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

convenes the

WORKGROUP MEETING

ADVISORY BOARD ON

RADIATION AND WORKER HEALTH

PINELLAS

The verbatim transcript of the Workgroup Meeting of the Advisory Board on Radiation and Worker Health held at the Airport Marriott, Hebron, Kentucky, on June 11, 2008.

STEVEN RAY GREEN AND ASSOCIATES
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C O N T E N T S

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TRANSCRIPT LEGEND

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-- (sic) denotes an incorrect usage or pronunciation of a word which is transcribed in its original form as reported.

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-- "uh-huh" represents an affirmative response, and "uh-uh" represents a negative response.

-- "*" denotes a spelling based on phonetics, without reference available.

-- ^/ (inaudible)/ (unintelligible) signifies speaker failure, usually failure to use a microphone.

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MAURO, JOHN, SC&A
MIAOULIS, SHIRLEY, CONG. YOUNG
NETON, JIM, NIOSH
PHILLIPS, CHICK, SC&A
THOMAS, ELYSE, ORAU

P R O C E E D I N G S

(9:00 a.m.)

WELCOME AND OPENING COMMENTS
DR. CHRISTINE BRANCHE, DFO

DR. BRANCHE: Welcome to the first meeting of the Pinellas Working Group. I'm Dr. Christine Branche, and I'm the Designated Federal Official. It's a pleasure to be with you this morning. I would first like to ask the Board members who are in the room to announce their names, please.

MR. SCHOFIELD: Phillip Schofield.

MR. CLAWSON: Brad Clawson.

MR. GIBSON: Mike Gibson.

MR. PRESLEY: Robert Presley.

DR. BRANCHE: Any Board members participating by phone, would you please state your name?

(no response)

DR. BRANCHE: Dr. Poston, are you on the line?

(no response)

DR. BRANCHE: Are there any other Board members who are on the line?

(no response)

DR. BRANCHE: We do not have a quorum so we can, of the Board, so we can continue.

Would any NIOSH staff in the room please state your name?

MR. ELLIOTT: Larry Elliott, NIOSH, no conflict with Pinellas.

DR. BRANCHE: Thank you.

And state your conflict. I appreciate it.

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

MS. ADAMS: Nancy Adams, no conflict.

MR. DARNELL: Peter Darnell, OCAS, no conflict.

DR. BRANCHE: OCAS staff in the room, please state your names and say if you have a conflict with Pinellas. What did I say? ORAU. I said OCAS. I meant ORAU.

MS. THOMAS: Elyse Thomas, no conflict with Pinellas.

MR. GLECKLER: Brian Gleckler, no conflict with Pinellas.

DR. BRANCHE: NIOSH staff participating by phone, would you please state your name and say whether or not you have a conflict with

Pinellas?

(no response)

DR. BRANCHE: ORAU staff participating by phone, would you please state your name and state whether or not you have a conflict with Pinellas?

(no response)

DR. BRANCHE: SC&A staff in the room -- we'll get back to them. John Mauro is here.

SC&A staff participating by phone would you please state your name and say whether or not you have a conflict with Pinellas?

(no response)

DR. BRANCHE: Other federal agency staff in the room, please state your name and state whether or not you have a conflict with Pinellas.

MS. HOWELL: Emily Howell, HHS, no conflict.

DR. BRANCHE: Other federal agency staff participating by phone, would you please state your name and state whether or not you have a conflict with Pinellas.

MR. KOTSCH (by Telephone): Jeff Kotsch, Department of Labor.

DR. BRANCHE: Jeff, do you have a conflict with Pinellas?

MR. KOTSCH (by Telephone): No.

DR. BRANCHE: Thank you.

Petitioners or their representatives, would you please state your names?

(no response)

DR. BRANCHE: Petitioners or their representatives, would you please state your names?

(no response)

DR. BRANCHE: Members of Congress or your reps, would you please state your names?

(no response)

DR. BRANCHE: Anyone else who is participating by phone would you please state your names for the record, if you wish.

(no response)

DR. BRANCHE: Thank you.

Again, I ask people in the room to please mute your phones. And those of you participating by phone, would you please mute your phones as well? It is very important for the quality of the sound for everyone participating by phone that you mute your

line. If you do not have a mute button, then please use star six to mute your phone. Then you would need to use that same star six to un-mute your phone when you're ready to speak. Thank you so much. I appreciate your using telephone etiquette so that everyone participating by phone can hear. Thank you so much.

Mr. Schofield, it's all yours.

MR. SCHOFIELD: I appreciate everybody coming. This is the first work group meeting we've got on Pinellas. I don't know, I haven't really set on how far we're going to get through today since this is the first one. I would like to get through it today, but if we don't well then I guess we meet again. I'd like to go ahead and start with the first issue here and turn it over to NIOSH.

DR. BRANCHE: What is the first issue?

MR. SCHOFIELD: The reconstruction doses.

DR. BRANCHE: Okay, thank you.

DR. NETON: It might be better if SC&A stated their position and then we would respond to it.

DR. BRANCHE: We may have a bit of a

challenge with that since our only SC&A representative is not in the room.

(Whereupon, the meeting paused until Dr. Mauro joined the meeting.)

INTRODUCTION BY SC&A

DR. MAURO: Good morning, John Mauro, no conflict, SC&A.

MR. SCHOFIELD: And it's turned over to you.

DR. MAURO: And I have it. Okay, that's fine. I stepped away from the table for a moment to make a few copies of the matrix handouts. Christine is finishing up. We're almost done.

This I believe is the first meeting of the Pinellas Working Group. Most of you, if not all of you, have received not only our main report, the bound version, ^ bound, that was dated September 15th, 2006. So that work was completed I guess over a year and a half ago.

And in the interim by the way after issuing this report, which I believe is on the web available for public consumption, SC&A and members of the Board were asked to meet with Senator Bill Nelson's folks. And Suzy Perez

Quinn (ph) was the young lady that met with us to get a briefing on this. So there's a little bit of background information.

In addition, anyone who doesn't have an extra copy, there are -- I made four all together.

DR. BRANCHE: And three of them have been distributed.

DR. MAURO: Very good. It looks large, but it's not that large. There's some empty pages for room for NIOSH to fill in.

The matrix that you have before you is a little different in format than we've used in the past.

DR. NETON: John, before you get too far, you talked about Rev 0 was issued 9/15/06. But there's also a Rev. 1 with a May 2007 date. Do you know what the difference is between those two documents? It might be potentially the same.

DR. MAURO: It might be just the PA cleared. That is, the original one may have -- I'm guessing right now.

DR. NETON: I'd be surprised because it's actually listed I think as Rev. 1.

DR. MAURO: Called Rev 1?

Chick Phillips, are you on the line?

(no response)

DR. NETON: Sorry, no, it is Rev. 0 still. So that's probably it. I was just confused because there's two issue dates, and then the May 2007 is the one that I brought, and I think they're the same document.

DR. MAURO: I'm not aware of any changes. The only time that happens is when we go through from a non-PA to a PA-cleared version. Other than that I'm not aware of any changes that were made.

DR. BRANCHE: There's someone participating by phone who's typing, and you haven't yet muted your phone. Perhaps you joined us late. Would you please mute your phone? If you do not have a mute button, then please use star six. Thank you very much.

DR. NETON: I checked the findings, and they're the same.

MS. MIAOULIS: Excuse me. I'm Shirley with Congressman Young's office. I didn't know if you knew I was on.

DR. BRANCHE: No, I did not, so thank you

very much. Shirley, do you have a last name that we can use?

MS. MIAOULIS: Yes, it's M-I-A-O-U-L-I-S.

DR. BRANCHE: M-I-A-O-U-L-S?

MS. MIAOULIS: No, M-I-A-O-U-L-I-S, and I'm with Congressman Bill Young.

DR. BRANCHE: Thank you so much. I do ask that you use a mute button or star six so that you can mute your line so that everyone participating by phone will be able to hear without any hindrance. And I appreciate your joining us this morning. Thank you.

MR. PHILLIPS (by Telephone): This is Chick Phillips. I'm on now, with SC&A.

DR. MAURO: Chick, good timing. Jim Neton raised a question. He noticed that our report that I have in front of me, the hard copy now, is dated September 15th, 2006. And apparently there is a Rev. 0 and a Rev. 1, and he asked whether or not that, in fact, is the case that there was a revision made. And I just speculated that that might be going from the non-PA to the PA-cleared version. Do you have any further information regarding that transition?

MR. PHILLIPS (by Telephone): No, I don't, John. I assume that to be the case.

DR. MAURO: That's what I do also because I don't remember any change, any substantive changes made to the original draft. I think we all have --

MR. PHILLIPS (by Telephone): Well, let me back up. We did, too. We went back and revised it to include the questions that were submitted to NIOSH.

DR. MAURO: Okay, and I was about to talk about that a little bit. The reason why the matrix looks quite a bit different than what you're used to seeing is we decided -- see, what happened, normally, when we prepare a site profile review, one of the steps in the process along the way before we issue the report is to prepare a list of questions, and we send it off to NIOSH to have what I call a technical clarification/verification session.

Basically, in those conference calls we present to NIOSH some questions regarding the report that, the site profile, whereby we're just seeking clarification, further information regarding those matters. It turns

out because of at the time the press of the timing was such that it wasn't possible to go through that particular step.

So as a result we issued our draft report without the attachment that normally would contain the questions and the answers that result from those conference calls. Subsequent to issuing this report we did receive a written response from NIOSH to those questions. So in a way you could almost think about those questions almost like the first round of the closeout process in a way to look at it.

So we thought that to expedite matters we would include those questions and answers in the matrix, sort of kick this off and get a step up on the process. So you're going to see that, for example, you have the package in front of you.

What we tried to do, on the very first page, we just have, we numbered the, there are a total of 11 findings and a number of observations. The important issues are the findings. You'll see each page has a number, issue number, basically a very brief statement

of what the issue is, to right of the number one. And to the right of the issue you'll see a paragraph that is SC&A's finding. This comes right out of the executive summary.

Below, the second half of each page, you'll see the question that SC&A posed in writing to NIOSH as part of the process. And then to the right of that column you'll see NIOSH's written response to us regarding that question.

And then finally, to the right of that you'll see SC&A's what I would call recommended internal resolution. It's really meant for our own purposes, but I thought it would serve the working group well to see the information that had transpired up to today.

You'll see behind there's a blank page. The blank page is really there now with the expectation that as a result of this meeting, NIOSH might want to have some additional comments. SC&A might wish to respond to those comments. And, of course, there's always the column for Board recommendation and actions. So each one of the 11 findings is structured this way.

With that what I presume that we'll do is march through the 11 findings and get the dialogue started. I'd like to point out that out of the 11, I believe three we wrote down as part of our recommended resolution. As far as we're concerned the issue is resolved. But that leaves eight that probably require some discussion.

I noticed when I was going over this that the reason it's so thick is it does not only include the 11 findings, but behind the 11 findings there's a page for each of what we call observations. In reviewing the observations you'll see that there's a lot of similarity between the findings --

DR. BRANCHE: I'm sorry.

If everyone would please make certain that you've muted your phones, I would appreciate it. Thank you.

John, continue.

DR. MAURO: You'll see that if we do get through the 11, my guess is we'll get through the observations pretty easily because there's a lot of -- once we get through the 11, for all intents and purposes there really is not

much left in the observation section, but we'll take a look at that just to make sure of it.

And I guess by way of introduction at that point I'd like to turn it over to Chick Phillips. Chick is with SC&A. He's our radiochemist, and he also was the lead author for putting together the site profile review.

So, Chick, if I may, I'd like to turn it over to you.

(no response)

DR. BRANCHE: You may need to un-mute your phone, Chick.

(no response)

DR. BRANCHE: Chick, you may be speaking, but you've got your mute button on or you've used star six.

(no response)

DR. MAURO: Did we lose the connection? Is there anyone else there on the line?

UNIDENTIFIED SPEAKER (by Telephone): Hello.

DR. BRANCHE: Okay, so we know that we have the phone working.

Chick Phillips, are you there?

(no response)

DR. MAURO: I assume for some reason we lost Chick. Hopefully, he'll be back and I'll do the best I can to pick it up and take it from there. So let's get started.

ISSUE 1: RECONSTRUCTION OF DOSES IN THE ABSENCE OF EARLY HEALTH PHYSICS INDUSTRIAL HYGIENE AND ENVIRONMENTAL RECORDS

Issue number one that we call reconstruction of doses in the absence of early health physics industrial hygiene and environmental records. The essence of this point is that apparently 1980 was a pretty important year in terms of the transition of the records for Pinellas going from a time period when the records were relatively sparse to when the records were quite a bit better.

And this issue goes toward, the question we raised is that we'd like to hear a little bit more -- remember, this one has a question and answer. So we raised the question we'd like to hear a little bit more about how you're going to deal with the pre-1980 where the records were somewhat sparse.

NIOSH responded, and the answer was despite some limitations in reference

detailing processes during the lifetime of the Pinellas plant, NIOSH is confident that the claimant favorability of the assumptions that were adopted for dealing with the early data are claimant favorable.

Now I also understand that --

MR. PHILLIPS (by Telephone): I'm back. I'm sorry.

DR. MAURO: Okay, Chick, thanks for getting back. You just saved me. I was doing the best I could to carry the ball. Where I am right now I just started to introduce issue number one with the issue dealing with the 1980 time period and the break point between pre-'80 and post-'80 and what the questions and answers were and what our position is. If you could take it from here, I'd appreciate it.

MR. PHILLIPS (by Telephone): Okay. I might just amend what I heard you say in the beginning. And that is you said that there were three findings that we were in basic agreement with, and we considered to be closed. And I'm not sure that I heard everything because I was having a bad

connection. But did you mention that some of these that we considered closed are dependent upon the revision of the site profile documents in accordance with what the NIOSH response was?

DR. MAURO: No, I did not say that. So, yeah, perhaps you should clarify that for us.

MR. PHILLIPS (by Telephone): As we go through here you'll see that the response from NIOSH indicates that there will potentially, at least, be some changes in the site profile documents. So when we say we're in agreement with that, of course, it's contingent upon the changes to the site profile documents.

John, I'm not sure how far you got with number one. I'm sorry.

DR. MAURO: Why don't you just take it from the top.

MR. PHILLIPS (by Telephone): Issue number one, reconstruction doses in absence of early records. In the site profile documents it indicates that there's an absence of pre-1980 records. And, of course, the problem with that is that one has to project into the early part of this, early part of the dose

reconstruction, records and information that are post-1980. We went to considerable lengths beyond the information contained on the O drive and in the site profile documents to obtain additional records from other sites.

We were not real successful in doing that, and there's a summary of that on the right-hand side in the recommended resolution part of that. But that is still a concern, and I'm not sure if anything has been done beyond the site profile, the information in the site profile documents, by NIOSH to recoup any of those early records at this point. We have no indication that there has been.

MR. DARNELL: This is Pete Darnell speaking. I don't know if I can agree with you saying absent. Sparse is probably closer to the truth as far as records being available. NIOSH has done record searches, and as always, as more documentation comes up we're willing to change the technical basis documents, add to the technical basis documents. If you have any other locations that we should be searching for, let us know, and we'll go look.

DR. NETON: This is Jim Neton. Just for my

own edification because I'm not as up to speed on this as I'd like to be. What type of records are we really talking about are really sparse? It seems to me that we had a fair amount of external dosimetry data in the early years. So are we primarily talking about external dosimetry data, bioassay data, that kind of thing?

MR. PHILLIPS (by Telephone): Yes, those are the kinds of things that we're talking about.

DR. MAURO: Both, Chick, both internal and external?

MR. PHILLIPS (by Telephone): Yes.

DR. NETON: I saw some earlier analyses I thought though that the external was a pretty consistent 20 percent of the population monitored or so or something of that nature which I believe we would tie to the, probably the appropriate percentage of the workforce that needed to be monitored, that sort of thing.

MR. PHILLIPS (by Telephone): How the selection for the personnel that were monitored, those kind of records that would allow you to determine if the right population

was monitored and those records, those actual records from that early.

DR. NETON: We're not talking about getting additional monitoring records because they more than likely don't exist. We're talking about documentation of the radiological protection program itself? I'm a little bit confused here.

MR. PHILLIPS (by Telephone): Yes, we're talking about those kind of documents as well as any personnel records that are available from that time period.

DR. MAURO: Chick, I noticed in looking over the matrix and reading the report issue number four deals a bit with this where dealing with the data, and there was a rather lengthy response provided in writing by NIOSH. It's issue number four where they talk a bit about the program and how it matured over time, the external dosimetry program it appears.

