how you questioned on the badge access because we -- basically you don't find -- that some areas were and that there's nothing describing such practices throughout in the SRDB.

MR. EVASKOVICH: Well I think, especially with LAMPF that's an issue because there's the employee assistance program is located in TA-53 so -- and basically it's just a badge check for people who get in as opposed to some areas that are more restrictive, so I think the concerns, or at least the one I am

expressing, is -- and I'm using this as an example -- is that, you know, a lot of workers can't have access to the area based on that, and they can either have a visitor's badge or you know, visitors go in there or an uncleared badge.

So you know, there is that potential, especially when we are dealing with releases to the air from the effluent. I think that's what I am trying to explain or at least --

MEMBER MUNN: Is that Andrew speaking?

MR. EVASKOVICH: Yes, it is. Sorry, my voice is not very --

MEMBER MUNN: Andrew, this is Wanda, I can hardly hear you, you are far away from the mic.

MR. EVASKOVICH: Well, my voice isn't too good either.

MEMBER MUNN: Oh, that's all right, I think I got it, I just wanted you to know, you can hardly be heard --

MR. EVASKOVICH: Okay, I'll try.

MEMBER MUNN: -- out here in the brush.

MEMBER BEACH: But you're hearing it's just a badge check so anybody can go in and out of there?

MR. EVASKOVICH: Yes, the controls are different there than say at TA-55 because there's electronic badge readers at TA-55 and, you know, and then so the concern is, you know, for and it kind of goes back to my trying to understand how you are going to apply dose to people if you don't know they are in the area or have the potential to be exposed.

DR. MACIEVIC: Well, that would go back to an environmental response for

unmonitored workers for people, anybody who we are going to have to supply a dose to, who has no dosimetry, and we are looking into the things that Joe had sent. We had that with the writers of the environmental TBD and are looking at those comments, and looking to do an application through the environmental TBD.

So that is something that will have to be addressed in that issue because that will be -- because most of these people are not going to be monitored for anything or -- because this facility -- and in other facilities where they may enter or not, or pass through, but that will have to be an environmental issue for --

DR. NETON: I'm trying to wonder, does this, is there something in one of our documents that says that we will use access control to differentiate who is going to get what dose because I don't -- we don't do that,

not to my knowledge

MR. EVASKOVICH: Well, I think, well, just from the discussion at the last meeting, I think that's why I wasn't clear on something at the last meeting that made me ask the question --

DR. MACIEVIC: Well I think we may have been talking about -- I mean restrictions in going into and out of buildings, but as far as a non-monitored person, we would not be using, I mean, that would not be used as a key for saying whether or not a person would get an exposure that by saying, well, because this was an electronic monitoring -- or electronic badge entry, therefore if you weren't on that system, you are not going to get any dose applied to you for environmental ambient dose, if you got a cancer. So you will get that dose, whether or not there's badge access or not, if you are not monitored for radiation.

MR. EVASKOVICH: I think just determining access to -- or as a means of placing people in the areas.

DR. MACIEVIC: Oh, yes, again, that would not be -- like we were talking about with the guards and firemen and people going in and out of areas to try to place people over a 20 to 30 year period, say where they were at different times, it would have to be an overall exposure based on a model like TIB-18 which is another one of these things we were looking at a modification for, as a possibility to look at all the radionuclide potential that you could also have a subset for LANL in that TBD and then -- or that TIB -- and apply it in the cases like this because there was a couple of ways of approaching this for -- since we are now reviewing the environmental model, how we will apply the environmental ambient dose to non-monitored

people.

CHAIRMAN GRIFFON: So you keep saying environmental or ambient dose applied but --

DR. MACIEVIC: Well I'm assuming --

CHAIRMAN GRIFFON: -- a coworker, you're not --

DR. MACIEVIC: Well, the coworker dose, there's going to be -- well we'd have to use the coworker dose as a potential subset within something like TIB-18 where you have -- covers all radionuclides to give you an internal dose for overestimating purposes for a person.

This would be, in this case, you would use a subset or a separate section within -- this is of course all discussion points that we are looking at now, have a subset inside of that document where you would

use that as a best estimate for particular people going through the area and assign a dose based on the coworker dose models.

Because, see, one of the --

CHAIRMAN GRIFFON: So the assumption, I think, where the control thing came up is the assumption is that this access control was tight enough that if you were in that area you --

DR. NETON: See, we have abandoned that. Remember that the original SEC that we had it was based on the -- that we thought we knew where people worked in different areas, and it became very clear to us that we couldn't partition that in any reasonable way, so we made that all workers at Los Alamos for the early class because of that.

And so I don't think there's any way that we are going to be able to segregate workers at different areas of the site. If it

was -- if they -- looks like they were not monitored and they didn't need to be monitored, they would get environmental dose, and it would be based on some environmental dose, probably the largest receptor site at the site.

CHAIRMAN GRIFFON: But how do determine didn't need to be monitored? That's the judgment part, right?

DR. NETON: That's that TIB that I brought up at the last meeting, you know, it's professional judgement combined with -- the profile of the worker.

DR. MACIEVIC: Well, can I ask Don, Don Stewart are you out there?