And our response in that case was NIOSH response is acceptable to SC&A. Is that indicative that perhaps that particular aspect of the early data are okay or is there still more to the story that you feel we need to

talk about?

MR. PHILLIPS (by Telephone): It's a matter of documentation of anything in the early part of this, pre-1980, particularly the records relative to the rad safety program and how the selection was made of the workers to be monitored.

DR. MAURO: Chick, I notice that that documentation is, at least to a certain degree, provided in issue number four. Now, would you say that if the, that that material that's described under NIOSH response for issue number four, if that were contained in the site profile, would that ameliorate a bit your concern regarding adequacy of external dosimetry data and documentation of the rationale behind the 25 percent or 20 percent of the people that were selected?

Because when I read that, I got the sense that this particular, I guess I read this as new material that explain what the rationale was, and if there was some citation of some documents that were published by GE that's quoted here by NIOSH that explains that, in effect, at least in those days --

they go back as early as 1966 -- that there was some discussion of the rationale for who was monitored and who wasn't monitored. And I guess me question is does that do the trick?

MR. PHILLIPS (by Telephone): If it were adequately documented in the site profile, I think that would alleviate a lot of the concerns, yes.

DR. MAURO: Okay, so that's important. What this means that in principle with that response if that response, in fact, was contained in the site profile that would never have come up as an issue. And so it's really a matter of revising the site profile to make that clear. Or is there anything else beside that that you would be looking for?

MR. PHILLIPS (by Telephone): No, I think if we've done an adequate, you know, if we've done the search of the other sites, which we seem to have done, then I think that would satisfy number one.

DR. MAURO: So what I'm hearing is two facets to this. One is the language that's in response to number four goes to a degree responding to this concern. But it sounds

like you'd also feel a little more degree of comfort if they went to some of these records centers such as LANL, Kansas City plant, SRS, Los Alamos, et cetera. And I heard from you that there was an attempt made to search those records by SC&A or was that a limited effort or, and you did not come up with anything?

MR. PHILLIPS (by Telephone): Yes, I think we went as far with that as we could. And I think we would like to be sure that NIOSH has depleted that effort, and they feel that they have retrieved from all these other sites which had some ties to Pinellas. And they came up with a similar result or either to include those in the site profile.

MR. GLECKLER: This is Brian Gleckler from the ORAU team. I'm the site profile owner now, the new site profile owner. Just to make sure I understand this, like I'm still not real clear on what types of records we're referring to. Are we, to me I interpret it as personal exposure records, but it sounds more like programmatic-type records that we're referring to. Can I get a clarification on that?

MR. PHILLIPS (by Telephone): Yes, programmatic-type records, in particular as we go through this you'll see that there were early concerns about the X-ray equipment and calibration and those kind of things, that that's available at another location.

MR. GLECKLER: Thank you.

DR. MAURO: Chick, I also noticed that there was a lot of concern about -- in some of the other findings -- internal dosimetry records for some, what I would call the more exotic radionuclides, at least at this site. Would that be part of the concern, too?

MR. PHILLIPS (by Telephone): Yes, it would. Any other comments on that particular issue? Are we clear on that?

(no response)

DR. MAURO: Phil, I guess my question to you is there any action item or recommendation or do you feel that this issue, I mean, it's really a matter now of is there anything more that you feel might need to be done to --

MR. SCHOFIELD: Not until the record search has gone on to see if there are any more records. I'd like to see if they can put a

copy of the Tiger Team's findings on the O drive if that would be possible.

MR. PHILLIPS (by Telephone): I'm sorry. I missed that.

MR. SCHOFIELD: I would like to see the Tiger Team's findings posted to the O drive, if possible, and any other records you find that we could use these for comparisons.

DR. NETON: I'm a little concerned about us committing to do any additional record searches right now. I'm not saying we won't, but I think we can prepare a response that sort of summarizes what we just talked about, which is the additional information response four is relevant to one. There may be some exotic nuclide issues to be addressed.

And I think we would like some time to evaluate the appropriateness or the fruitfulness of us conducting additional searches at a number of sites. Those can be extremely costly and time consuming. We're not saying we won't but before we commit to that, I think we'd like to craft a response.

MR. CLAWSON: For an action item what we'd probably have is NIOSH will further

investigate the --

DR. NETON: Evaluate the utility of capturing additional records at these sites. We may indeed have gone to some of these sites already. I don't know. We may know internally among our data capture teams that it's unlikely that we'll obtain some information because these sites can be very time consuming and costly.

MR. SCHOFIELD: That sounds like a reasonable approach.

DR. NETON: Just give us a chance, I think, to explore that, and we may indeed come out on that side of the equation which is, yeah, it makes sense to do it. But I prefer not to commit to that at this meeting.

MS. THOMAS: We might be better able to document for everyone what records we did search to get the information we have, too. So that's something else we could do.

DR. NETON: That was my sense. Sometimes that's not adequately communicated in the site profiles, you know, what we did look for, what we didn't.

DR. MAURO: As a backdrop I know that very

often when we get into this stage of the process, especially if it's an SEC, like we just recently went through this process with Fernald where, as a result of the triggering of the SEC and some of the important issues, one of the issues we raised was thorium. And as a result of subsequent efforts to deal with that one particular hot item so to speak, it was retrieval of a substantial amount of additional records. So in that case that was a very important exercise. I'm not saying that's the same thing we have here, but, yeah, you got the idea.

MR. PHILLIPS (by Telephone): As I understand it you will prepare a response to that --

DR. NETON: Right.

MR. PHILLIPS (by Telephone): -- to indicate what has been done as well as what you see might be done beyond that.

DR. NETON: I also think a very nice, robust summary of our position on the availability of current records in house, like we say, number four addressed, had a response to a lot of number one. I suspect there's also additional

information to talk about the, that there'll be records for the exotic radionuclides, that sort of stuff. Those were monitored programs that were in place.

ISSUE 2: METAL TRITIDES

DR. MAURO: Chick, if you want to go on to number two.

MR. PHILLIPS (by Telephone): Hold on just a second, John.

DR. MAURO: Sure.

MR. PHILLIPS (by Telephone): John, can you start with number two, please?

DR. MAURO: Of course, I'll be glad to. In fact, I'm pretty familiar with this particular item. And it's one of the --

DR. NETON: I just have a quick administrative question before we go further. Who is going to be the person to keep the updated matrix, I guess?

DR. MAURO: I'm taking notes, and Brad, too, do that. It wouldn't hurt that there be some backup to that.

DR. NETON: I think Elyse is taking them for our side as well.

DR. MAURO: Between the two of us we can get

it to make sure we've got the story right.

DR. NETON: Just so we have a single --

MR. CLAWSON: Phil's going to keep track on the matrix of what the action item is.

DR. BRANCHE: You're doing it electronically?

MR. SCHOFIELD: Yes.

DR. NETON: Just want to make sure.

DR. MAURO: Item two is --

MR. PHILLIPS: (inaudible)

DR. BRANCHE: Chick, you're going to have to mute your phone, please.

(Whereupon, multiple speakers spoke telephonically and unintelligibly.)

DR. BRANCHE: We've got a bad echo. I'm going to hang up and start all over again. Please excuse us for this moment.

UNIDENTIFIED SPEAKER (by Telephone): That's better now.

DR. BRANCHE: Somebody must have muted or hung up. Again, if you would please mute your lines if you're participating by phone. If you don't have a mute button, then please use star six. Thank you.

DR. MAURO: Thank you. Item number two is

one of the items that from SC&A's perspective might be one of the more important items in terms of some of the sites where metal tritides is an issue. I've only become familiar with the existence of what a metal tritide is recently, and I've learned a little bit about it.

For those of you around the table that may not be familiar with it -- it looks like a lot of you are. It's when you tie a molecule of tritium atom, yeah, I guess it's T_2 to a metal. There are different kinds of metals. And somehow that's used in weapons, and I'm not familiar with it. That's the extent of my knowledge.

And it can become aerosolized. That is, if they break -- it's a powder. And apparently, at Pinellas and also other sites apparently this material, metal tritides, has become airborne and has been inhaled. And one of the problems associated with that is that, unlike regular tritiated water -- we know the biokinetics.

If you inhale some tritiated water we know it has a ten-day half life in the body.

It's clear. It goes through urine. You take urine samples, and based on the urine samples, you could figure out how much tritium was inhaled. Once you know that you could reconstruct the tritium dose. It's really one of the easier ones to deal with.

However, if it's tied to this metal particle, -- it's a real microscopic particle -- and inhaled, then the tritium is sort of stuck in your lung, and it's going to sit there and decay while it's sitting in your lung. Or I would imagine that it may be phagocytized whereby, if it's a small particle, like any small particle, it could be grabbed and brought off to the lymph nodes.

DR. BRANCHE: Phagocytized?

DR. MAURO: Phagocytized. And so quite frankly, that's the extent of my knowledge of metal tritides and its potential dosimetric implications. But I can envision it being a challenge to reconstruct the doses for two reasons. One, you take a person's urine samples. If it's not being cleared, it's like high-fired plutonium, you're not going to see anything in the urine. And even if you did,

what's the biokinetics? In theory you could assume it just sits in the lung.

Now I understand very recently that there was an OTIB-0066 that's been published which I haven't looked at, but that might be the magic bullet. We haven't reviewed it, and I guess my recommendation to the working group would be it's probably a good time to review it to see whether or not it resolves this particular issue. And if it resolves the issue here, it's very possible that it resolves the issues in many other places also where this has come up.

DR. NETON: I think you summarized it real well. TIB-0066 was issued back in April of 2007. It does treat more insoluble forms of these tritides, metal hydrides using the ICRP lung model. In other words there are solubility classes of M and S that can be applied and modeled based on the urine. So it's really not that difficult to do.

DR. MAURO: So there's empirical data on these that people have been studied sort of like the transuranic --

DR. NETON: Right. To my knowledge there's

no Super-S tritide. The worst case we would treat that as Type-S solubility class. And so you take the urine and you model it just like it was a Type-S clearance from the lung. The systemic organs though can be treated just like, once it's systemic then what comes out in the urine is proportional to what's in the system, and you can calculate it that way.

DR. MAURO: Does it always stay tied? In other words are the two together for life?

DR. NETON: Once it becomes systemic, then it's free to, just like tritium, it's in the body.

DR. MAURO: So when it becomes systemic, the tritium does part ways with the metal it's tied to and goes its own merry way?

DR. NETON: I believe so, yeah, because it's dissolved in the system. We could look at that. The only other thing I would offer is that I think in our site profile for Pinellas should be modified to incorporate TIB-0066, but also to provide guidance as to which workers and which locations might be appropriate to apply that concept.

MR. SCHOFIELD: Now the question is on these

hydrides, does the metal make a real difference in the solubility factor?

DR. NETON: It does. It does. In fact, there are tables in TIB-0066 identifying which metals would be more soluble or less soluble. I don't recall them, but I think the titanium tritides are, actually might be Type-M or some of the more exotic or some erbiums or there are some other ones out there, scandium.

And that's covered in the TIB which SC&A would be able to review. I haven't looked at the background literature completely, but I suspect that we could make this out if we pulled out the data from some study that had been done on solubility.

DR. MAURO: So this type of material now is in the open literature. From my talking to our folks this was something that people didn't talk about very much.

DR. NETON: Apparently, there's enough out there for us to have generated this.

MR. SCHOFIELD: This is going to sound bad, but given the fact that, you know, like depleted uranium is one of those things that ^ how are you going to treat the different

metals or if they don't know which hydride they were exposed to? Are these going to be treated different during the dose reconstruction?

DR. NETON: Yeah, we would do like we normally do, you know, take the most claimant-favorable solubility type if we didn't know. That's sort of standard.

MR. GIBSON: Jim, when were these studies done on hydrides?

DR. NETON: I don't know. I think this is going to have to wait until the review of TIB-0066. I'm not, you know, I reviewed this a year or more ago. But there's a Mound 2004 Technical Basis Document for stable tritiated particles that was issued that's cited in here. There's also a couple of Department of Energy handbooks for special tritium compounds that were issued in 2004 that are referenced in here. I suspect those also reference additional studies.

MR. GIBSON: So they're fairly recent?

DR. NETON: Fairly recent, at least 2004, 2006.

DR. BRANCHE: There's a person participating

by phone that needs to mute their line, please.

ISSUE 3: MDCs FOR PLUTONIUM BIOASSAY SAMPLES

DR. MAURO: If it's appropriate, I think we can move on to number three.

MR. PHILLIPS (by Telephone): John, I'm back.

DR. MAURO: Okay, thanks. We just finished covering issue two on metal tritides, and the bottom line is SC&A's going to review OTIB-0066, and NIOSH is going to make appropriate revisions to the site profile to incorporate OTIB-0066 or make reference to it and identify those classes of workers at Pinellas that might be subject to that particular exposure scenario. So I think that's pretty clean, and we can move on to number three.

MR. PHILLIPS (by Telephone): Okay. In number three there were several concerns about the calculation of the minimum detectable concentration for the plutonium bioassay samples. For one thing if you look at the bioassay data, you see that the MDCs that are calculated in these data, it's highly variable from sample to sample. So when it was not

clear exactly what the reason for this is, but one would have to conclude that it probably had to do with the variable recovery in the, radiochemical recovery, in these samples.

But the first question we had was regarding to the equation that was in the site profile as to how these were calculated. I think that has been cleared up in NIOSH's response to this. But it is not clear, it's still not clear to us how the average MDCs were calculated.

And we believe it was worthwhile to discuss the high variability in the minimum detectable concentrations in the urine samples that are included. So the bottom line on this is we believe that in the site profile there needs to be a further discussion of the MDCs, the variability and the calculation for the average MDCs and the uncertainties associated with those.

MR. GLECKLER: This is Brian Gleckler. So your primary issue with all this is coming from the variability that you're seeing in the MDC values?

MR. PHILLIPS (by Telephone): Yes, and a

further explanation of how the averages were calculated.

MR. GLECKLER: Okay, that's the average --

MR. PHILLIPS (by Telephone): What the uncertainty of those might be given the high variability of the MDCs.

MR. GLECKLER: How the averages, the average values that are presented in the TBD. Is that what you're talking about?

MR. PHILLIPS (by Telephone): That's correct.

DR. MAURO: When I read this and spoke with Chick about it the thought I had in mind is I envision you have a worker that was sampled for bioassay plutonium. You see these below the MDC, and the question then becomes, you know, you're going to assign something to him because he was monitored, but a zero is reported.

And given the five-fold difference between, I guess, the range of the MDCs I guess are pretty variable. Is it a person-specific MDC? Or is it one -- in other words, how do you, then how do you assign, I guess if you go into one-half the lower limit of

detection as your missed dose. If it's a missed dose, you would go one-half the MDC as... If a person was monitored, you come up with zero, what do you assign if there's this kind of uncertainty in the MDCs?

MR. GLECKLER: It's like all the uncertainties appear to be sample specific. So they're a specific sample for a specific person. They'll have an MDC value. And as far as the calculation goes our standard approach would be to use the LOD-over-two. With it varying it's like that you could still plug them in as half of it, you know, the LOD-over-two value.

DR. MAURO: And it would be sample -- see, I'm used to seeing that, well, here's the MDC. It's almost universal. And you're saying this would be almost like sample specific.

MR. GLECKLER: The ones that we receive with the data, it's like they're sample specific. It's what they appear to be because they're so like what's been indicated. They're so variable. And that may change. You'll get like a few, there's only a handful of individuals that will have more than a couple

of bioassay samples for plutonium. It's like you'll -- each sample will have a different date typically. It's like and they'll all have different, they report them as MDL values. And so, yeah, they can be pretty dramatic as far as the difference.

DR. MAURO: Chick, does that, I mean, the fact that each person would have his, every bioassay sample collected and analyzed for plutonium would have its unique minimum detectable level for that sample and that analysis. That's what I'm hearing. And as a result that would be known when the dose reconstruction's being done. And if the person came back with less than the MDL, am I correct, your protocol would be to assign one-half whatever the person's specific MDL or analysis specific MDL was and that would be assigned to that person?

MR. GLECKLER: Correct. And the simplifying approach that would typically be used on a dose reconstruction is like if you have multiple MDLs and one's higher than all the others, we would use the highest one and use it across the board, that value as a claimant

favorable approach rather than trying to account for all the different --

DR. NETON: But what I'm hearing here is we don't have what I call censored data for Pinellas workers. We have the MDC values. If the value was below detection limit, they reported the detection limit for the individual samples.

MR. GLECKLER: We've got a combination. It's like they did report a number of zeros for it looks like a finite period of time, but they give the MDL values it seems for everything but the very early data from like the mid-'70s when that project started to about 1980s timeframe. I know at least for 1982 and beyond we've got MDL data from virtually everything.

And then there's a period of time where they, I believe, they report negative values rather than the censored data of zero. It's like in all cases from like, at least from 1982 and beyond from what I can tell, it's like we get the MDL value provided for that specific sample.

DR. MAURO: That's from '82 and before?

MR. GLECKLER: Yeah.

DR. MAURO: And so throughout the history you have that kind of information, that level of detail, for the places where bioassay was done?

MR. GLECKLER: Yeah. And one thing to also be aware of, too, is they pretty much did a, from what I can tell, it looks like they did a baseline on virtually everyone before they went in to working it in the RTG areas. And it's like and so even though we don't have a MDL value, we essentially have a background value for those individuals because typically those 1970s data that they have is like only in d per m.

And then they also give the sample volume so we couldn't convert it to d per m per unit volume. But we don't get any MDL information with that. But we have that baseline sample measurement. It's like and that can be used as a background. In a lot of cases that baseline looks like it's higher than the subsequent samples.

DR. MAURO: So you have baseline numbers. Are we talking Polonium-239 or -238?

MR. GLECKLER: Most cases both. I'm trying to think if the '70s data might be just 38 I think. It might, I think, I can't remember if it's both or from 1982 timeframe I know and beyond it's like you get both, U-239 and -238.

DR. MAURO: Chick, correct me if I'm wrong. My understanding is that in many, many cases in these records you find zeros for the results. And I'm hearing a couple things. One is when that occurs you have two pieces of information. One is you have a baseline reading for this person which might actually be a positive reading. I guess I was surprised to hear that. You actually see detectable levels --

MR. GLECKLER: I don't know if it's technically positive. It's higher than some of the subsequent results in a number of instances.

MR. PHILLIPS (by Telephone): And the MDL is reported on those as well?

MR. GLECKLER: That's the problem, we don't have the MDLs for those, but you can make inferences based on that baseline because they weren't exposed when that baseline was

provided. And so if they have a subsequent result that's less than that that might be, you know, when you're talking at the levels we're looking at it's like you're going to get a reasonable number of false positives.

It's just a matter of how you deal with those false positives and your ability to identify those. It's going to be tricky with looking at that early data.

DR. MAURO: I have to say I'm a bit --

MR. PHILLIPS (by Telephone): I guess I would question if you don't have the MDLs on those early values, how do you assign an MDL to those?

MR. GLECKLER: Typically, there's no intake associated with those from what we've seen. There's a number of those that are reported as zeros, and usually it's like they're, like what I was indicating, a lot of the subsequent results are less than the baseline measurement result.

MR. SCHOFIELD: Is it known that everybody was actually tested before they started working at RTG? Had a urine sample?

MR. GLECKLER: As far as --

MR. SCHOFIELD: (unintelligible)

MR. GLECKLER: I'm trying to remember. I believe there is documentation on that where most of these bioassays it says how they tagged, they tagged the results. They label them as -- they don't call it a baseline. I think it's preoperational measurement, something along those lines. But they are tagged as that type of a measurement, the data. And it's everyone that has any PU bioassay that I've seen thus far has one of those in there.

MR. PHILLIPS (by Telephone): I guess I still don't see the utility of that if you don't have the MDCs on those values. Just because it says zero --

MR. GLECKLER: Yeah, but what if you use --

MR. PHILLIPS (by Telephone): -- zero, I mean it means it might be below some MDC value. But if you don't have that MDC value, then I'm not sure how much use that data is in determining the baseline.

MR. GLECKLER: But you should be allowed to use the baseline as a background sample and subtract that from the other results. Then

ultimately you get typically a lot of negatives and zeros.

DR. NETON: Well, I think we need to go back and rewrite this up because I think there's confusion here, and give you an example how we would do that.

MR. PHILLIPS (by Telephone): I think that's it. I think that in the site profile it needs to be clarified how those MDCs were handled.

DR. NETON: I agree.

MR. CLAWSON: So NIOSH will provide to us and SC&A a sample of how it was done?

DR. NETON: Description of how we're using the averages or not using them and an example of how we would do that for someone who had a value that was reported as zero. How would we do that.

DR. MAURO: And especially considering the variability in the MDCs depending -- there's a five-fold variability. I don't know how important that is in terms of dose, but it's my experience that once you start to see Plutonium-239, you had a fairly good intake, you know, if it's Type-S. It takes a pretty good intake to see some in the urine. And if

the uncertainty in the MDL is a factor of five, that further increases --

DR. NETON: It's all dependent on the chemical recovery because I can make a -- having done radiochemistry with plutonium in urine I can tell you a factor of five is not unusual to get in your yields if you're especially inexperienced with this. But we need to look at that.

DR. MAURO: Just in terms of the level of importance, so let's say we have a person that we know was sampled, urine sampled, and routinely or whatever or periodically for plutonium analysis. And you repeatedly come up with a less than detectable level. Are we talking about, I guess we're talking about a lung dose or a bone dose or one of the organs that plutonium might find its way in or even a thoracic lymphoma. There you go. My question is, are we talking about doses that are relatively miniscule, or are we talking about doses that are not insignificant? I don't have a feel for it.

DR. NETON: It could be very high. Missed dose for plutonium in the lung area is --

DR. MAURO: Could be very high.

DR. NETON: -- very high.

DR. MAURO: So this issue is not insignificant.

DR. NETON: No, it's not an insignificant issue. I agree.

MR. CLAWSON: Just to clarify for me, how many samples do we actually have for the Pinellas for plutonium? I see the radiation ones, but what do we actually have number-wise?

MR. GLECKLER: Oh, I don't know that offhand. The relatively small population of the workforce that worked in the RTG areas, and from what I can tell it's like all of them that worked in those areas at least as a minimum had a baseline before they were allowed to be assigned to that area.

MR. CLAWSON: And we're talking a range of workers, maintenance, operations personnel, so forth or just the operational end of it?

MR. GLECKLER: Let me think, it's like I'm trying to remember. It's like they've got criteria for the external dosimetry. I don't remember seeing anything in there on how they

handled the internal. I believe there's documentation on who they monitored or determined who they monitored. It's like, well, I'd have to look into that.

MR. SCHOFIELD: We need that kind of documentation because I've worked around these RTGs myself. We had people who worked with it were monitored. So we had crafts who came through the area that weren't monitored for the same things.

And so there needs to be that distinction of how whether all personnel who came and worked in that area whether they were temporary, whether they were craft or whatever their job classification was, were they monitored for this? Did they have baseline?

DR. NETON: I think some of that goes back to issue number one which is who was monitored and why and under what criteria. That's what ties I think, Phil, into that issue. Between that and then the analysis is probably what we have.

MR. CLAWSON: Just a question for SC&A before we get too far into it and stuff like that, the things that were brought up in other

site profiles and so forth and that's data integrity and so forth. I'm sure that we're looking into that.

DR. MAURO: I would say that I guess -- Chick, help clarify.

We didn't do any what I would call data integrity analysis, the kinds of things we're doing right now for some of the other sites where we go back to the original records, maybe even some logbooks and the electronic data. Is this data in an electronic form? In other words are we dealing with a dataset that's hard copy for each worker and you just go in and you do the dose reconstruction? Or is there actually a separate electronic dataset the way we've seen, for example, at larger sites?

MR. GLECKLER: Both. Yeah, we've got datasets in the SRDV, and we've also got datasets that the DOE provides, you know, part of their response to our request for records.

MS. THOMAS: But there's no database that we've received. It's all individual reporting on their personal exposure. Is that correct? I think that's what he's asking.

MR. GLECKLER: I'm not familiar with what's meant by --

MS. THOMAS: You know, like for Hanford, SRS, we've received an electronic database. I don't think we have that in this case.

MR. GLECKLER: Yeah, as far as I know, no, we haven't received anything like that.

DR. MAURO: So these were all like worker records. Basically, all the claimants come in and your worker records, and there's your dataset. Some of them have bioassay data. Some of them don't. And on a case-by-case basis you reconstruct the doses based on that data.

MR. GLECKLER: Correct.

DR. MAURO: As opposed to, let's say, a site where they've taken all of that data and put it into an electronic file that can sort. You don't have that.

MR. GLECKLER: No, that has not been done for Pinellas.

MR. PHILLIPS (by Telephone): John, to answer your question, we have not gone to that level of data verification.

MR. CLAWSON: Well, as lessons learned from

many of these other sites I believe that is something we need to check into a little bit further, just the data integrity and so forth.

DR. MAURO: Can we talk a little bit about how that would be done in a situation like this? In other words what we have -- how many claimants do we have here? Anybody have a feel for it?

MR. DARNELL: Three hundred sixty-five.

DR. MAURO: Three-sixty-five. Now a data integrity investigation for the 365, typically what -- let me sort of set the, what we've done in the past when we have thousands of workers. And let's say there's a limited amount of bioassay data. A good example would be what we're doing right now on Nevada Test Site. I'm trying to draw an analogy of what we might do here or might not do.

What happens is we say, okay -- for example, at the Nevada Test Site we have 1,500 claimants. NIOSH selected 100 of the claimants that had the highest external exposures with the assumption that in general people with the highest external exposures probably also had the highest internal

exposures. That's an issue that we're looking at. But that, you know, for better or worse let's go with that for a minute.

And then what happens is then you go and you say, all right, we go in and we look at the bioassay data for those workers that have been selected by NIOSH to be the ones that we're going to use as our coworker model. In other words we have bioassay data on some subset of these 100 workers -- stay with me.

And then the intent that NIOSH is using is that from there we could build a coworker model where we get an understanding of the distribution of tritium intake, the distribution of iodine intake, the distribution of polonium intake from some subset. And theoretically you could pick off the upper end of that 95th percentile or some value and say, okay, we're going to assign this upper end intake to all workers that weren't monitored and perhaps should have been monitored at the Nevada Test Site. So they're sort of like the model of how you build a coworker model.

Now one of the things we've been asked

to do -- because you want to do things the same way -- one of the things we've been asked to do, well, there are a lot of different -- when that group of 100 was selected as the body of workers that are going to represent the source of your data for a coworker model, one of the questions that came up around the table of the work group was, well, how do we know that you've captured all the different categories of workers, all the time periods, all of the different workers' settings that the workers -- in this case a large number of workers at NTS -- might have experienced.

So what we're doing is we're going in and going back into the 1,500 cases and developing a sampling plan which in effect would say, okay, let's sample from all tunnel workers. Let's sample from all carpenters, all welders and do a cut at the same 1,500 dataset but come at it differently than the way NIOSH did. And then we're looking at the data that comes out of that.

I'm telling this story because I'm trying to make sure that we do everything the same way. And what we're doing is say, all

right, now when we look at the distribution of intakes that we get from these other samples, do they ring true with the distribution of the intakes that you get out of the dataset that NIOSH selected as the basis for their coworker model.

And the test we're really saying is, one, that if it looks like that set of 100 and the distribution intakes for those workers, is bounding or comparable to all the other different cuts that we're making at it, we could walk away and say, yeah, I think that it's a pretty robust approach. Because even when we look at different categories of workers, we still see that the set of 100 is bounding. Or we may find out surprise, surprise, some group of the 1,500 has a distribution that's ten times higher, in the high end, of the set of 100. And then you start to say, oh, oh, we've got a problem.

Now, given that model how do we, in order to, you know, to try to be responsive to Brad's request, how do we transfer that sort of philosophy to this particular facility?

MR. ELLIOTT: I think you have to understand

this facility first.

DR. MAURO: Yes, right, right.

MR. ELLIOTT: This is not an NTS facility.

DR. MAURO: I understand.

MR. ELLIOTT: I consider this to be -- and people are not going to like this when I say it, but this is a low dose facility. The work that they were performing is not a dirty type of operation. I think Pete has shared with the working group members the summary of external, this monitoring that was done. You can see that only about a third, or less than a third, of the workers were monitored because of the monitoring requirements at the time. And I hear we don't have an electronic database that we can utilize to come up with the universe of dose records for this site.

MR. GLECKLER: We can almost.

MR. ELLIOTT: We can almost?

MR. GLECKLER: Yeah, it's like in the site research database some of those records include all of the plant's records --

MR. ELLIOTT: We must have something because we can come up with this from the annual reports.

MR. GLECKLER: Yeah, because one of the things we've come up with is unmonitored dose assignments for external doses and internal doses. And there's quite a bit, it's like a whole body dose which also includes tritium dose factored into it. That's the most uniform dataset that they have, and we've got that for quite a few years, and that would develop --

MR. DARNELL: You have to realize that that unmonitored dose is based on the monitored workforce which is a very small subset of all the workers at Pinellas, and it's biased very high. Of the workers that were monitored better than 95 percent of them received less than 100 millirem in a year. We had some cases where you got to 500 and some cases where you got up to a rem and a half. But most of them it would be very low.

MR. ELLIOTT: Pete, you have to speak up. I'm having trouble hearing you.

MR. DARNELL: I have a hearing loss so I don't know how loud I talk.

The other problem with a site like Pinellas is a lot of the operations were

either on or off. You didn't have a site population walking around getting exposed to an operation ongoing all the time. When they were doing the testing, the neutron generators were either operating or they were put away and not being worked on.

MR. ELLIOTT: So it's campaign driven.

MR. DARNELL: Yes, and you can see that in the dose records. It's very spotty. You have a ten, 12 millirem exposure one month. A year and a half later you have your next exposure. And you'll see that through a lot of the dose records that we have.

MR. ELLIOTT: I agree with, you know, how do we come up with this is the question.

DR. MAURO: In fact, I'm looking for help. In other words I think all of these sites require some degree of data adequacy and data completeness evaluation. And maybe every site you have to design something that works for that site. I'm not quite sure what that is here.

MR. CLAWSON: Every site is going to be different. We found out the differences from Rocky to Hanford to whatever. But I guess

this is -- I agree with you, this is what we've kind of come to look into. Because if you looked at the claimants and some of the comments that were made to us in Florida and so forth like this, this was one of the questions that came up on this, and we need to make sure that we've addressed it. And I guess it'd fall down to SC&A and between NIOSH and SC&A --

(Whereupon, musical interruption played telephonically.)

DR. BRANCHE: Excuse me. Telephone participants, please do not put us on hold.

(Whereupon, music continued.)

MR. ELLIOTT: And of course that person that's on hold, can't hear us.

DR. BRANCHE: Right, I need to go and have the telephone operator cut that person on hold.

(Music stopped.)

DR. MAURO: Am I correct? What I heard is that perhaps NIOSH and SC&A could collaborate a little bit, come up with a plan that works for this that may make sense? Maybe nothing elaborate.

MR. ELLIOTT: Brad's absolutely right. We need to answer these folks' concerns about this.

MR. CLAWSON: And I understand what you're saying about this site because this site is unique in its make up and how it was run and so forth. So this is why I believe between SC&A and NIOSH/ORAU that we need to come up with a way to be able to do this. And I guess this falls down to...

DR. NETON: A lot of what we're discussing here is covering this. I mean, finding number one, which is data adequacy, did we, were the workers who were exposed monitored properly based on a review of their procedures and their health physics plans and such. You drill down through all that and then eventually you get down to the bioassay records themselves.

If you can say, well, the right workers were monitored, then are the data that you have accurate? You know, did the bioassay laboratory or program that took these samples, were they capable of measuring? We've experienced a lot of EML samples where we sort

of decided that's sort of the gold standard and AEC operations are in that time period. But was this in a laboratory they used, for example, like CEP that had some issues that we had to discount some of those samples?

So I think that's sort of drill down through it, I think it's premature maybe until we dissect some of these other findings and figure out -- now if we can say that they didn't monitor the right people or come to that conclusion, then there's no sense to start drilling down any further. We don't have sufficient data to begin with.

MR. SCHOFIELD: I think the biggest concern here is not so much the external exposures as it is the question of the internal exposures and were they properly monitored --

DR. NETON: Exactly, and I think it's been --

MR. SCHOFIELD: -- the procedures that were used for this, you know.

DR. NETON: It's been our position that internal exposures are fairly few and far between, if that, at this site because of the nature of the operations, and we need to do a

better job, I think, explaining that.

DR. MAURO: One other problem then that this is a site that's very classified. We're talking about one of the more sensitive sites. We're going to do some of this diving.

DR. BRANCHE: Hang up or what?

MR. ELLIOTT: Christine, we can hear you.

DR. BRANCHE: Oh, sorry. Actually, I'd like to tell the people who are participating by phone to please not -- you can mute your line, but please don't put us on hold. That only gives us music which interferes with everyone's hearing. Thank you.

MR. DARNELL: One of the issues Brad was talking about, worker concern over monitoring, we've had several mini-outreaches with the workers in Florida who were actually getting ready to go back to provide a more technical explanation, not only of how we do a dose reconstruction for them, but how they were monitored.