MR. STEWART: Yes I am, Greg.

DR. MACIEVIC: Could you just chime in? Do you remember that in the last meeting, we were talking about the badge access and all that, and doing dose

applications?

MR. STEWART: The subject came up at, I believe it was in relation to how do we demonstrate that somebody was not exposed to something, say at the accelerators? Could we go back and look at their badge access, what they had?

If they weren't allowed in that area then we wouldn't have to consider that dose, but as Jim said, we really don't do that typically for sites, we don't look at badge access that a particular person would have.

CHAIRMAN GRIFFON: Well this could be quickly answered if we could just say NIOSH is not going to apply a policy of using the badge access --

DR. MACIEVIC: And we're not.

CHAIRMAN GRIFFON: -- for dose reconstruction determination.

DR. MACIEVIC: No, we won't use

badge access because it would be -- you would also have to show that that badge access was working from 1976.

CHAIRMAN GRIFFON: But I think the further discussion is the question of this judgement, and we will have to look back at your document I remember, but --

DR. NETON: Well there's unmonitored, but there is also the matter of who is going to get what coworker dose, and that is all tied up in what we talked about all this morning, I mean that's all about you know, who got these exotics and when, and that kind of thing. That's still under some significant debate here.

CHAIRMAN GRIFFON: But I think there might be a debate on any of that where you are assigning environmental or are you assigning a coworker --

DR. NETON: That's a complex-wide

issue, I mean if you have a -- an administrative support personnel such as secretaries and that sort of thing that never really entered areas where material was processed --

CHAIRMAN GRIFFON: But then you're going to get into some grey areas.

DR. NETON: You do.

CHAIRMAN GRIFFON: And that's all I'm saying. We can end the badge access issue by saying that you are not planning on using that as a determination for dose.

Okay. Then the fourth item.

DR. MACIEVIC: Let's see. I thought that was -- yes, no further action was required based on that question.

DR. NETON: This is the difference between a checklist and occupational health reports.

CHAIRMAN GRIFFON: Okay so then

the fifth item.

DR. MACIEVIC: The fifth item is Joe did send us the responses or the discussion or questions about the environmental TBD, and as I said a little earlier, that we are now -- we have got it with the environmental TBD writers and we are now -- the responses to that and also looking at ways of incorporating what we talked about into the about unmonitored individuals into that TBD.

CHAIRMAN GRIFFON: Joe, maybe you can just give us an overview of what you -- your response.

MR. FITZGERALD: Yes, this is the -- you should have a copy of the February 2nd memo, and the last two pages are the comparison of the 2004 version of the environmental TBD with the 2010 version.

And let me see, we have a couple

of places where we believe that additional clarification would be useful, and one of those is -- I guess this notion of selecting radionuclides of significance that have contributed at least one millirem of committed dose and using that, from the standpoint of a CEDE and reading the TBD we -- that didn't jump out as to how you are going to do that, and I think that was the point of clarification on that.

And the questions we had, would there be instance, for example, where contributions from MAPs, mixed activation products, or volatile particulates would be masked or neglected because of the individual's large existing CEDE for plutonium and uranium, is the 50 year committed effective dose equivalent cited as a criterion to be limited to environmental issues or effluents? We presume that, but that is not

clearly stated.

And I guess in general, what's the difference between the two approaches in terms of, you know, what kind of results you are going to get from the 2004 to 2010, using that approach.

So some clarifications really on that. It's not clear from the 2010 or 2004 whether the occupational environmental source of exposure from LAMPF or LANSCE were fully considered and whether the tabular source data in the appendices addressed that.

So these are a lot of clarifying questions. I think the biggest issues, though, let's see, this question of adequacy of the stack monitoring release points, given that there was an EPA NESHAPs compliance issue, I guess in the '90s, in terms of whether or not all of the stacks were monitored and whether that has any implications for whether those

release points are adequate. Let's see.

And sort of a big one for me was the 2004 TBD I think pointed to resuspension as a source term worth further investigation. It sort of was a spaceholder in the 2004 TBD. This is the question of resuspension from contaminated or residual contamination on the ground.

And what puts this in some contrast is we had some workers that we interviewed talk about the fact -- and these are support service workers where they were doing maintenance under buildings, through crawl spaces, places like that.

They would come back and apparently be pretty contaminated, you know, so the question of where in fact do you have contamination on the site and is the resuspension of that contamination an issue that ought to be addressed in the TBD?

And it looked like it was acknowledged in 2004, but there wasn't enough investigation to support a conclusion at that point. So there was a reference there.

In 2010 it disappears, but there's nothing new addressing that, so that was an open question of how is the resuspension question, the notion that outside of stack releases, the other -- another source of exposure for workers, particularly support service workers within just plain residual contamination at the site, and workers being exposed directly to that contamination.

So that was certainly another issue and then, Cerro Grande you have addressed in the White Paper. That's not addressed in the TBD. I'm not sure whether that was waiting for this type of assessment. I don't recall that being addressed anyway.

DR. MACIEVIC: No, not in the TBD.