There's a very large misunderstanding with the workers down there. They feel that when they were working around the tritium process, they should have had a monitoring

badge to measure external exposure. And their thought is we weren't properly monitored because we didn't wear a monitoring badge. Relying on the workforce for a heavy amount of concern is, you know, as always we should listen, but we should also understand their weaknesses in knowledge.

And I'm not casting dispersions at the workforce. It's just that I don't believe that Pinellas itself did a good job explaining to the workers what the hazards were that they were working around. In all reality for this site the vast majority of the workers probably never came into contact with, and never really worked around the radioactive materials that were at the site.

There was a lot of chemical exposure. There was a lot of other industrial hazards, but as far as actually working, putting your hands in and on the radioactive materials, it wasn't done. A small workforce like Brian explained with the RTGs, a small workforce that worked with doing the testing in the neutron generators. However, with that workforce there were a lot of tours. That was

the main thing that the site did, and even while testing was going on they gave tours.

DR. MAURO: Let's talk a little bit about the neutron generators. I guess that's a Plutonium-238 problem? Is that what these, not neutron generators. I was thinking the radio. So we have basically -- am I correct? We have Plutonium-238 because of these thermoelectric generators that were produced here. And then we have the tritides and tritium problem associated with these neutron sources, these triggers.

MR. DARNELL: Generators.

DR. MAURO: And then I noticed from reading the site profile and the material that there are a few other places where, I guess, Plutonium-239 comes into the picture, which I don't know why. But in other words we have a number of different isotopes, even Carbon-14 was mentioned for some reason.

MR. DARNELL: Used as research. There was research for a short period of time. But most of the plutonium was triple encapsulated, sealed sources. The Nickel-63 was sealed sources.

DR. MAURO: Were these ceramic sources like they used for --

MR. DARNELL: No.

DR. MAURO: -- these weren't these little -- okay.

MR. GLECKLER: Shards.

MR. PRESLEY: Let's don't get into any of this, okay?

DR. MAURO: Okay, okay. Yeah, I'm asking questions that as a novice I don't know the answers. But I'm thinking about myself as trying to be responsive to concerns raised by concerned individuals that were they adequately monitored. Is the data complete? Can you build a -- I did hear that not everyone that was monitored -- there will be people where you're going to have to assign some dose to because maybe they weren't monitored but they should have been. I assume that was -- there are some workers where you're going to assign some intake even though they weren't monitored for, let's say, tritium, or for Plutonium-238.

MR. DARNELL: Actually, with a lot of the dose reconstructions we haven't made that fine

of a decision. Most of the time the workers are assigned an external dose and assigned the internal dose simply because they're workers. Unless the dose reconstruction gets close to the 50 percent probability of causation, they're really basically capers loading a bunch of dose on a worker.

Anything to add to that?

MR. GLECKLER: As far as how we deal with that is typically the vast majority of the cases like the work groups, we take a claimant favorable approach with them. And there is a large number of the workforce that was not monitored. And you can often tell from like their CATI, or the telephone interview information, that, yeah, they didn't have anything to do with the radiological side of the house.

But we typically still assign them claimant, we have a 95th percentile unmonitored external dose assignment that we use. And I forget, but the 99th or 95th percentile tritium dose that we assign.

DR. MAURO: That's where I'm headed. Once you move into the realm where you do have to

build a coworker model, in effect, that's what you're doing. And once you move into that realm, that's where the vulnerabilities lie. And that's where questions regarding data adequacy is.

In a paper like this. If you're going to pick a worker, and you say, listen, here's a person we want to assign a tritium intake to or a tritide intake or a plutonium intake. We're going to draw upon a dataset that we do have data for and somehow use that to build a coworker model for that worker or for other workers.

We continually run into the question is, is the dataset that you're working from adequate, complete, sufficient to build a coworker model that you feel confident when assigned to that worker, it's going to be claimant favorable. And the questions that always come up is, is the data set you're working with, does it capture the full range of people that might have been exposed and that you did catch the upper end. That is, is it possible that there are some workers that had high exposures that are not in that

population, and therefore, your coworker model has some weaknesses to it.

Now, what's very often asked of SC&A is, on behalf of the working group is, is there anything that you can do to go into the data -- and this could be asked of you folks or SC&A, and it's really a reasonable question. How do we convince ourselves, how does the working group convince itself that the dataset that you're working with is a dataset that when you pick off the upper 95th percentile, you have a high level of confidence that, and you assign that to someone else, the upper bound, that you feel confident that, yeah, it's unlikely that he got that much.

Because I think in the end that's what the public wants to know. They want that trust. That's what the Board wants to know. That's the working group. And the question is in this instance, what is it that could be done by way of looking at the data that would help convince you, convince us, convince everyone that, yeah, that's a reasonable thing to do.

We've just been through this, for example, at Blockson. There's a lot of discussion going on on did the distribution of the data, the sample, was it robust enough, complete enough. And time and time again we run into this. And sometimes it's clear that the data agree and you can do it. And there's sometimes where it's not so clear. And I guess what I'm looking for from the working group and from everyone around the table is what is it that we could be doing to reinforce the coworker model that you guys are about to build or are building to deal with this question.

MR. GLECKLER: We've been using this coworker based on unmonitored --

DR. NETON: We're back to issue number one which addresses this, which is how do you know that the doses in the early health physics records capture the right population. If we go back and demonstrate that they had procedures in place -- again, the response to number four. They had procedures in place of who was sampled and why and when and documented that population was the most

exposed, that goes a long way. That might not be the end of the --

DR. MAURO: The way we've been looking at it it's one thing to have words, that is, go back to the protocols, the procedures that were used by the health physics group, we're gonna do this, this and this. But really in the end, where the rubber meets the road, let's go look at the data. And that's what I think Brad's talking about.

Let's go look at the data. Does it appear that they did -- is the data there for the people at the high end jobs. And way we usually do this we look at the data that we do have for workers, and we also look at where is it they worked, what they did, maybe there's some air sampling data, maybe there's some process knowledge.

And the weight of the evidence starts to build, yes, it looks like the workers that were bioassayed were, in fact, the workers that had the highest exposures as opposed to the words that are said in some plan.

DR. NETON: It's a start.

MR. DARNELL: From the monitoring data that

we have, we've got in basically a couple of different sections. 'Eighty-three to '93 shows the highest worker exposure ever. Annual exposure was about 550 millirem. From '57 to --

DR. MAURO: Is it external?

MR. DARNELL: External. Well, actually, total, that's whole body.

DR. MAURO: Does that include tritium? Did they do the tritium with it?

MR. GLECKLER: And usually they get one or the other. It's like they usually don't get both. It's like if they have a tritium dose, they usually don't have an external dose and vice versa.

MR. DARNELL: From '57 to '79 the highest was around 500 millirem. But out of those monitored workers, 95 percent of them had less than 100. And what we've done is use the 100 as the 95^{th} percentile. There was only two years where 95 percent or more received less than 100. That was in 1958 and 1960, and respectively was 80 percent and 84 percent.

DR. MAURO: We've run into, and what we've seen is that very often when you have a nice

big dataset, you find out there are thousands of workers that have zeros, and then one percent, five percent have detectable levels. And so therefore, if you start to talk about the 95 percentile value, and you leave all the zeros in, you're sort of, the median, the median is always zero.

In other words so if you're going to say I'm going to go with the median, it's always zero because the vast majority of people have zero dose or less than a detectable level. So we're always struggling with well what do you do when you build a coworker model.

MR. DARNELL: Well, that's what we did here. We biased it high and at --

DR. MAURO: Only those with a positive.

MR. DARNELL: Only with a positive dose, used the 95th percentile at 100, and that's what gets assigned.

MR. GLECKLER: And that's the only assignment so that goes for compensable and non-compensable cases. So we don't have, we don't use a 50th percentile-type dose.

DR. MAURO: That's the external.

MR. GLECKLER: Yeah, for the external.

DR. MAURO: So the fundamental theme is you, of all the worker right now, the worker regs right now this is by year or did you roll up all years?

MR. GLECKLER: Well, the 100 millirem is based on our valuation of virtually all years. There's a couple years that are, there's holes in those data slots. We weren't able to --

DR. MAURO: So you pooled everything from in the '50s right out to --

MR. GLECKLER: Yeah, we got stuff starting in '58 up through '95.

DR. MAURO: And out of that some subset had positive readings, I guess is a...

MR. GLECKLER: Well, basically the approach that we took with, it kind of the way it evolved just like, it sort of evolved versus the normal dose for coworker study-type approach that we take to where it kind of progressed to like a dose, an unmonitored dose assignment of 500 and 550. We're using two different values at one point in time. It's like which represented one of the highest annual doses that you would see for any given,

more of a 99 percentile-type dose. And we needed to ratchet that down because it was way too claimant favorable. It allowed us to process a large number of cases, but then we had a large number of cases, well, that would put him over, close to the 50 percent range or even over the percent --

MR. ELLIOTT: It's unreasonable.

MR. GLECKLER: Yeah, and we can't use such a claimant favorable approach on that type of a case.

DR. MAURO: Would the rationale for that not be -- in other words what you're saying so you have a subset of workers that do have positive readings. You pluck off the upper 95th percentile from that pooled data, and you get doses on the order of 500 millirem a year.

MR. GLECKLER: The 100 millirem --

MR. DARNELL: The upper 99th percentile.

DR. MAURO: Okay, the upper 99th percentile you come up, and then to say that anyone who wasn't monitored got -- I guess who wasn't monitored, not the zeros. The zeros use one-half the MDL for the change out period. But for the people who weren't monitored you're

saying that -- and I understand this -- to assign that dose to people who weren't even badged seemed to be somewhat absurd, especially since the reason they weren't badged is because you didn't expect them to have any dose.

MR. DARNELL: Yeah, through a lot of the history at Pinellas, they assigned external dosimetry based on whether or not you were going to hit ten percent of the limit of the day.

DR. MAURO: And I tell you, the argument that you just made together with the answer to question number four, you know, it's a pretty solid argument.

MR. DARNELL: This is in the TBD, the summarized data and assigning the 100 millirem as the 95th percentile. I forget which section exactly.

MR. SCHOFIELD: I have just one quick question going back to action number three. And my understanding was that they actually were manufacturing the RTGs there.

MR. GLECKLER: Correct.

MR. SCHOFIELD: That would make a difference

for internal dose.

MR. GLECKLER: Not necessarily. The sources were triple encapsulated. They weren't put in the --

MR. SCHOFIELD: ^.

MR. GLECKLER: -- they received the sources as a triple encapsulated source.

MR. SCHOFIELD: Oh, they received them as already encapsulated?

MR. GLECKLER: Yes.

MR. DARNELL: Most of your plutonium exposure there would be to contaminants on the outside of the source itself.

MR. SCHOFIELD: That makes --

MR. GLECKLER: That would be their only sources.

MR. DARNELL: I think the limit upon receipt was a 200 dpm limit or it had to be sent back. Nothing ever had to be sent back. And I don't remember seeing data more than at the most 20 dpm contamination.

MR. GLECKLER: And then only that would be discovered upon the receipt inspection that they would perform. That was under hood conditions, and the sources were deconned at

that point while in a hood. So it's like exposure potentials were going to be next to nil. It's like it should be nothing after that step in the process, after they're deconned.

MR. DARNELL: The internal exposure.

MR. GLECKLER: Correct, yeah, the internal.

MR. CLAWSON: You know, something came up. Bob brought up something a little earlier. How much of this stuff's classified?

MR. DARNELL: Nothing that I've said is classified.

MR. CLAWSON: Well, I know you haven't, but with DOE's little comment that come out, were they dealing with classified information and the process there that we need to be aware of because we've talked of some other articles and so forth that I know were classified at other facilities, and I just want to make sure that --

MR. ELLIOTT: The activities at Pinellas had some sensitivity about them, and we can't go into great detail here in any regards --

MR. PRESLEY: Yes, they did have some sensitivity and let's stop it right there.

MR. CLAWSON: Well, yeah, but, Bob, we also need to know what --

MR. SCHOFIELD: We don't want to cross that line, Bob.

MR. CLAWSON: We don't want to cross that line. If we don't know where the line's at, we're not going to know if it went across it or not. So I guess that's one of the questions that I have. And are we going to have any issues with some of this documentation being classified?

MR. ELLIOTT: Well, I don't believe that we've used any documentation that is Q restricted information or data.

MR. DARNELL: We actually haven't seen any --

MR. CLAWSON: That's why I was questioning. Because I haven't seen anything and in reviewing the site profile and so forth like that there were some, I never got a clear feeling of that, of what was, I didn't get any feeling that there was any classification issue. But I want to make sure that I'm right on that.

MR. ELLIOTT: Well, the only way that I feel

that the working group or the Board members can be assured that our site profile is a sufficiently accurate approach to dose reconstruction in this regard would be you would have to send your Q cleared members along with maybe SC&A's Q cleared staff and our Q cleared staff to go look at those items and satisfy yourselves that there's nothing there that would influence the ability to reconstruct dose with sufficient accuracy here. That's the only thing, the only step you can take.

MR. DARNELL: The other thing you need to remember though is that the radiation producing activities at the site weren't part of the stuff that's classified. And the X-ray machines, the tritium wasn't part of the classified process.

MR. SCHOFIELD: Why don't we take a short break here so we can discuss this stuff off whether or not --

MR. PRESLEY: We can't do that --

MR. ELLIOTT: Can't do that.

MR. PRESLEY: We need to take a short break.

MR. SCHOFIELD: Take a short comfort break

here then.

MR. ELLIOTT: But I think Pete's last statement is very critical for the record.

MR. CLAWSON: And that's what I was not understanding because when I reviewed the site profile and so forth like that, I didn't see any classification issues. But then we started talking something and Bob deals with this quite a bit, and I wanted to just make sure that we don't step over a line that we don't know is there. And that's all I wanted to make sure.

MR. DARNELL: Well, most of what I learned about RTGs I got off the internet because I didn't know a lot about it until I looked at the site. If it's classified, then the internet's got some stuff --

MR. GLECKLER: The same is true for neutron generators. You can actually buy them nowadays. Maybe not as small as the units that they had for the weapons, but definitely tabletop size, desktop size.

DR. MAURO: Using metal tritides?

MR. GLECKLER: They would have to use a similar method. The metal tritides were only

the storage mechanism for the tritium, to hold and bind the tritium inside the glass vacuum tubes.

MR. ELLIOTT: I think we've gone far enough on this. But I mean, if there's a need to be satisfied, the working group would have to send their Q cleared folks. We don't need to go any further.

DR. BRANCHE: Mr. Schofield has asked for a ten-minute break. We're going to mute the line until 10:41 when we reconvene.

(Whereupon, the working group meeting took a break from 10:31 a.m. until 10:45 a.m.)

DR. BRANCHE: This is Dr. Christine Branche. We are restarting the Pinellas working group meeting. If someone who's participating by phone can please let me know that you can hear me, I would appreciate it.

UNIDENTIFIED SPEAKER (by Telephone): I can hear you.

DR. BRANCHE: Thank you.

I'm going to ask one more time that everyone participating by phone, mute your line. If you do not have a mute button, then please use star six. A new piece of

experience here encourages me to say the following: please don't put us on hold. If you need to get off the line, then do so. But putting us on hold subjects all listeners by phone to whatever music or beeps or whatever is going on with your hold system. So please don't put us on hold. Remember, you are part of a community of people participating in this meeting by phone. Thank you so much.

Mr. Schofield.

MR. SCHOFIELD: I guess we're going to start in here. Does anybody else have any comments on issue number four?

DR. MAURO: Three.

MR. SCHOFIELD: Three. I can't count that high. So we're going to be trying to complete issue number three here.

DR. BRANCHE: And what issues do you think are outstanding?

MR. SCHOFIELD: I think we've got -- does anybody else have anything left on three?

DR. MAURO: The only residue that I think it might be a good idea to close up now so we can move on to four is the question that Brad raised, namely data validation for the purpose

of building coworker models. And I think Jim's suggestion is the logical sequence. Namely, let's first do one. Let's go back, check out the other sources of data, make sure that we're as complete as possible in having a dataset. Because in the end, the way I see it, and now I've just been informed that there is an SEC petition pending or undergoing review --

MR. DARNELL: It's made it through --

MR. ELLIOTT: It's qualified.

DR. MAURO: It's qualified, okay.

MR. ELLIOTT: Didn't it qualify?

MR. DARNELL: They just sent back the letter of clarification.

MR. ELLIOTT: Oh, okay. So it's going through consultation.

MR. DARNELL: It's going through consultation. Thank you.

DR. MAURO: And I would say that as we've seen before, the completeness and adequacy and reliability of the dataset, notwithstanding the good intentions of the plans and the programs, the dataset itself, if you have a certain number of claimants, and as you have

pointed out, only a small fraction may have been bioassayed for various isotopes, and then the question becomes building a coworker model.

So where I'm going with this is I think that first step in just making sure we have all the data we can get our hands on is important. And I think NIOSH agreed to check that out to see what they can do.

MR. DARNELL: We're going to evaluate the need to go back --

MR. PRESLEY: May I ask a question? Has anybody, do we have any type of data that said where these people, where they worked or what areas they worked in or anything during the timeframe to go along with the dose data?

MR. DARNELL: Yes, we know what buildings the different processes --

MR. PRESLEY: I didn't catch that if y'all talked about it a minute ago.

MR. DARNELL: I don't know if it ever came up, but --

MR. ELLIOTT: Is there more than one building?

MR. DARNELL: Yes. There's quite a number

of buildings but the radioactive processes were pretty much in set places. I just don't remember the building numbers off the top of my head.

DR. MAURO: To complete my thought then, that once that question one exploratory work is done then I think then the question becomes, okay, what is it that would make sense to look at the dataset that you're working with from the perspective of its adequacy and its completeness to build a coworker model? Something that I think is going to be essential to not only the site profile but eventually this SEC petition.

Now, it turns out what I'm hearing is that may very well have to be a discussion that's held amongst people who can hold that discussion. That is, it's not going to be an open discussion because you're going to be talking about work, job responsibilities, locations at the site, exposure settings. I don't know the degree to which that could be discussed by people without clearance, and I guess I look for guidance.

Robert, when we get to that step in

the process where we have people looking at the job responsibilities, the buildings, what was going on, who was monitored, who wasn't monitored, is that something that really can't be done by us without Q clearance?

MR. PRESLEY: Somebody's going to have to look at that prior to, you're going to have to ask for the documents and have somebody look at the documents and see whether we can do that or whether the documents can be let out to this group. That's something that I cannot say one way or the other because I'm not that familiar with what they have in those documents. So they have people at their site that can look at that stuff and say, okay, this can be let out or it can't be let out. And if it can't be let out, then we'll have to go look at it.

DR. MAURO: We have two individuals that visited the site for the interviews as part of our report, both of whom have Q clearances. My guess is at the appropriate time they will be brought into the picture to talk to your folks that have the Q clearances and decide what do we do next once you finish step one.

Does that seem to be a reasonable thing to do?

MR. CLAWSON: Yeah, we need to because especially in light of over the last couple of weeks what's come down with DOE and so forth like that. It's hard for us not to know if we're crossing a line if we don't know there's a line there.

MR. DARNELL: I'm sorry. You're Bob. What do you do? You're talking a lot about security classifications, and I apologize for my ignorance, but --

MR. PRESLEY: I'm Security Representative for the Advisory Board. Also, I sit on this Board.

MR. ELLIOTT: He's a Board member who has ADS classification.

MR. PRESLEY: Yes.

MR. DARNELL: I'm not asking to question you. I just, curiosity just --

MR. PRESLEY: No, no, no problem.

MR. ELLIOTT: If you, you've got your clearance.

MR. DARNELL: No, I don't have a clearance.

MR. ELLIOTT: You don't have a clearance. Well, we have to send somebody from OCAS with

a clearance, somebody from SC&A with a clearance. If the Board wanted to have a cleared person, they could have one of their cleared people go and look at the documents and make a decision, is there something there that we need.

MR. CLAWSON: Christine, with the e-mails that were sent around last week and so forth, this is a prime example to be able to ^. So just in light of that I think this is a serious issue, and we need to take it seriously. But we also need to find out where the line's at.

DR. MAURO: Would you want to move on to four at this point?

MR. SCHOFIELD: Ready to move on to four.

ISSUE 4: PERSONNEL DOSIMETRY POLICY

DR. MAURO: Four is really further discussion regarding personnel dosimetry policy. In other words I guess when we reviewed the site profile, some questions came up with what was the policy that was in place in determining who would be badged and who wouldn't be badged.

In response to that question for issue

number four NIOSH provided a very nice response that's in front of me right now that describes, going back, I guess, to the 1966 report and 1971 report prepared by GE, and '79, '84. So there's a whole series of documents. I'm not quite sure whether this was in the site profile or not, but it answers our question. So as far as we're concerned, you have now put in place on the record a response to this question that is acceptable to SC&A.

Chick, is that --

MR. PHILLIPS (by Telephone): John, this is Chick. I would just amend to say that the site profile needs to reflect this information.

DR. MAURO: Okay, so this was not in the site profile. This is new material.

MR. PHILLIPS (by Telephone): Not all of it.

DR. MAURO: Okay.

MR. ELLIOTT: Well, we'll take that as a suggestion.

DR. MAURO: Fair enough.

MR. ELLIOTT: Yeah, we have people looking to see if we modify the site profile in that

regard.

ISSUE 5: PROBLEMS WITH PERSONNEL DOSIMETRY

DR. MAURO: I'm going to move on to five.

MR. SCHOFIELD: Yeah, I think that issue's pretty well covered there.

DR. MAURO: Five is very much related to four, and basically the response, the questions that we raised again refers to this external dosimetry issues and the historical protocols that were followed, and in effect, refers the reader back to the response to question number four. And SC&A agrees with your response so we feel that this issue has been resolved.

Again, Chick, any more you would like to add to that?

MR. PHILLIPS (by Telephone): Again, it just needs to be reflected in the site profile.

DR. MAURO: Okay.

Six?

MR. SCHOFIELD: Okay.

ISSUE 6: D&D ERA

DR. MAURO: Six has to do with the D&D era. It is my understanding that the site profile does not address the D&D era very much, and we

raised a question. We said will NIOSH address the D&D operations in subsequent revisions to the TBDs. And the answer that NIOSH responded in their written response was, yes. And as long as that's the situation that you would cover that stage, apparently, the current version doesn't address D&D?

MR. DARNELL: No, it does not.

DR. MAURO: No, okay. So that's where we are.

MR. ELLIOTT: Do we know that the D&D was, well, it's a recent D&D so it was performed, I suspect, with proper monitoring practices and procedures.

MR. DARNELL: It's post-10-CFR-835 so they were under that rule.

MR. ELLIOTT: Have we seen a claimant come into our hands that required dose reconstruction during the D&D period?

MR. DARNELL: Not that I know of off the top of my head.

MR. GLECKLER: Yeah, because there's a number of them that have just gone to that employment period. I don't know if any specifically identified themselves as being

involved with D&D operations. There's a number that indicate that they were involved with plant shutdown that may or may not have to do with the D&D operations.

MR. GIBSON: I think we also have to be careful that just because they were under 10-CFR-835 rules, it doesn't mean that they followed them.

MR. ELLIOTT: Yeah.

MR. GIBSON: I mean, DOE's enforcement was somewhat lacking in that.

(Whereupon, multiple speakers spoke simultaneously.)

ISSUE 7: MISSING INTERNAL DOSE ESTIMATION METHODS FOR UNMONITORED WORKERS

DR. MAURO: I'm going to move on to seven if that's okay. I'm going to introduce it and then ask perhaps Chick to expand a little bit.

In effect we found that, yes, a worker, there was a program for monitoring tritium and plutonium, and currently as mentioned earlier we did come across some language in the site profile and in some of our work where there were other radionuclides. We particularly mention two, Nickel-63 and

Carbon-14 as being other radionuclides that might be of concern. And I guess our question was will there be additional, is there a need for the as you see or/and will there be additional guidance provided of how to deal with internal exposures to those radionuclides.

MR. DARNELL: Actually, for Nickel-63 I don't think there's going to be a need for guidance on internal dose. Again, these were sealed sources mainly dealing with equipment that was being used. So this was a sealed source inside of a piece of equipment. So unless you had a worker that dug into the equipment, which isn't part of the protocol, there shouldn't be anything for internal exposure for Nickel-63.

Carbon-14 was used there as during some research. There shouldn't have been any internal concern for Carbon-14 because all the work was done within the hood system. That's pretty much the level I know about Carbon.

MR. GLECKLER: I've encountered even less information on it.

MR. DARNELL: Carbon-14 is a very low

exposure hazard. It's on the level of tritium as far as external dose. And internal doses, you know, your body's made up of carbon, and it changes it over quickly.

MR. ELLIOTT: But you also said you don't believe or understand that there was an internal dose issue with Carbon-14 as well.

MR. DARNELL: Not in anything, the effluent releases on these are, they're extremely small.

DR. MAURO: Is that described in the site profile?

MR. GLECKLER: In the environmental --

DR. MAURO: In the environmental section, oh, about the effluents but not part of the -- by the way, I hear your arguments, and they certainly make sense to me. I know Carbon-14 is not a big issue especially if they're dealing with it in extremely small quantities. It's probably a good idea to document that to put it to bed if that's the case.

Chick, is there any information you have related to these two isotopes and perhaps other isotopes that where a little bit more is needed?

MR. PHILLIPS (by Telephone): Yes, I believe what you just said. It just needs to be expanded upon in the site profile. It mentions that these are radionuclides, but it doesn't go into enough detail like you just mentioned to eliminate the concern about them.

MR. DARNELL: Well, we'll certainly evaluate the profile to see what can or should be put in there.

DR. MAURO: As a policy or process -- not policy. Process is a softer word. Very often at work group meetings like this an answer to one of our questions comes up and sounds reasonable. And the question is is it necessary for the site profile to be revised to reflect this or does the very record of this discussion that we're having constitute sufficient documentation that this issue has been resolved. This is really something, I guess, that goes toward the working group and the Board as to what they'd like to see.

MR. SCHOFIELD: I want to see a little more on this just because of the fact that some of the workers could potentially have been exposed because we all know hoods aren't fail

safe.

MR. DARNELL: That's definitely true. So we're only talking the Carbon-14, not the Nickel-63?

MR. SCHOFIELD: Right.

MR. ELLIOTT: I think we -- to answer your question, John, I won't speak on behalf of the working group or Board members. But from NIOSH's perspective there's the site profile needs to be revised to address what happens or what is discussed, what's resolved in this working group session.

The reason for that is the dose reconstructors typically are not going to look and read the transcript of today's session to learn, and they don't take their guidance from this. They take their guidance from NIOSH/OCAS and the document that is used in the process which is the site profile.

DR. BRANCHE: So you will amend it?

MR. ELLIOTT: Yeah, we'll look, we're going to look at all of these issues and make the modifications that are appropriate to provide the right guidance.

ISSUE 8: POTENTIAL FOR MISSED DOSE FOR DEPLETED URANIUM

DR. MAURO: Move on to number eight.

Chick, I'm going to need a little help with eight. It sounds like that this has to do with depleted uranium and the results of some interviews that there was some potential for exposure to depleted uranium. Could you tell us a little bit more about this and as described on this summary page?

(no response)

DR. MAURO: It sounds like Chick didn't hear me.

DR. BRANCHE: Chick, are you there? Or if you're there, potentially you're muted.

MR. PHILLIPS (by Telephone): I'm sorry. I'm muted.

We felt like that the site profile was deficient relative to the potential for exposure to depleted uranium. And there was some information, and it was discussed in the matrix here that one worker had mentioned the milling or grinding of depleted uranium. And I think that's discussed in this issue. But if indeed depleted uranium is not to be considered, then that discussion should take place and justify it in the site profile.

MR. DARNELL: We'll certainly evaluate that. We do know of several incidents that happened with uranium beds. As far as milling or one, several reports on it. As far as milling, grinding, working with the DU, there was no process for that that we're aware of at the Pinellas site, none whatsoever. The radioactive materials that got to Pinellas with the exception of the tritium were sealed sources. There would be no reason for them to break into a depleted uranium bed to grind on them.

DR. MAURO: It was a depleted uranium -- is that a storage device for tritium?

MR. GLECKLER: Yes. It's another metal tritide type situation, contained. It's how they store large quantities.

DR. MAURO: And you describe some incident that might have occurred where there might have been some exposure, internal exposure.

MR. GLECKLER: I believe, was it '75? There was a valve that leaked. I'm not, they go into it in pretty good detail, but they took steps to fix that so it never happened again.

MR. ELLIOTT: Any incident report? Based on

an incident report?

MR. DARNELL: Yes. It happened over a three-week period from an improper valve closure. Basically, uranium oxide and uranium nitrides were formed in the DU bed. And there's documentation discussing how they were, prevented this occurrence from happening again. It's documented that it's the first incident that occurred on January 31st, '75, and it talks about how it was corrected and prevented.

DR. MAURO: So if a person were in the vicinity of this particular incident, they would be exposed to tritiated water vapor and depleted uranium as aerosol?

MR. DARNELL: No, the incident actually happened inside the bed, so I'd have to do a little bit more research, but it does not look like there was an exposure outside of the bed that occurred from this except for during the preventative maintenance, and the preventative steps that they took, and the repairs that they took.

MR. PHILLIPS (by Telephone): You're saying that the beds were received from offsite in

the form that they were used?

MR. DARNELL: I'll have to get back to you on that. I did not go into researching that, unless Brian knows.

MR. GLECKLER: I'm trying to remember if they shipped the beds as the container for shipping the tritium or if they transferred them into the beds. But I know those beds were used as the basically the tritium storage tanks so to speak where all they would do is heat the bed, I guess, just like to drive off the tritium and into the manifold. And I can't remember if they actually shipped it using the beds.

MR. PHILLIPS (by Telephone): My understanding is from what, from my review of the literature that they received the depleted uranium, but they prepared the beds there. So I think that needs to be addressed. You know, what did they do with that material once they received it to get it into the final form for the beds that were used in the tritium process.

MR. DARNELL: Most application of DU beds, the preparation of the beds for use has to do

with a heating cycle and a cooling cycle plus some other preparations of material already inside their containers. I have never read anything where the DU was shipped and then the DU put into the container for one of these storage beds. Like I said, I'm going to have to get back to you with more for the specifics of Pinellas, but what you're describing doesn't sound right in my experience.

MR. ELLIOTT: Let us look into --

MR. PHILLIPS (by Telephone): I don't have the reference now, but I believe there are a couple of places where it would lead you to that conclusion. But we can talk about that, but I think for today, I think that needs some research on your part and maybe a little more on my part, too.

MR. DARNELL: Yeah, you have to remember that Pinellas was a user not a builder of that type of stuff. So they would have received the final product not built the product to use at their site. But we do need to research it a bit more and get back to you on this.

MR. ELLIOTT: Chick, this is Larry Elliott. If you have any references that we don't have,

we would appreciate you sharing those.

MR. PHILLIPS (by Telephone): I believe that what I got was from the O drive. I've been searching for it, but I can't find it right now, but I'll certainly share it with you when I do.

MR. ELLIOTT: Thank you, sir.

MR. SCHOFIELD: How often was the machining done on these 50-gram loadings on these tubes? It talks about right here in your response it talks about the machinist. It goes on and says they were placed in their pockets and transferred.

MR. GLECKLER: Now, I think that's coming from one claimant in particular, I think, that got brought up, I think the claimant might have attended the worker outreach meeting on that.

MR. DARNELL: What we're talking about here is basically a stainless steel pipe filled with the DU. It had a centered filter to keep the DU inside. I don't know, I haven't spoken to this claimant, so I haven't heard this story from, directly, but that doesn't sound like something that Pinellas should have to do

for the course of the work they were doing. Obviously, it could have been something special that went on, just not aware of it. Like I said, we need to research it.

MR. SCHOFIELD: I know they had the facilities were low moisture controlled, a lot of those. And the drive trains, they used depleted uranium. Is there any documentation to that effect?

MR. GLECKLER: I haven't encountered anything on that. They did have uranium dope glass, and that's one of the things that I think we need to watch out for on this discussion is that one instance where an individual's talking about carrying it in their pocket, they mentioned glass pieces is like which I wonder if it might not be essentially glass beads, like bulk glass that would have depleted uranium in it versus anything to do with the uranium beds, tritium storage beds. That would make a big difference.

MR. ELLIOTT: It seems like we've got more work to do here on number eight.

MR. SCHOFIELD: Okay, so this one's open

yet.

DR. MAURO: Yes.

MR. SCHOFIELD: And showing research, I guess.

ISSUES 9,10,11: OCCUPATIONAL MEDICAL EXPOSURES

DR. MAURO: We're up to, I'm going to roll nine, ten and 11 together because it has to do with occupational medical exposures, the three of them. And they're all really related. I'm going to try my best to communicate my understanding of the issues.

And, Chick, if you would want to embellish on it at all, that would be great.