MR. FITZGERALD: Right. So that's kind of a thumbnail. Like I said, it's a number of specific questions. I think the resuspension issue is the biggest one for me because I think in terms of exposure, that probably would be, for support service workers, that would be as important as stack releases depending on what kind of work you do.

MR. FITZGERALD: That is pending our review of those questions to incorporate so --

CHAIRMAN GRIFFON: Item 1.6.

DR. MACIEVIC: And, again, we refer back to issue 2.1 in this document, so it's back to that same question of the actinides and all that. And we will be addressing more of those source term issues with the exotics in our response to that question.

CHAIRMAN GRIFFON: So it's going back to the exotics, is that it?

DR. MACIEVIC: Yes, that question where, you know, the descriptions with the polonium and curium and americium activity. And also adding about the firing sites.

CHAIRMAN GRIFFON: And this covers -- not being familiar with the SEC petition, pages 46 through 60, I mean are there other areas where there are specific areas outlined in there, I'm sure there were, where there was concern about characterization?

DR. MACIEVIC: Well, we were covering, I mean the response in 2.1 was to say these are the areas where we are talking about the actinides had the biggest presence and those type of source terms.

There were no other source terms. I know we talked about waste disposal and things like that as a potential source term,

but that would have to be addressed in the environmental response.

CHAIRMAN GRIFFON: Okay. Well that's what I was getting at, is this just exotics or is it just other areas that are not characterized. And you are saying the other areas that aren't characterized have been covered from -- under environmental?

DR. MACIEVIC: Because we addressed it in terms of -- from what the discussion more with these -- and locations of those sources but then I remember we also talked about the sources of buried waste and things like that, which there is a listing of.

MR. EVASKOVICH: Yes, there is. I have some examples here that I pulled up. Dealing with a record from it -- this is Andrew Evaskovich.

The report says usually, there's a section that says these sites required further

investigation to determine if they pose a threat to human health and the environment.

And some of the examples I've got here are TA-3-030D septic system, and this is just a section that I pulled out of the fact sheet for the releases.

And type of release, antimony; calcium; copper; iron; lead; mercury; selenium; silver; zinc; neptunium-237; plutonium-239, 240; uranium-235; and organics.

In TA-2-011A, storm drain and outfall, type of release, cesium-137, strontium-90, technetium-99, cobalt-60, tritium, uranium, isotopic plutonium, mercury, and chromium.

TA-3-007 firing site, type of release copper; bismuth-211, 212, 214; cesium-137; lead-212, 214; radium-224; thallium-228; organics; thorium; and HE.

TA-4-004. Soil contamination. Type

of release photographic chemicals, radionuclides, beryllium, lead, aluminum, HE, terbium, terbium oxide, and unspecified laboratory chemicals.

TA-9-012, disposal pit. Type of release unknown. I include that one because at the Board meeting we had in Sante Fe in November, one of the guards mentioned doing a training exercise and they found out later it was a hot dump, and I think this might be the location that he was talking about. And it's been uncharacterized, but it's referred to as a hot dump.

TA-15-001, surface disposal, this is called the bone yard. Type of release, HE, lead, uranium, beryllium, radionuclides, and other unknowns.

TA-16-005M, chemical pit decommissioned, type of release, undetonated HE, HE degradation, HE burn products, uranium,

depleted and enriched radium, cobalt, strontium-90 and barium.

TA-20-003B, firing site, type of release, strontium-90, radionuclides, metals, uranium-235, and lead.

TA-35-003R, effluent receiving canyon. Type of release, inorganic chemicals, organic chemicals, PCBs, and radionuclides.

TA-39-002A, storage area. Type of release, systematic release of solid waste including RCRA regulated constituents. There is potential for radioactive contamination from stored debris at the site. Solvents were also stored at the site.

TA-42-002A, former structures, and this is currently in TA-55 now, near building 66. That's a decommissioned site. Radionuclides; americium-241; cesium-137; lanthanum-140; plutonium-238, 239; tritium; uranium-235; unspecified fission products;

acids; and organic compounds.

TA-43-001B2, outfall. Type of release, radionuclides, sanitary waste, cooling water.

TA-46-004, outfall B. Type of release, barium, cadmium, copper, lead, mercury, nickel, silver, zinc, and uranium isotopes. Mercury and uranium isotopes were found above screening action levels and uranium-234, uranium-235 and uranium-238 were above background.

And I included those basically because -- and these are just some of them now, not all the sites listed in the fact sheet contain radionuclides. A lot of them are chemical releases.

But there are radionuclide releases but a lot of them are commons but there are some that it just says radionuclides and that's I think the concern, because they

are saying that these need to be evaluated to see if they are still a threat -- or to the environment or human health, but it only says radionuclides.

I think you have to look at that, and that's the point that I have been trying to make as far as dealing with these. And the ones I picked were outfalls, and there are some others, or you know, I think these show more potential for exposure than some of the others as well because some of them are like septic systems or drainage lines.

But my concern is if you have a release to the environment in like the guards, fire fighters are running around in the canyons, either guards were doing training exercises or fire fighters were fighting fires, some of these are near older buildings, and you have the craftsperson out working near them, my concern is what is the potential for

exposure, you know, can you guys determine that and the -- exposure pathway, and then what is the risk incurred from that. I think that's the point that I have been trying to make as far as identifying these source terms and the exposure pathways.