When I reviewed this, this is a recurring question that perhaps has been put to bed. I'm not sure. When occupational medical exposures are being done, I noticed that when I reviewed a lot of the cases, we always use the generic approach developed by Ron Kathren. Originally, it was OTIB-0006, I believe, and now there's an update of that which is not that much different.

And we did a detailed review of it, and by and large the bottom line is that the numbers selected there we found favorable,

claimant favorable. So what we usually look for when we're looking at a site profile is are you adopting the Ron Kathren protocol in the OTIB. And my understanding is that the election was not necessarily to use that but to use some site-specific information related to the workers themselves, where you actually have worker records, medical records of when he was X-rayed, if he was X-rayed, et cetera, et cetera, which makes it less claimant favorable and specific for the claimant, I guess, which I was surprised to see. Because usually what I've seen is always gone toward this default. And it's before 1970 when the worker worked there, you would default to the fluoroscopic examination, which is not a small exposure usually to, I guess, the chest area only like three rem per shot.

MR. GLECKLER: Before 1960 I think.

DR. MAURO: The guidance said anything before '70 you assume annual fluoroscopic.

MR. DARNELL: We have a program evaluation report on that. It's much earlier than '70s.

DR. MAURO: Okay, so that may be being revised then.

MR. DARNELL: I think it is like through the '60s.

MR. GLECKLER: I'm pretty sure the TBD reflects that.

MR. DARNELL: Through 1960, not the '60s.

DR. MAURO: So you can see when we do our audits of the DRs for the cases and that, one of the things we always do, we see it all the time is wait a minute, where's the fluoroscopic examinations. You only gave him the ten millirem from the each X-ray to the chest and whatever -- it goes to the other organs -- as opposed to the three rem that you get from the fluoroscopic.

And so again I'm looking at this, and I said it looks like that they're doing something different here. And that's one side of the recurring issues that we've raised related to this matter. And the other side has to do with things that -- the fellow that reviews these things for us, he's sort of an expert in this area of medical X-rays.

And there's something he keeps referring to as retakes. That is, when a person goes for an X-ray, they get multiple

shots often. It's not unusual. And that the one X-ray per year, which is part of the medical surveillance program, may not do justice to the fact that there are other X-rays that he may have been subject to during the year and that might need to be taken into consideration. He gives a long list of conditions under which those circumstances occur.

MR. GLECKLER: As far as I can tell that is taken into consideration. That's the retake or the need to do, that a retake was being performed will show up in the records or has showed up in the records. We've seen that, and we'll count those X-rays.

MR. DARNELL: And the TBD includes requirements for doing the photofluorograph, the chest X-ray, KUB and lumbar spine.

DR. MAURO: And you have the photofluorograph and that's in there also, and that's starting with date, '60 you said?

MR. DARNELL: 'Fifty-seven through '60 I believe is when the PFGs were included. And then the chest, KUB and lumbar spine was in the medical records. One thing we have to

make, understand with Pinellas is that the facility was also open to workers for non-, well, for other medical reasons, too. So they could have gotten X-rays for diagnostics that had nothing to do with the work.

DR. MAURO: In other words the policy is not to include those others. If a guy breaks his leg on the job and gets an X-ray --

MR. ELLIOTT: So you're saying those might be in the medical record, too, and have to be teased out.

MR. GLECKLER: It looks like a lot of fluoroscopy-type procedures, barium enemas, barium swallow-type procedures, and you see all kinds of stuff.

DR. MAURO: And you would expect that.

MR. GLECKLER: Yeah, for those.

MS. THOMAS: If I can address your first issue, too, OTIB-0006 is only the organ dose. The organ doses in OTIB-0006 are only to be used when we don't have site-specific data. So that's used as a default. So if we do find site-specific data, then that will be used to develop site-specific organ doses.

MR. SCHOFIELD: We're going on the

assumption they had an annual chest X-ray.

MR. GLECKLER: And something to be aware of we've also gathered more information regarding the PFG use, and that's looking like that's very likely a very claimant assumption. We've interviewed the plant nurse that was there from, I think, like 1958 into the 1980s timeframe and took a lot of those, was involved with taking a lot of those X-rays. And she's indicated that there is, they had not PFG capability.

DR. MAURO: Okay, so you have documentation of that.

MR. DARNELL: We only remember seeing one PFG record in the dose reconstructions that were done, but we applied it through that timeframe based on that one photofluorographic record.

DR. MAURO: So when you have a worker that, let's says you go into his records. You go back to the earlier years, and you see no records for him for X-rays or a PFG. What do you do?

MR. GLECKLER: If it's a non-comp case, we'll take the claimant favorable approach and

give him one extra PA chest X-ray per year. But if he's got his records, we'll apply it based on what's in the records.

DR. MAURO: So you wouldn't automatically postulate that he did get an X-ray if that would cross the line and cause him to be compensated?

MR. GLECKLER: Correct. If they don't have any records at all, it's like we'd be hard, we haven't been able to justify making a case compensable on that assumption. We typically have to default for a compensable case if they had no X-rays.

DR. MAURO: Now the reason you're doing -- and I know you don't do that -- at many other sites that wasn't done. But for some reason at this site you feel confident that if there's nothing in the records, you feel confident that he didn't get the X-rays, I guess. And the reason for that is you have lots of information that says the records were complete with regard to -- even in the early years. This is important.

MR. GLECKLER: Yeah, if they provide the records at all, we're assuming that those

records provided by the DOE are complete for that individual, and we haven't seen anything to indicate to the contrary on that. So if we received the medical records as part of the DOE response, and out of all those -- it's all their medical records not just X-rays. It's like if there are no X-ray records, then the case is potentially compensable or close to 50 percent on that POC it's like then we have to assume that they had no X-rays on that.

MR. DARNELL: Basically, the default at close to 50 percent is to go as accurate as we possibly can using the records that we have.

DR. MAURO: This is a bit different than was done in other places.

MR. ELLIOTT: Sure.

DR. MAURO: And that's fine. You've got good reason for it. There's no doubt if you have a rock solid, you stand on a rock, you've got it. You've got the records. You know that if there are no X-ray records for this worker, he didn't get X-rays. And that's the position you're taking.

MR. ELLIOTT: All of the other sites that we've seen, I assume that they -- and using

TIB-0006 or whatever it is -- AWE sites. We don't have any information that tells us that they had such a monitoring program used in ^ or X-ray, so that's why we default to that.

In this case it's my understanding from what I've heard and what I've been told that we have good records to support this position, and we've talked to the person who evidently was the principal in charge of taking the X-rays.

DR. MAURO: What was the beginning start date for this facility when they started this?

MR. DARNELL: 'Fifty-seven. The nurse they spoke with was started in '58.

DR. MAURO: So you've got that information.

MR. ELLIOTT: She was probably the one that put it into the medical file, too.

MR. PHILLIPS (by Telephone): And do you believe that to be true for the '57 to '60 timeframe as well?

MR. DARNELL: Yes.

MR. GLECKLER: At least the '58 to '60 timeframe. She was there. So that leaves one year which it's unlikely they would have changed any equipment within the first year of

the plant's operation.

MR. ELLIOTT: When did they start in '57? January of '57 or --

MR. GLECKLER: The plant itself, I think was it, yeah, it was some time in '57 but something to be aware of, there's a temporary facility in the St. Pete area that operated. I think it just had some tritium work going on there.

It's like up as early as 1956, and that's, I think one of the issues that I still need to deal with in the TBD because I don't think it properly addresses that and leaves that as a hole. Because there are some claims that have popped up for that employment that mention that.

MR. PHILLIPS (by Telephone): And we would agree with that.

DR. MAURO: And the only thing I'd like to say is that the X-ray side of the story, which is this is new information in terms of our experience over the last several years this is a special case where even into the '50s you've got this good information. And certainly, if you're talking to the nurse that was there,

not bad.

The fellow that looks into this matter for us unfortunately is not on the line, Dr. Pettingale (ph). What I'd like to do is just a follow up to this. I'd like to talk to him a little bit about this to see his perspective. Because he had quite a bit to say about this matter. But your response certainly is responsive. You have the data. You have the people, and that's a pretty strong argument. Something that we don't have at other sites.

MR. GLECKLER: The one thing we don't have is good programmatic information to say that this was the frequency of what we performed X-rays for at various intervals. I mean, there's virtually none of that, but we did get the actual X-ray records.

DR. MAURO: I'm especially --

MR. GLECKLER: Gonna need that information at that point.

DR. MAURO: PFG, I mean, that is not a small dose. X-rays are --

MR. GLECKLER: It's made a lot of cases at that site compensable.

DR. MAURO: Yeah, and so I think a lot rides on that. We may want to -- if it's okay with the work group -- ask Harry to look into that further because I wouldn't want to walk away from three rem a year external exposure which may very well dominate exposures if, in fact, you were to make that assumption. Let's say, you didn't have the benefit of this information, and you would default it to let's say up to 1970 or 1960, a PFG, my guess is that three rem a year would be the highest doses that anybody got there from external exposure.

MR. DARNELL: That's absolutely correct.

DR. MAURO: This is in my mind a very important issue.

MR. CLAWSON: So SC&A's going to look into that a little bit further. Now you rolled in nine, ten and 11?

DR. MAURO: Yeah, because they're really all --

MR. CLAWSON: I just want to make sure that we're clear on that.

MR. ELLIOTT: And I think we need to tighten up the TBD site profile in that regard, too.

Not only the '56 year but what we're doing specifically on X-rays, and why we feel we -- I mean, let's just be clear here. We have a standard approach for AWEs and DOE sites where we don't have a lot of data. Here's a site where we have X-ray data. And I think that needs to be very clearly articulated in the site profile.

DR. MAURO: And bulletproof because the whole body dose turns on it.

MR. ELLIOTT: It's a shift in dose reconstruction approach.

MR. PHILLIPS (by Telephone): I think if that were discussed more thoroughly, that would be very helpful.

MR. SCHOFIELD: Is it safe to assume that the, probably the only people who were monitored, they felt that should be monitored up until, what is it, about 1974 I believe it is, received an annual X-ray?

MR. GLECKLER: No, it's pretty much everyone received at least the pre-employment X-ray. That's one way that we could quickly tell, hey, we might be missing some records here. There's that, virtually everyone's received a

pre-employment. So we have that as a minimum typically. There's a couple cases where there were GE employees that transferred over. In those cases we might be missing records in those instances where they're transferring from one GE facility to Pinellas or Pinellas to another GE. Sometimes they transfer those records with them, and we might have to go to that other facility which is quite often ^.

MR. SCHOFIELD: Yeah, because it says right here in the SC&A statement that chest examinations are often quite limited after 1974, and that's why I was wondering about the period before 1974 for those who were considered radiation workers if they received an annual X-ray.

MR. GLECKLER: Based on a review of all the records I've seen, there's really no rhyme or reason of what any frequency. We can't make any assumptions regarding frequency. And so it's fortunate that they are providing the records for that site because some years they will receive more than one chest X-ray. Other years, they might go five years. I don't know what's, it's hard to tell what's driving it

for that site.

MR. PRESLEY: Have you been able to see what type of a frequency they had their health checkups? Is it a two-year program, site program? Is it a five-year program or something like that?

MR. GLECKLER: As far as their physicals I think a lot of them are annual. I'm trying to remember. It's been awhile since I've looked at, processed any Pinellas cases. It's like --

MR. DARNELL: The way the Pinellas records were given to us, we have records that show the X-rays. And there's a supporting document that we don't typically take a look at for the rest of the physical. What we have on our electronic database is the X-rays.

MR. GIBSON: Do they have or was there a need for them to have a respirator fitting program there?

MR. DARNELL: It wasn't a need as far as I know. I don't remember reading anything about a respirator fit program there. If there were one, it would not be for radiological. It would be more for chemical, industrial

hygiene-type hazards.

MR. GIBSON: But even on the other side of the house if they had one, it requires an annual physical which they may very well have been X-rayed.

MR. DARNELL: May very well, but we don't get into that side of the site's operations.

MR. ELLIOTT: And we see the X-rays.

MR. GLECKLER: The medical records we get show which periodic physical exams they received which not all of them did they receive a chest X-ray or an occupational X-ray during those. You can do that by matching them up. I haven't done that in some time. It's like now after doing quite a few cases for that site it's like you realize, okay, this is what's going on. You just go and look for the X-ray records and run with those. Sometimes if we think we're missing some records, then we'll go back and look at the physical exams and see if there's a, or if there's no indication of a chest X-ray record in there, we'll go back and sometimes those might give us a clue of whether they received something or not.

MR. DARNELL: When we were looking for them, if I remember right, looking through the medical records, if I remember right, the record actually stated whether the person was going to get an X-ray or not that year. It was written in the doctor's notes.

MR. GIBSON: But it just seems like from my history to that typically, I mean it changed from time to time over the years, but it was either you're on an annual X-ray or you did have one every two years. But it was like in the protocol for the physical.

MR. DARNELL: That may be true other places, but this is what we see with the records we have here at Pinellas.

MR. GLECKLER: The only ones I typically have seen getting annual X-rays are the smokers, and that's because, you see indications that there's concerns about lung cancer. So they're really probably not technically being done for occupational reasons in that respect, but we're counting those as if they were though. Because it's not that clear.

It's an inference that we're making or

that I'm making based on what I'm seeing. I'm making that connection. But we're still counting them as occupational. But that's about the only ones that are getting annuals from what I can tell.

SECONDARY FINDINGS

DR. MAURO: That completes the findings, the 11 findings and the action items. There are a number of what I call secondary findings. But I reviewed those, and they all link back in some way or another to the primary findings we just discussed. I would suggest that there really is no need to visit the secondary findings at this time for the following reason:

Everything that we just talked about when we regroup and address the 11 items we just covered with the additional material, I think we're going to find we will have covered all these other what I call secondary findings. In other words I think when looking at them they all almost reflect back --

And please, Chick, correct me if I'm wrong.

That is, if we do satisfactorily

answer all of the questions raised on the 11 findings, I think we're going to find ourselves in the position where all the secondary findings go away. I hate to jump to such an enormous conclusion, but that's the way it looks to me in reading through the secondary findings.

Chick, are there any secondary findings here that you think need to be brought up at this time because they differ substantially from the first set of 11?

MR. PHILLIPS (by Telephone): I would say secondary issue three and four are not -- we haven't specifically discussed, but those are relatively minor. It might be worthwhile just to touch on three and see what the NIOSH response on that is.

DR. MAURO: Why don't you go ahead and summarize them for us?

MR. PHILLIPS (by Telephone): Well, there were perimeter tritium monitoring stations and the data should be available for those. And it wasn't mentioned in the environmental site profile. And it just seemed that that data should be considered.

DR. MAURO: Are these tritium?

MR. PHILLIPS (by Telephone): Yes.

MR. ELLIOTT: As we say here, we'll look at that, environmental air data, and it will be reviewed and if the TBD needs to be updated, we'll do so.

MR. DARNELL: I'm looking at the environmental data, Table A-4.A of the technical basis document. It's got tritium gas, tritium oxide, Krypton-85, Carbon-14.

MR. GLECKLER: What I think you've indicated in there, Pete, is that those values are based off of, I think, a CAP-88 run or a dispersion model run to where did they ever go back and compare it to the perimeter concentrations that they were monitoring to just kind of calibrate the model? That I don't know.

MR. DARNELL: Is that what you're asking, Chick?

MR. PHILLIPS (by Telephone): Yes, that's it. I think it should be considered. We can discuss it.

MR. SCHOFIELD: People are going to, I think it needs to be addressed, but about the potential for those people having tritium

uptakes from the stacks. That's got to be addressed so that the people looking at the TBD can understand the issue of the stack floats being discharged. There's quite a few ^.

MR. GLECKLER: Yeah, but based on the dispersion model calculations we're talking like the doses come out to be about ten thousandth of a millirem at their highest.

MR. SCHOFIELD: But I don't remember seeing that action spelled out in the TBD for people who are looking at this. They're going to look at those charts, those lines and the number of curies that were put out to the stacks.

MR. GLECKLER: Well, we've got the annual intakes that we've assigned from an environmental side where when we plug those into a dose calculation tool, that's going to kick out what the dose is because it will be different -- well, it's actually not different for each internal organ but with tritium.

DR. MAURO: So you have numbers in the site profile that say using the source term information you have and the classic

atmospheric dispersion model like CAP-88, you're onsite, airborne tritium levels to outdoor workers could not exceed one millirem a year.

MR. GLECKLER: That's just what they come out to. They calculated intakes, annual intakes, based on the stack releases, and those models to where if you plug those intakes into to a dose calculation tool, one of the dose calculation tools that we have, it'll kick out like about a ten thousandth of a millirem for dose.

DR. MAURO: Is that where you're coming in?

MR. GLECKLER: Yeah. And actually, you know, those doses would only reflect what exposures outside the buildings were. Potential exposures inside the buildings were much higher.

DR. MAURO: Well, I have to say, knowing tritium it takes an awful lot of tritium in the environment to deliver a substantial dose. As long as your source terms -- I guess the question is you have to be off by orders of magnitude on your source term to even make this onto the radar screen.

MR. GLECKLER: It would be at least three orders of magnitude.

MR. ELLIOTT: We have committed to look at the environmental air sampling data, review it and see if we need to make a change.

DR. MAURO: Okay.

MR. ELLIOTT: Is that satisfactory?

MR. PHILLIPS (by Telephone): That's satisfactory.

DR. MAURO: And number four, Chick?

MR. PHILLIPS (by Telephone): That would have to do with the discussion of uncertainty. And again, I think it's a minor issue. I asked to take a look at that discussion and see if it can be revised.

DR. MAURO: This has to do with the plutonium?

MR. PHILLIPS (by Telephone): It's just a discussion of uncertainty in general.

MR. GLECKLER: This is in regards to the environmental stuff?

MR. PHILLIPS (by Telephone): Yes.

MR. GLECKLER: I think the reason that the TBD author kind of left that vague or that section vague is because it's being run

through a dispersion model. And to my knowledge there's no way to really quantify that uncertainty associated with that. And it's going to be a much larger uncertainty when you're modeling Mother Nature than any of the other uncertainties that factor into that.

MR. PHILLIPS (by Telephone): Yeah, just some discussion of that, and just like you gave then, at least to kind of set the stage. The discussion that's there is, it seems kind of off the top of the hat, so I would ask just take a look at that and see if more specific things can be said.

MR. ELLIOTT: Just why we plucked out three standard deviations as the parameter for assessing uncertainty.

MR. PHILLIPS (by Telephone): Yes.

Other than that, John, I agree with you. I think all the other things are covered in the discussion we just had. And if we get through the 11 issues that these will be cleared up, too.

DR. MAURO: One more thing I'd like to ask the working group. Given that there is an SEC petition that has been qualified --

MR. DARNELL: It's in consultation.

DR. MAURO: Oh, it's in consultation, okay. So it's premature to talk about this then. Never mind. I was just going to say if there was qualification the degree to which the Board would want us to read the petition and the issues raised and perhaps that would be a pointer to some of the issues here and whether or not we, you know, what are the ones that are sensitive with regard to SEC.

But in a way that brings us -- I don't know if you're ready to move into that world. We just keep doing our site profile work now and we won't consider SECs until, I guess, until the evaluation report comes out. That's something that we take our direction from the Board.

DR. BRANCHE: It would be appropriate for you to wait.

DR. MAURO: We will wait.

I think SC&A has completed our issues discussion.

Chick, anything else?

MR. PHILLIPS (by Telephone): No, I think you covered it, John. I think that, I agree

with where we came out.

MR. SCHOFIELD: I'd like to take a look at issue number five there.

MR. GLECKLER: Secondary issue?

MR. SCHOFIELD: Yeah, it's a secondary issue about the bioassay.

DR. MAURO: It's the five-to-one ratio?

MR. SCHOFIELD: Yes. How they come up with these ratios.

DR. MAURO: Chick, would you mind just giving us a conceptual description of this issue number five related to, I guess, the five-to-one issue, Plutonium-238, -239 and what the concern is?

MR. PHILLIPS (by Telephone): This relates to when a bioassay sample is considered to be non-detectable. And there were five criteria I believe that were set up. And this was post -- what was the date on this? I'm sorry.

MR. GLECKLER: Had to be fairly modern era. I think in the '88 timeframe was it?

MR. PHILLIPS (by Telephone): Nineteen eighty-eight timeframe.

MR. CLAWSON: 'Ninety actually.

MR. GLECKLER: 'Ninety?

MR. CLAWSON: 'Eighty-eight, '89 and '90.

MR. GLECKLER: Yeah.

MR. PHILLIPS (by Telephone): In one of those related to the criterion that's shown in this particular issue, and that is the ratio of Plutonium-238 to -239, the bioassay sample should be five-to-one. Or the -238 is detected while Plutonium-239 is not detected. And we questioned that as being a viable criterion for rejection.

And this relates back to the amount of Plutonium-239 versus -238 in the RTG devices. And this particular criterion, at least according to the site profile document, resulted in the rejection of a number of bioassay samples. It may have been in collusion with other criteria, but the way it's stated is that it resulted in the rejection of a considerable number of samples as being non-positive.

MR. GLECKLER: Something to realize on that it's like that is Pinellas plant documentation being quoted in the TBD. That is not our document or our statement.

MR. ELLIOTT: Not an interpretation.

MR. GLECKLER: That's not an interpretation on our behalf. That is exactly how it's quoted to where one thing regarding the or, after the or part of that, is the PU-238 is detected while PU-239 is not detectable. I looked at the source. That is exactly how it's quoted in the source document to where that's probably a typo in the source document is the only thing I can think they flip-flopped. It doesn't make sense.

MR. PHILLIPS (by Telephone): I would agree that that's a viable criterion if you reverse those, that 239 is detected while 238 is not detectable. That would be a reason.

MR. ELLIOTT: We should correct that.

MR. PHILLIPS (by Telephone): Can you confirm that that's incorrect in the --

MR. GLECKLER: I don't know if there's a way to confirm whether or not the plant used that criteria as that or as it should have been, you know, if that was inverse. I mean, this is coming from plant documentation as far as the RAD-CON Program at the site. But the TBD's just quoting that directly without any changes or interpretation.

MR. PHILLIPS (by Telephone): But it's stated in that document that 238 is detected while 239 is not detected?

MR. GLECKLER: Yeah, and I found the source document for that because I was thinking maybe it's a typo in the TBD. And, no, it's that way in the source document coming from the Pinellas plant health physicist. So I don't know. I suspect that it's probably a typo in their document, but it's going to be probably difficult or next to impossible to verify that that was a typo in their document, and they were actually using the inverse of that.

MR. ELLIOTT: Well, maybe we don't have to verify a typo. I mean --

MR. DARNELL: We're talking about a very small amount of samples for a very, very low exposure hazard here with dealing with plutonium.

MR. ELLIOTT: We could make that interpretation technically and say it doesn't make sense the way it's couched. It makes more sense if it was reversed, and we could apply it that way.

MR. GLECKLER: We could always reevaluate

the data or take another look at the data ourselves and provide our own interpretation versus quote the plant's.

MR. PHILLIPS (by Telephone): Yeah, I would suggest that both of those need to be done.

MR. GLECKLER: Both of what?

MR. PHILLIPS (by Telephone): That the issue of 238 versus 239, the criterion needs to be addressed. And the data needs to be looked at to confirm, to the degree that you can, why those were rejected.

MR. ELLIOTT: It's only a small amount of dose either way, but it would perhaps help a best estimate. Am I correct, Pete or Brian?

MR. GLECKLER: What's that now?

MR. ELLIOTT: I say it's a small amount of dose we're talking about here, but it could help in a best estimate situation.

MR. DARNELL: Only in a best estimate situation.

MR. ELLIOTT: If we did it wrong, that's the risk, and I don't want to take that risk.

MR. PHILLIPS (by Telephone): I'm not sure I followed that. Could you say that again?

MR. ELLIOTT: Well, this is Larry Elliott.

We have different approaches that we use in our efficiency process to help move claims through dose reconstruction. And a best estimate is that in and of itself. We try to make sure that we account for all dose so that we give the claimant the best dose reconstruction that we can. That's what we call a best estimate. And generally, we find those in the area of 45 percent and less than 49.9 percent POC.

MR. DARNELL: Actually, it's 45 percent to 52 percent.

MR. ELLIOTT: Fifty-two percent, that's the way it's written up, but you know, to make sure people get across the line, the compensation bar, that's what we're worried about.

DR. MAURO: You're going to have to help me out. I'm reading this, trying to make it make sense to me. So you take a urine sample and your expectation is that because the ratio, the mass ratio, of Plutonium-238 to -239, is there a mass ratio or is there an activity --

MR. PHILLIPS (by Telephone): Activity ratio.

MR. GLECKLER: It's set up as an activity ratio. It could be either way, but this one's set up as an activity ratio.

DR. MAURO: So there's an activity ratio associated with the source. This is what you get when you're working with those thermoelectric generators and use Plutonium-238 as your source of heat.

MR. GLECKLER: Still a certain amount of PU-239.

DR. MAURO: Yeah, they always put 239 in there. And there's five times more activity in there, 238, than there is 239 disintegrations per second. So that's what you get when you buy this product.

Now along comes a person working with this stuff and you pull a urine sample. And what I'm hearing here is that you would -- if you get a positive 238 result on your urine sample, you then look at, well, how much 239 do I have. And if there isn't any 239 in the urine so you can detect, you reject the 238 as being not real.

MR. DARNELL: Actually, the way this is written it's backwards. You detect the 239

but have no 238, you would reject the sample.

MR. PHILLIPS (by Telephone): The way it's written, go ahead with your analogy, John.

MR. ELLIOTT: You yourself as a health physicist would question that. When you read it --

DR. MAURO: I was taught to read it the other way. But you're saying it's written the opposite way.

MR. ELLIOTT: Right.

MR. DARNELL: It's written incorrectly.

MR. ELLIOTT: And that should be our interpretation. You would agree with that.

DR. MAURO: I was just reading this as you were talking to me, and saying wait a minute, wait a minute, I got it.

MR. ELLIOTT: Phil was right to ask us to talk about this on the record, and I think that was an important issue.

MR. SCHOFIELD: Well, I was confused.

MR. PHILLIPS (by Telephone): I think we're all in agreement as to this makes no sense the way it's written, so it just needs to be addressed. Other than that, John, I think that's all that I would have on secondary

issue five unless there's another question.

DR. BRANCHE: Phil was the one that raised the question.

MR. SCHOFIELD: No, I think that, the solution we've come up with will be adequate.

MR. CLAWSON: If I could go back to issue number two when we got in there --

DR. BRANCHE: Regular issue or secondary?

MR. CLAWSON: Regular issue.

And Jim has left. This was dealing with the tritium and so forth and NIOSH feels that OTIB -- I call it 0061.

MR. DARNELL: Sixty-six.

MR. CLAWSON: NIOSH feels this would cover it?

MR. DARNELL: Yes. Of course, we have to incorporate the, process it to the TBD, or put a reference to the TIB, one way or the other.

MR. ELLIOTT: That's the easiest.

DR. MAURO: I think it's going to be an important one because this is something new, and it goes to the heart of one place where we thought that we were going to run into some problems with the dose reconstruction. So, yeah, in my mind when I saw the OTIB-0066, my

eyes lit up. I said, oh, okay. Sort of like the high-fired plutonium thing. Same thing here. This is something that I didn't know that there was a well-developed record of empirical data that would allow us to come to grips with this thing.

MR. SCHOFIELD: That should actually cover the secondary issue number six on plutonium solubility. Would it not?

DR. MAURO: I think that's a separate issue, right? One is dealing with the tritides and the other...

MR. SCHOFIELD: I guess that issue could be closed then because they did not process any oxide. Is that what I understand in NIOSH's response?

MR. GLECKLER: From ^ --

MR. SCHOFIELD: Yes, secondary issue number six.

MR. GLECKLER: They didn't process, but the RTG sources contained it.

MR. SCHOFIELD: But that was the only source of plutonium oxide they had?

MR. GLECKLER: They had a plutonium-beryllium neutron source there at the start

up, near the start up of the plant as well. I don't know when that source left the site. I can't remember. But those are the only sources of plutonium.

DR. MAURO: I'm sorry, Phil. I had my pages out of order. I was trying to catch up to you. You're looking at secondary issue number --

MR. SCHOFIELD: Six.

DR. MAURO: Okay, now that I've got myself back in order again.

MR. SCHOFIELD: We're looking at the solubility of the plutonium. You know, this is going back to the same issue Rocky has when you've got Super-S.

MR. DARNELL: Yes, but Rocky processed it. There was no processing done here at Pinellas. The TBD says choose whichever is the most claimant favorable, class S or class M. There's not much more that I think it really needs to say.

MR. SCHOFIELD: Do you know how many positive samples there were for plutonium in the records?

MR. GLECKLER: It all comes down to the

rejection criteria. It's like based on the rejection criteria that the site used, and that there were none. And that was part of what was being disputed it was the first criteria and the rejection of that first statement in the rejection criteria on that that we need to kind of go back and take an extra look at just to make sure that they didn't kick out any samples that were potentially positive and rule them as being less than detect based on that rejection criteria.

Because I'm assuming that the rejection criteria that the plant established was probably the result of some false positives which you will encounter especially when you're measuring low levels in radioactivity. A certain percentage of, if you have 95 percent confidence interval, you should have about, what, five out of 100 samples as being false positives.

DR. MAURO: Let me see, there's a number of -- I'm starting to form a little picture in my head of the plutonium question. What I'm hearing is that the thermoelectric generators

used Plutonium-238 with trace levels of -239 in triple triple-sealed sources. And that was the only way in which plutonium showed up at the site.

MR. GLECKLER: With one exception. They had a plutonium-beryllium source much earlier.

MR. DARNELL: And encapsulated --

DR. MAURO: And again, that's the standard. Now the way in which a person and the way in which they used this material in the thermoelectric generators is there was no reason to open these up, break them up.

MR. GLECKLER: They were never opened up.

DR. MAURO: But there could have been some surface contamination. And the surface contamination would be the way in which a person may inadvertently inhale or ingest some of the residue that might be on these sealed sources.

So that brings us to, okay, you take a bioassay to see if you see anything. And then we have the minimum detectable level problem that says, okay, we don't see anything. And now the question becomes if we don't see anything, we're going to have to assign. If

we took the urine sample as we always do, we're going to have to say, okay, we're going to have to assign something.

That brings us to another issue. It seems like the same ol' story. That is, what do we assign? And what we assign is one-half the MDL. What if the MDL is somewhat uncertain because it varies from case to case.

You're position is that, well, for everybody who had a urine sample that was analyzed for plutonium, and it was analyzed apparently for both 238 and 239, there is an MDL unique to that person. That's part of his record and if it came up zero, you would assign one-half that MDL to that person. I don't know the degree to which that's described in the site profile, but that's what the regular plan is.

MR. GLECKLER: That's the project's approach. That's the standard approach.

DR. MAURO: Now, if you got a positive reading of 238, we've got some 238. And you would expect also to see some 239 or not. And that's where the five-to-one thing comes in. And what you're saying is that, well, if we

see 238 activity ratio, we should see 239 at one-fifth that value. Is that correct? That's what you would expect to see.

MR. DARNELL: Yes.

DR. MAURO: If you don't see 239 at one-fifth that value, you reject the 238.

MR. DARNELL: No. It's the other way around. If you see 239, you should see five times that of 238. But if you have 238, and you don't see 239, that's not a reason to reject the sample.

DR. MAURO: So you see the 239, which is hard to see, but you do see it. But then you don't see the 238 five times higher there, right?

MR. DARNELL: Yeah.

DR. MAURO: Then you're saying, well, something doesn't look right. That means that I have a false positive and you reject the whole --

MR. GLECKLER: It could be a false positive.

DR. MAURO: -- could be a false positive.

MR. GLECKLER: And one of the other reasons for this ratio it like if I remember right I think I remember seeing some documentation

regarding where that might have come about. It's like I think the levels that they're looking at they're concerned about being able to detect even exposures to fallout. And that would be dominated by the 239.

And that's one way to distinguish it. The use of the ratio's also a way to quickly discriminate that this is ours, but I think the other potential exposure of plutonium that they're concerned about that might show up in the bioassay records was fallout.

DR. MAURO: Now, my reaction to that is that you're concerned that you have a false positive on 239, and one way to avoid false positives is to see if you've got that 238 there also. If you don't have the 238 there, something doesn't sound right. I mean, that's what you're saying. And I can understand that.

I guess, I just asked myself this question. If I was in the process of running that program, within the context of that program -- perhaps that makes sense to you within the context of compensation where you want to give the benefit of the doubt to the

worker, would you want to do that.

In other words use that criteria, and especially if there was a lot of rejected samples. In other words there's a lot of workers where you saw some positive reading on 239, but because you didn't see the 238 present in the ratio you would expect it, there's something about it that you don't trust, and therefore, you're going to reject that intake that you would normally use.

That's a test that you're putting your data through that no other site I know of does that. But it's when you see a positive 239 in your urine, you use it.

MR. GLECKLER: That's because most other sites that's the predominant plutonium isotope. Whereas, here they're limited to the PU-238-type --

DR. MAURO: That's the driver.