As far as dealing with the fire, a lot of -- there's a lot of sites that I listed starting on page 46, like I said, those are chemical releases and not necessarily all of them were radionuclide releases.

Because what I did is, in the maps that I included with the petition, showed all these sites as either potential release sites or areas of concern. So I just picked the ones that were inside the fire lines, I didn't go down and break it down to the ones that actually contained radionuclides.

You know, it would probably shorten the list, but you know that's the

concern there.

CHAIRMAN GRIFFON: So I think we are probably right in dividing it into exotics versus these other environmental exposures where people are working around the site and the issue gets back to what Joe was saying is the -- if -- are the source terms characterized well enough, and can you figure out resuspension potential and exposure that way.

So I would kind of roll part of that into the last answer, 1.5 covers the environmental exposures and the adequacy to make sure we can -- the environmental model covers all these potentials.

MR. EVASKOVICH: And then if I can about the environmental model. As a result of the Clean Air Act lawsuit, the NESHAP that Joe was referring to, they had an audit team that went and conducted an audit as part of the

resolution of the case.

And they questioned the historical data of releases, stack monitoring, because it did not meet the requirements, and I cite that in the petition.

The point from the report is the audit team determined that a lack of documentation regarding facility inventories severely precluded a thorough evaluation regarding the quality and completeness of the reported 1996 inventory.

Because of the lack of facility documentation, neither the audit team or even LANL could discern whether the reported inventory value is truly represented. So that kind of goes back to what I am saying as far as the inventories and the accuracy and the quality of the data.

Second the audit team reported LANL did not necessitate prompt recognition of

operational changes that could affect stack monitoring requirements. Groups identified changes only for new projects that needed additional funding. Laboratory personnel did not understand that they must evaluate all radionuclide usage despite of the amount regarding its potential to impact monitoring requirements.

Basically that's just saying that they didn't update their monitoring requirements according to changes in operation unless they thought new funding would be required for this new operation that they were picking up.

The filters that LANL uses to collect radionuclide samples, there were some issues that this report brought up. And they said that the LANL filters may not be thin enough to prevent self-absorption. As a result, gross alpha counting accuracy is

uncertain.

Then there's also a discussion concerning beryllium-7 sampling. During the discussion it states that for beryllium-7, filter collection efficiency is quite poor. And I think that's interesting because you are referring to the air monitoring beryllium-7 to develop your ratio. So if the data isn't any good, then I think your ratio -- I think you need to look at this information as well.

And it wasn't, there's some additional -- there was a statement in there concerning holding of the activation products, I believe, and I think there was some discussion of that as well in that report, and they felt that LANL wasn't holding it long enough in order to allow for decay of the activation products coming from LAMPF.

So and I included this report as well, just the first report, and it was sent

in not in electronic format, but in paper format, because the copy I had was on paper. So you know, this -- I think that makes the point that I have been trying to make as far as the environmental monitoring.

CHAIRMAN GRIFFON: Okay.

MEMBER MUNN: Question.

CHAIRMAN GRIFFON: Yes, go ahead, Wanda.

MEMBER MUNN: Perhaps I missed the first introductory comments with respect to the initial list of potential sources that was being read. What was the documentation or what was the source of that list of potential contaminants?

MR. EVASKOVICH: Hold on just a minute.

MEMBER MUNN: Where did that source come from that was incorporated into the SEC?

CHAIRMAN GRIFFON: Andrew is getting that reference.

MR. EVASKOVICH: It's called Fact Sheet Appendix SMWUs and AOCs, and that comes from the RCRA permit that LANL submits to the New Mexico Environment Department, and it's like 500 some pages long, and it lists a variety of sites and issues that the NMED has with them and what they expect LANL to do with the sites.

MEMBER BEACH: You sent that around to us, didn't you, at some point?

MR. EVASKOVICH: I know it's included -- it was included in the petition because I refer to it.

CHAIRMAN GRIFFON: Right.

MEMBER MUNN: And I have also seen it in the SEC petition itself. I just -- it's been so long since I have glanced at it that I couldn't remember where it had come from.

So I can check that. Which of the SECs was that, Andrew, which --

MR. EVASKOVICH: 109. 00109.

MEMBER MUNN: All right. Got it, thank you.

MR. EVASKOVICH: And I believe it's, well, I don't know, I am assuming you guys put everything on the hard drive. Is it on the O: drive?

CHAIRMAN GRIFFON: Yes, it's somewhere on the O: drive.

MR. EVASKOVICH: Look for a fact --

MEMBER MUNN: I didn't know what its reference was. I will find it.

MR. EVASKOVICH: Yes, look for fact sheet appendix.

MEMBER MUNN: Okay.

MR. EVASKOVICH: SMWUs and AOCs.

MEMBER MUNN: Got it.

MR. EVASKOVICH: And if need be, I can resubmit that.

CHAIRMAN GRIFFON: No, I think we are fine. All right, I am going to divide that 1.6 up into two, you know, the other areas to expand on your exotics table, and then the other section environmental source terms, right, potential environmental source terms.

And 1.7 I think we can roll into that now, and this is the fire. I think you issued a White Paper on this, correct?

DR. MACIEVIC: Yes, we did.

CHAIRMAN GRIFFON: Maybe you can give us an overview and then Joe can --

DR. MACIEVIC: Well I can give a brief summary of what -- I can ask Don after I am done just to give anything to add if he wants. Basically we have a document by Everhart, a report that was generated in 2010,

which has new numbers on the fire and an analysis and several indications of what calculations of the effects of the fire and the dose and all that, and these numbers were used in the White Paper using highly conservative breathing rates and models of time spent in fighting the fire to come up with a dose model, and the only dose model using these new numbers that has any significance is a dose rate, or a dose, total dose, of essentially 0.1 millirem for an assumed plutonium-238 absorption type S to the thoracic lymph nodes.

And so it's a very small number that they have come up with and using the numbers from that paper, so it basically has a very small contribution of all to the overall dose from the fire.

Don, would you like to add anything to that?

MR. STEWART: Well that's really essentially it. They did some fairly exhaustive sampling based on the sampling data that we do have. It is actually quite a wide range of concentrations that they measured, and some sites were clearly above other sites, and it's pretty interesting to see that list of sites if you want to go back and look at that restaurant -- reference. I don't remember exactly all of them now, but one of them was the McDonald's.

So, and that was a fairly high site. What the overwhelming exposure was in this case were naturally occurring radon progeny that had deposited on vegetation, and the fire, as fires always do by the way, resuspended that very effectively such that any man-made radionuclide contributions were very much smaller. But what we did was we took the maximum measured air concentrations and we

used them to come up with an intake based on a conservative breathing rate, and the doses were small.

CHAIRMAN GRIFFON: Joe, did you guys have a chance to look at this?

MR. FITZGERALD: Yes, we did, and I guess sort of following up on, I guess, comments that Andrew had raised at the last meeting, the averaging is based on a monitoring station that was deemed to be perhaps most representative of -- or a upper bound representative, maybe that's the way to say it, of the -- what was emitted during the fire -- one of the monitoring stations. That's the LANL document.

And I think there was some question as to how representative would that have been of the -- what the individual firefighters would have been exposed to doing the procedures they were active in doing, one

of which was after the fire, sifting through ashes for some weeks and whether that would have been representative of the -- this gets into almost resuspension again, which has been talked about before that you know, on one had you have a fixed air monitoring station which is the basis for the averaging --

DR. MACIEVIC: Well let me ask Don. Don, was it, in the new report, is it one monitoring station that they are using these numbers from or is there new info?

MR. STEWART: Oh, in the Everhart report?

DR. MACIEVIC: Yes, in the Everhart report.

MR. FITZGERALD: The 2001, yes.

DR. MACIEVIC: No, in fact --

MR. STEWART: 2010.

DR. MACIEVIC: -- this was all the stations that they had. I simply took the

largest number.

DR. MACIEVIC: Pardon me, I didn't hear the last part, what was that?

MR. STEWART: I simply took the largest number of any sampling station.

DR. MACIEVIC: From all the sampling --

MR. FITZGERALD: Of all the sampling stations.

DR. MACIEVIC: So, but it wasn't just one sampling situation?

MR. STEWART: No, sir, it was not. It was all the data that had been in the previous report, and they went through and they looked at them again, and yes, I look at all sampling stations, and it was interesting that some of the offsite stations were higher.

MR. FITZGERALD: Now how would you reconcile that with the actual work that -- I am going to use the fire fighters because I

agree with your assumption that they are probably the bounding worker in this whole thing -- in terms of their actual up close and personal activity on the site, again it was raised, an example of going in to different TAs, sifting through ashes, making sure there's no hotspots, that whole thing, which would be a little different than I would think a area monitoring reading, but would be -- you know, you would be exposed to particulates, you would be exposed pretty much in the breathing zone.

I am just trying to figure out, I think that was raised by Andrew and others at the last session, and I think that was the question I still had.

MR. STEWART: Right, well, you know I tend to go back with my field experience and with our excavation controls, our rad controls. Typically our excavation

limits are very much higher than regular inside the facility limits, air monitoring limits.

And the reason is that the dust becomes a limiting factor. The area, the amount of time that a person can work due to dust control, all these particles are -- matrix to soil and other debris, if we control the dust, it seems to keep the concentrations down.

I don't know if I am saying that very well, but certainly a concern, an additional concern when you are doing work of that nature, is to control the dust that you are breathing in, and I guess I would summarize it, what we found at Hanford was that that was a good way to index how much exposure you were getting, the amount oh golly, I am not saying this well -- you are talking about material that is spread all over

the place, and it's in dirt and dust and soot particles, it's in all these other things.

So, well, I couldn't really tell you. If you frame the question for me, in terms I could go and look at some references.

MR. FITZGERALD: Well, I'm just going -- actually this is more the questioning I got from the firefighters we interviewed, I think even Andrew mentioned it, is that they--

MR. STEWART: Yes, questions like that can really --

MR. FITZGERALD: They have a problem with these --

MR. STEWART: I'd be more than willing to take a look at your question.

MR. FITZGERALD: Okay. Just in general, they have a problem with these air monitoring sitting at McDonald's or whatever it is that's being a -- as a representative

sample, given the type of activities they are engaged in which may be, you know, in terms of firefighter, actually sifting the ashes by hand.

So I think trying to reconcile what they know they were doing versus what they read as these air samples that were being taken at these different locations that may or may not have been right on top of what they were doing, I think there's a -- that may be over-simplifying it, but I think that's sort of the basis for why there is this disconnect because their point is well no, that clearly -- you know, I wasn't -- you know, in terms of ashes, in terms of resuspension, I was in the middle of it raking ashes for two or three weeks, and that's not going to be the same as an air monitor sitting on a pole over at McDonald's, or whatever, even the highest one, it wouldn't be the same.

And I think that's where the disconnect may be. And I don't know how the Everhart analysis addresses that particular issue, but that's kind of what I get from talking to the firefighters that they had a real problem accepting that as representative.

MR. STEWART: Well, just a comment on the term representative. We often don't try to argue representativeness of our samples. In this case we simply took the highest number that was available, and we do that a lot in dose reconstruction as well.

CHAIRMAN GRIFFON: Were there any bioassay samples or individual samples?

DR. NETON: It seems like these people would have had enough bioassay samples if they were sifting through --

MR. EVASKOVICH: No, the firefighters that we talked to, they said there was no bioassay for them after the fire,

and that was one of their concerns.

DR. NETON: And these are Los Alamos firefighters?

MR. EVASKOVICH: Well, the way the fire department is structured, they used to be DOE firefighters, but they went county back in the '90s and then they have a contract with the laboratory to provide fire protection services.

DR. NETON: I wonder if they are covered employees.

MR. EVASKOVICH: They are.

DR. NETON: Off site, off site based firefighters. I guess something around--

MR. EVASKOVICH: They are contracted to provide fire services, and they actually go though the buildings, not only do they fight fires, but they -- well they respond to fire alarms on LANL property, but they are also conducting fire protection

services as well.

MEMBER BEACH: Fire maintenance.

MR. EVASKOVICH: Yes, and they have to go through, and they have to check the fire alarm systems, and I think they are also -- I am not too sure if they review the fire suppression systems as well,

MEMBER BEACH: Yes, they would. They do on our site anyway.

DR. NETON: I would still be surprised if they didn't leave some samples.

CHAIRMAN GRIFFON: Yes.

DR. NETON: We could check into that, I suppose.

CHAIRMAN GRIFFON: I think there is the question, the remaining question I think is that.

MR. FITZGERALD: I think it's the biggest issue, and having interviewed these people personally, I think clearly they see

the report, they see analysis and they say well, that doesn't strike a chord for them.

CHAIRMAN GRIFFON: Well, it makes me wonder as well, yes.

MR. EVASKOVICH: Well the point that coincides with this is the fire wasn't declared out until July 20th, but you are referring to the 17 days of the actual, you know, when it's burning and material being burned, smoke in the air.

And the issue that I raised and I still haven't heard really addressed that well is the filters, the sampling filters were getting clogged because of all the particulate in the air, and one of the reports referenced the uncertainty in the data capture increased by an order of magnitude because of this.

And additionally when the fire was burning on LANL property, the air monitors were not working due to a loss of power. So

you are not capturing data for the actual fire itself, when it's on the laboratory property.

MR. STEWART: The report -- I'd have to make -- again -- the report does mention that some samples were not available because there was power losses. Overall coverage was pretty good, but there was a number given in the report, I can't remember what the exact value of it was, but it was actually fairly high, though there were samplers that lost power. For the most part, sampling was conducted during the fire.

MR. EVASKOVICH: I think -- I'm not sure. I know the EPA and the state were also sampling as well as LANL, but there was some question as far as crossover of the data because I think they were looking for different things.

I think that was also in the fire report as well, the Risk Assessment

Corporation report that I referred to, and I think there were some questions as far as dosing because of the conflicts between the data sets, and that was raised in that Risk Assessment Corporation report.

So yes, you have data, but I think it's a question of usability and quality of the data.

CHAIRMAN GRIFFON: Yes, and I think we hit on the main question of does it -- and you know either representative or overestimating of the workers' exposure. I think we are not so honed in on representative, as long as it's, you know, can be demonstrated that it's an overestimate to use the approach you are describing. So all right, let's hit I think the last one, number 8, was a Work Group issue, and I am going to do what we have often done which is to put it down as remains a Work Group issue because I

didn't think about it and I am not sure if my colleagues in the Work Group -- I mean this is the question of did something -- Nevada Test Site, right, so we certainly should look at that and reflect on consistency of our determinations, but I haven't --

MEMBER BEACH: Well do we need more details on what's similar or not similar? It's a pretty broad --

CHAIRMAN GRIFFON: Yes, that was pretty broad --

MR. FITZGERALD: Well, I think, trying to remember back, the notion with exotics was these were, I guess --

CHAIRMAN GRIFFON: Campaign-driven.

MR. FITZGERALD: -- campaign-based, they weren't, you know, lengthy operations, and the approach to the testing at NTS, which is I guess analogous essentially at

least, you know, set periods of time when you actually ran the test you know, but that was episodic as well, so whether or not -- and I am not -- I am not fully familiar with NTS --

DR. NETON: NTS is based on much more than just the --

CHAIRMAN GRIFFON: Campaign.

DR. NETON: -- campaign-based nature, I mean there was a very large gap in our knowledge of how they ran their rad protection program, and we searched high and low and couldn't find a good document that sort of led us to how they determined who was going to be monitored and such, or as I think we talked about this morning, there's pages and pages of health physics procedures available, with RWP systems in place, and the whole nine yards, that I think give us, at least me, a fairly good comfort level that something was in place to make those

decisions. I'm not prejudging here, I'm just saying, that is a difference that I see between NTS --

MR. EVASKOVICH: Well, if I can comment, I think one of the issues I tried to make was the size of the data sets and if you look at the in vivo data sets for LANL, you have a large amount for plutonium and uranium and americium but not for the exotics, and that was one of the points I think was in that report that came out in November of '09, was the size of the data sets available for NTS, and I think that was my concern when I raised that question, was you know, how small is too small or how much is enough in order to actually do a dose reconstruction.

DR. NETON: Well, there's a reason they are called exotics. I mean, they are infrequently used radionuclides, so you would expect the data set to be much smaller. The

question is the data set large enough to be representative of what --

MR. EVASKOVICH: And that's the point that I was trying to make, the issue that I was trying to incorporate as far as -- because looking at the data sets for the in vivo that were included the last time, you see a lot of zeroes and ones and twos and 10s and 20s, and I am like, is that representative enough in order to do a dose reconstruction?

DR. MACIEVIC: The one thing we should look at is that because a data set has a lot of low numbers with zeroes and all that, a zero, 10, 20 doesn't imply the site has missed everything and everything is wrong.

I mean you may actually have zeroes, 10s, and 20s and that 50, 100 and 1,000 millirem is the freak number --

(Simultaneous speaking.)

DR. MACIEVIC: Well number of

samples, too, but I think as well as we tend to look at these data sets and say oh look, there's a lot of zeroes, that means there's something wrong, whereas --

MR. EVASKOVICH: No, that's not -- I am saying is it representative? That's my question. Can you take that number, say you have got a data set of 10 for germanium, cam you take that 10 samples and apply it to workers in order to reconstruct dose of those who were potentially exposed. That's my question.

DR. MACIEVIC: Depends on whether what you are applying it to is a particular task. If you got 10 readings of a task that lasted over a short period of time that didn't continue, you can say yes.

But if you are taking that 10 samples and applying it to five years worth of effort, then yes, I would say that's --

MR. EVASKOVICH: Well, that's the point I am trying to make is because that covers '76 to 2005. And I think maybe if you are going to reconstruct dose and just say yes, this is adequate, at least include an explanation of why you think it is adequate.

And all it comes back to like, what I have said in the past, is explanations, I think, PR, you know, public relations, and I think that's part of the issue is, you know, the understanding of the public concerning how the program works and you guys have made an effort with the workshops and the Board meetings help. But just explain to people how things work and I think that's part of the difficulties that we face as the claimants and petitioners is understanding process.

So, you know, I am saying if it's not there, you know, add the Class, if it is there then explain how it works if you can. I

mean I understand the difficulties there too, so that people understand it.

DR. MACIEVIC: Well, but since we are on this type of thing, as far as if I have 100 activities that I can explain and I can't explain one, does that mean it's an SEC?

I mean, you know, how far do we dig into the -- do we have to have a handle on every activity that ever went on at a site and cannot do it? I mean, that I think is --

MR. EVASKOVICH: I understand that. I concede that point.

MS. ROBERTSON-DEMERS: This is Kathy DeMers, since we are on the topic of NTS, a clarifying question. If you have a LANL worker who was involved in testing beyond '75 and meets the 250 day criteria, they were at the test site right next to the REECO workers, working on various tasks, how do you treat that individual with respect to the NTS SEC?

DR. NETON: Did you say the REECO worker?

MS. ROBERTSON-DEMERS: No, no, an individual from LANL that's sent up to the test site and is working side by side with a REECO person --

DR. NETON: Oh, REECO.

MS. ROBERTSON-DEMERS: -- who falls under an SEC at Nevada. How do you treat the LANL worker who meets the 250 day requirement, say they visited 250 days at NTS?

DR. NETON: It would seem if he was exposed at the NTS site, he would be covered under NTS SEC. It's work at that site. It's not where you worked. I guess I would have to think about it, but my gut reaction is it would be covered, but I -- maybe there's a --

CHAIRMAN GRIFFON: Sort of --

MS. ROBERTSON-DEMERS: Well that's

what I have been wondering because you have these weapons laboratories, and they send people to NTS, and they are right next to the REECO people. Are they covered under the NTS SEC petition?

DR. NETON: Well, this exposure has to be covered somewhere, and it wouldn't be covered at NTS because he didn't incur the -- your exposure has to be where you incurred it.

MS. ROBERTSON-DEMERS: Well, he received the exposure at NTS.

DR. NETON: Right, so I would think that it would be covered exposure at NTS. Essentially he was working at the Nevada Test Site even though his employer was --

CHAIRMAN GRIFFON: But he would have to meet the 250 day, right?

DR. NETON: Yes, they have to meet the --

MS. ROBERTSON-DEMERS: Yes. Well this is a question that I have had because you have Livermore people, you have LANL people, you have Sandia people, and I would like to get a clarification on this.

DR. NETON: We could do that for you.

CHAIRMAN GRIFFON: Sometimes that might be the 250 day issue, too.

MR. KATZ: Don't you have experience with this with dose reconstructions? Are you reconstructing doses at other sites for an individual while they are employed as a lab employee?

DR. NETON: I'm pretty sure that the exposure that you receive at the site, as a visitor at that site, is covered at site, not at your home base employer.

MR. KATZ: Right, well then that's the answer then.

DR. NETON: I think that answers it, but sometimes I say things and go back and check if there's some quirk that I'm missing.

MS. ROBERTSON-DEMERS: Well can you confirm your answer?

DR. NETON: Yes, I can definitely do that.

CHAIRMAN GRIFFON: We can do this off line.

MR. FITZGERALD: It seems like what would confuse it is if your monitoring was done back at your home site and you are listed as a LANL employee. I don't know how that would --

DR. NETON: Well, but I would think that you would have a badge at the test site.

MR. FITZGERALD: You would have the external badge, but I am wondering where your bioassays would go. You know, maybe it

doesn't matter if you are there 250 days --

DR. NETON: You are in, yes.

MR. FITZGERALD: -- you are in, but if you are an employee of the lab, you know, I could see whether that could be -- that could screw you up a little bit if it came in --

DR. NETON: I hear you, Kathy. I'm pretty sure the answer's right, but I will verify that and make sure --

MR. STEWART: Let me chime in just a little bit. If I am a Los Alamos worker who works at NTS, I get dose records back from both sites.

MEMBER MUNN: Yes.

MR. STEWART: And if I had a bioassay sample and for some reason that's not very typical, because they didn't do a lot of bioassays at NTS, I will use the NTS assumptions to figure the dose from that

bioassay, not the Los Alamos one.

DR. NETON: You would give him the dose at NTS, though, right?

MR. STEWART: Yes, it would be based on NTS's external dose.

DR. NETON: There's no way you could assign NTS dose to exposure at Los Alamos. It just doesn't work that way.

MR. STEWART: Yes, I mean, and I have done that before, I have made that mistake. A peer reviewer has commented, he said okay well you assigned 12 zeroes, but four of them were zeroes from NTS and there was a different LOD at NTS and so you have to put the right level of detection to use the right level of detection to determine the missed dose, oh, I missed that one.

So yes, the dose parameters specific to the site are applied to the doses from that site.

MS. ROBERTSON-DEMERS: I understand that, but my concern is if the LANL worker meets the 250 day rule, he is exposed to the same source term as the REECO person who worked at NTS. Is he not eligible for the Nevada Test Site --

MR. STEWART: If he was at NTS for 250 days he is eligible under the NTS SEC.

DR. NETON: If you look at the definition, the Class definition, Kathy, I think it says all DOE workers, contractors, subcontractors, whatever, who worked at the Nevada Test Site for 250 days. If you meet that definition you are in, no matter who your employer was, if you were working there.

CHAIRMAN GRIFFON: Okay, well, we will follow up on this and they will get back to you, Kathy, I'm sure.

DR. NETON: I'll verify that, but I think that's the answer.

CHAIRMAN GRIFFON: All right.

MS. ROBERTSON-DEMERS: And the other question is I hear what you are saying, but is it being applied?

MR. KATZ: Well you know this, I mean, first of all this is a DOL process if they are in the SEC or not, but we will get an answer as to what is supposed to be done and if you want to follow up on a particular individual with DOL, if DOL did it, they wouldn't even come to us. They would be put in the SEC; we wouldn't see their case.

MS. ROBERTSON-DEMERS: Okay.

CHAIRMAN GRIFFON: All right, is there anything else for today?

I think we got it -- did you have anything else, Andrew, to add? You got your comments in at the end there.

MR. EVASKOVICH: No, I --

CHAIRMAN GRIFFON: All right I

think if there is nothing else that should do it for the Work Group. Wanda?

MEMBER MUNN: Yes.

CHAIRMAN GRIFFON: We didn't assign anything to Procedures. You need something to do to keep you busy?

MEMBER MUNN: Well, if there's something that comes to mind after you are all done and finished, do let me know, I always have space for you guys on Procedures, you bet.

CHAIRMAN GRIFFON: Just one question. What time is dinner, and what are you serving?

MEMBER MUNN: Well, dinner is going to be late for you, very, very late. So you will just have time to get here, and it will probably be leftover Easter ham.

MEMBER PRESLEY: Wanda.

MEMBER MUNN: Yes.

CHAIRMAN GRIFFON: Meeting adjourned.

(Whereupon the above-entitled matter went off the record at 3:23 p.m.)