MR. GLECKLER: Material which isn't weapons related. It's just a source material.

DR. MAURO: I'm sort of thinking out loud of what I think would be a reasonable thing to do here. I could understand why a person would do this. Listen, you're going to get the 238

there. If you've got 238, you're going to see the 238. Why don't we see the 238? I understand that.

But at the same time I'm going to say, geez, am I giving this guy the benefit of the doubt. I did see 239. Granted that it's questionable. So, I don't know. The fact that they adopted that philosophy in their plan, all I'm saying is that is there something necessarily that NIOSH would like to adopt in their dose reconstruction.

MR. DARNELL: Actually, yes, because we're trying to do a dose reconstruction based on the worker's real exposure. Going to look at 239 just because there was a 239 positive that was rejected because there was no 238, you're actually looking at -- like Brian said -- fallout or some other --

DR. MAURO: Something else.

MR. DARNELL: -- exposure that's not there.

MR. ELLIOTT: It's not related to the plant operations.

MR. DARNELL: It's not related to the plant operations. It's not related to reality even.

MR. GIBSON: But in reality the plant

criteria and their rejection criteria, the whole bioassay program, was basically in a lot of these sites incentivized by DOE to keep exposures low. That's how they got their award fees. So their program wasn't set up to be claimant friendly. It was set up to minimize exposures to employees so they can get their award fees.

MR. DARNELL: You're absolutely right about the award fee, but we also have to draw the line some place around reality. And for this material if you didn't see the five-to-one ratio, and you detected 239, that's not a real result. Even though there's a detect there, it's not a real result because you can't have the 239 without the 238 for this material.

MR. GLECKLER: I mean, the whole purpose for that criteria as I see it is they had to come up, you know, they were starting to see some of the false positives that they should see on that predicted rate depending on how many samples they analyze it's like for that. And they have to be able to explain that because they also are going to be looking, I suspect that they were also looking at the likelihood,

I mean, we've looked at the likelihood of potential exposure.

The only real potential for exposure is upon the receipt inspection for these sources. As soon as those sources are received at the site, they're inspected, and then they're also surveyed for smearable contamination. If they're found to be above a certain level, they get shipped back. They never shipped any back.

None were ever above that level, but they did, there is indication that they did find some lower levels of contamination on them and they would decon them and that. And this is all performed in a hood. And then after being deconned they would progress into the plant.

MR. DARNELL: The limit to send back the sources was 200 dpm alpha contaminant. They didn't check whether it was 238 or 239. It was just 200 dpm. And I think the maximum that was recorded was a 20 dpm sample on one sealed source.

MR. GIBSON: Well, I'm just stating the reality. I realize the sealed sources and

everything else, but let's just face it. At these sites if there's any reason to question the results, that was DOE's buzz word, false positive, you know. If there is an unexpected result, they would retest the employee three times, and if it's two out of three, came back negative, you know, well, we got false positive. But on the other hand if there was a true exposure, they would never, or a negative, they would never retested a negative to see if it was a false positive. You still have that same criteria.

MR. GLECKLER: But there's only going to be like a, you know, there's a small number of people that worked in the RTG areas relative to the rest of the plant. And the people involved with those receipt inspections is an even smaller part of the population. You're talking maybe five people over quite a few years that are routinely exposed or had that, any potential to be exposed during that period of time.

It's like after that receipt inspection is performed and any potentially contaminated sources deconned, about the only

potential for exposure is if the source is breached. And there's a lot of documentation that's available that indicates that none of those sources were ever breached.

MR. GIBSON: I'm not necessarily arguing the merits of what you guys are doing, but I'm just saying you need to look at the reality. But that was, the way they operated at the sites was totally different from what we're doing here, so just to take all of their work and data at face value, and their protocols, is not necessarily something to hang your hat on.

MR. DARNELL: Well, that's one of the reasons why we use the one-half the MDC to calculate missed dose because we do have to rely on records to a certain degree. But we also recognize exactly what you're saying. And I think DOE's point of view and their whole thing was to minimize as much as possible so they didn't have to report to the Department of Energy they had exposures.

And in addition, as long as we're talking about reality here, in my experience as a DOE official -- I have no conflict with

Pinellas -- it was a feather in the site's hat to send something back that was shipped to them. So if Pinellas could have, they would have sent them back if there was significant contamination, and that would have been a feather in their hat meaning their radiation protection program was working in that particular aspect. That never occurred at Pinellas.

So we've got records on one end and records on the other end that are pretty much showing that the contamination monitoring on these sealed sources was a good program. They did catch some contamination, took care of it at the source upon receipt.

MR. GIBSON: I don't want to belabor the point, but let's just say that if Pinellas had scheduled to get an RTG out the door, and they received a sample that was a little bit over that contamination limit, they'd be ^ put it in the generator and get the generator out the door.

MR. DARNELL: At that point they'd be guilty of violating a law, and I don't think that would happen.

MR. GLECKLER: But even the key thing is they deconned before they passed it through the rest of the system so that potential for exposure would be limited to just a very small number of individuals, and it's because it's performed in a hood, the potential's going to be very low for them because you're talking a small amount of surface area because they're fairly small sources.

DR. MAURO: This five-to-one rule, intuitively you say, sure, it makes sense.

MR. DARNELL: It's not really a rule. It's a ratio. You look for about that. It doesn't have to be --

DR. MAURO: Where I'm going with this is that I recall that the biokinetics in 238 could be substantially different than 239 because of the difference of specific activity. So though you may start with surface contamination or the source that's at an activity ratio of five-to-one, what you might end up in the urine may not carry through because of they're going to go separate ways in terms of because of specific activities if it's inhaled, for example. I

might be wrong about that.

Where I'm going with this is I know enough to be dangerous here. I would like to ask Joyce Lipsztein, who knows this stuff like the back of her hand, to ask her whether she thinks this general policy for rejection of a positive 239 reading rings true with her as being a reasonable way to deal with this problem if that's acceptable to the work group because Joyce is really our expert on this matter.

And I think that, now, I know how important it is, but if all of a sudden, let's say a judgment is made or SC&A comes back with, you know, I think if you got a positive 239 reading notwithstanding a 238 reading, let's keep it. Let's make it a keeper. That would probably affect a number of dose reconstructions because all of a sudden you'd be assigning plutonium doses that you didn't before.

MR. DARNELL: Actually, for a level of 20 dpm for an alpha contaminant maximum, still if you want to keep that 239 ^. Feel free to talk to that lady, but please let her know the

actual scope of what this is.

DR. MAURO: But it was my understanding from talking to Jim that even when you're at the limit of detection for 239, you're still, in other words the amount of 239 you have to inhale to see anything is not insignificant because it's so difficult to detect. So what I'm getting at is that if you do see a detectable level, even though it might be a false positive and might not based on the ratio approach, I suspect we're not dealing with an insignificant inhalation of Plutonium-239.

MR. DARNELL: The other thing you have to remember when you're relating this to other sites is at the other site I had plutonium exposure ongoing. I mean every day, every other day, a couple times a week, whatever. But it's an ongoing exposure. You go to Pinellas. You get a shipment in, a couple months later you get another shipment or whatever they're -- I don't know the exact timeframe of the delivery, but that's the only time you have exposure potential, once in a while. So the build-up that you're looking

for from the way other sites do it don't occur here.

MR. GLECKLER: Another thing to keep in mind, too, is just because a person was monitored for plutonium exposure at Pinellas doesn't mean they had the potential to be exposed. So in those instances if they weren't involved with the receipt inspection process, it's not really appropriate to assign a missed dose based on a bunch of negative plutonium bioassay data because it was just a precautionary thing that they were doing that was way and above the requirements.

MR. DARNELL: There is precedence at other sites for not assigning missed dose for that exact reason.

DR. MAURO: Not assigning because they were not actually in an area where they could have been exposed. I haven't seen it, but I believe you.

MR. PHILLIPS (by Telephone): But having said all those things if there was a reason to collect the sample, then you have to treat the sample as having to be evaluated realistically irrespective of the exposure conditions. In

other words if you're going to collect the samples, then you have to evaluate each of those samples that there's a potential for them to be positive. And that's what we're talking about in this particular case.

MR. ELLIOTT: ^ to the sample.

MR. GLECKLER: Yeah, and that's one thing we've already committed to do is to take a look at that criteria again and look at how it affected some of those samples on that. Because from what I can tell I don't think I've encountered any of the positive bioassays that they applied that to yet. So there may not be any claimants --

DR. MAURO: It may not have happened. I misunderstood. I thought that happened --

MR. DARNELL: What we're talking about is bioassay for something that I haven't seen a positive on yet for material that was at an extremely low level of contamination in an extremely tightly controlled area, meaning the fume hoods, that only a few people did but a lot of people got monitored for.

It's a lot like the criticality badges. Everybody wore them, but they weren't

working in those areas, neutron badges at some of the Oak Ridge facilities the same thing. Everybody wore them, didn't need --

MR. PHILLIPS (by Telephone): No, that really doesn't relate to what we're talking about. What we're talking about is how you determine if a sample is positive or not. Whether there was a need to take that sample or not has nothing to do with the way you evaluate that sample.

MR. DARNELL: We've already said we're going to look at that ratio.

MR. ELLIOTT: I think we've made our commitment.

DR. MAURO: I just have a question --

MR. ELLIOTT: I don't know what we --

MR. PHILLIPS (by Telephone): The other thing just to complete this that's a little troubling is criterion number five, the recovery of the tracer must be greater than 50 percent. What they did is they, if the first four did not reject the sample, then they re-analyzed the sample and to a level of where they had a recovery of greater than 50 percent.

What that should have been applied to is all the samples because what about the samples who were negative but had low recovery? Do we have any information on those? We don't really know the recoveries, right?

MR. GLECKLER: That I don't know. I mean, it's going to be probably nearly impossible to verify what the plant actually did. I mean, that's documentation that was provided in the site, it's in the site research database that we found. And that indicates what they did and being able to verify exactly what they, or how it's affected and that may be difficult.

I mean, we can look at the results that are available on that, but I'm trying to think. I don't think any of that would be censored yet. It's like I think that's just how they, I think they still provide the uncensored results. Well, some of them they do zero out so it's like they wouldn't be censored as zeroes, so it's hard to say without going back and looking because there is some data that the TBD based the table off of that provides more kind of like a

collection of bioassay data for quite a few of the individuals at that, that worked in the RTG areas.

And I encountered that just recently, and it's like, and that covers for more than just claimants to where I'm only familiar with what I've seen in the claimants' files for the dose reconstructions that I've either done myself or peer reviewed which is probably the majority of the Pinellas cases.

So there's more data there to where we might see indications of the positives and get a, you know, but until we have time to take a look at that a little closer, it's kind of hard to say if it's more than just them trying to deal with the false positive issue or not. I suspect that's really all that's going to end up being.

MR. ELLIOTT: Well, we've committed to re-look at this and revisit it. So I don't know that we're to say anything more. We're beating a dead horse right now.

DR. MAURO: The question I had, Phil, would you like us to ask Joyce to look at the five-to-one philosophy because --

MR. SCHOFIELD: Please do.

DR. MAURO: She'd be able to pretty quickly know whether or not there's any reason to believe that 238 would differ biochemically from 239, and whether or not that criteria is something that you can hang your hat on. She may say that's fine. Or she may say I wouldn't do it for the following reasons. We'll get some feedback from her.

MR. CLAWSON: That was on secondary issue item number five?

DR. MAURO: The ratio, yeah, that's right. So that's become something that's probably worth looking at.

DR. BRANCHE: Do you have another issue?

MR. SCHOFIELD: No, no.

MR. PHILLIPS (by Telephone): That's also in primary issue number three as well. This is all part of the both of those.

DR. MAURO: Okay.

DR. BRANCHE: It sounds like NIOSH has its list of the things that they want to review.

John, you and Chick have noted some things that you want to do. And the communication is with Phil.

Phil, do you still believe that you're done?

MR. SCHOFIELD: We –

REVIEW OF ACTION ITEMS

MR. CLAWSON: Yeah, well, one of the things is I would like to review everybody's action items before we get away from here if that's all right with everybody. I'm also going to have to help him because his computer crashed halfway through the middle of it. So we --

DR. BRANCHE: I just want to make this clear. He delegated you as the reviewer.

MR. CLAWSON: So what I wanted to go back to was item number one. And what NIOSH has said is they're going to look into the feasibility of locating more information on Pinellas, and what the feasibility of that is.

For SC&A I have an item that they will look into the data integrity and how robust the data is and who was monitored and why. SC&A will also set up with NIOSH or ORAU on how we can check out the data integrity especially internal dose. Is that correct?

DR. MAURO: Yes.

MR. CLAWSON: And I don't know if this one

really fell into the same place, but I put it under action item number 1 for the Board, is we need to find out if any of the information at Pinellas is classified. And if so, set up a time and a place to be able to review it so we know what's classified and what's not. I think that's more of a Board action there. But, of course, SC&A and NIOSH would be involved with that, too.

Item number two, NIOSH feels that OTIB-0066 will cover this and put it into the TBD and then get back with the Board and SC&A.

Item number three, NIOSH will show how they did the reconstruction and show the Board and SC&A how they did these runs and how they were performed.

Item four, NIOSH will look into the air monitoring ambient air data and if they need to clean up the site profile or TBD, whichever one we want to use.

MR. DARNELL: That's number four?

MR. CLAWSON: No, that's where I put it. If I put that in the wrong one, let me know.

MR. DARNELL: Number four is external dose.

DR. MAURO: You're listing action items not

necessarily coupled to each of the items in the thing.

MR. CLAWSON: Well, yeah, I was trying to -- right in the middle of this we kind of crashed, so I need to make sure this is where the ambient air --

DR. BRANCHE: Where do you think that what he said should go?

MR. DARNELL: I forget which one it was that we had the discussion about the tritide monitoring, the boundaries.

DR. MAURO: Tritium.

MR. DARNELL: Tritium, excuse me.

MR. CLAWSON: Well, does this need to be moved to two?

MR. GLECKLER: Because that's the only thing that I note that I've got for number four is that we need to incorporate the new information in our NIOSH responses in the site profile.

MR. CLAWSON: Right.

MR. GLECKLER: But everything we need in that response --

MS. THOMAS: On the NIOSH side, four.

MR. CLAWSON: Okay, where did we need to put

this ambient air? Was that under two or three?

MR. DARNELL: It was something that was talking about the boundary samples for tritium. I don't know where that --

DR. MAURO: That was secondary --

MR. PHILLIPS (by Telephone): Secondary three, I believe.

MR. CLAWSON: Secondary three? Okay, I'll clean that up.

Let's go to number five. This is where we got into our problem.

DR. BRANCHE: The computer problem.

MR. CLAWSON: Computer problem. I have nothing for five, but I thought that SC&A accepted it.

DR. MAURO: That's correct.

MR. CLAWSON: So this is okay.

MR. GLECKLER: The only note that I've got is I need to reflect that in the site profile, NIOSH response information.

MS. THOMAS: Update the response in the site profile.

MR. CLAWSON: Then on to number six, and a lot of questions SC&A had when NIOSH addressed

the D&D operations in their site profile. And my understanding was NIOSH will look into if they need to update the TBD, Larry, if that's correct.

MR. ELLIOTT: Is that what you've got, Brian or Elyse?

DR. BRANCHE: That's what you said.

MR. ELLIOTT: I know it's what I said --

MR. GLECKLER: I think we had a stronger commitment ^.

MR. ELLIOTT: I think we've got --

MR. GLECKLER: -- because the D&D isn't addressed in there. It won't make, I doubt it, very doubtful that it'll make a difference in how we do our dose reconstruction, but it's information --

DR. BRANCHE: You're still going to --

MR. GLECKLER: -- it's stuff that we need to look into and incorporate.

MR. CLAWSON: I mean, you're going to review that, and if we do need to then, the site profile is going to be updated.

Item number seven, NIOSH will look into this and see if they feel that the site profile needs to be changed and will report

back to us.

MR. DARNELL: That was only for Carbon-14.

MS. THOMAS: Yeah, Carbon-14.

MR. CLAWSON: Carbon-14, yeah.

Number eight, NIOSH will look into how the -- when I say NIOSH, it's NIOSH/ORAU or whatever. NIOSH will look into how the DU bed was used and how it got to the site and will report back, and if needed, change site profile because there was a question on that.

Then items nine, ten and eleven were rolled into one. NIOSH will look into going into the site profile and look into change, clean up a little more with the medical X-rays. And for SC&A I just had that these were rolled into one.

DR. MAURO: Yeah, and we're going to have to --

MR. CLAWSON: Have somebody look --

DR. MAURO: The big ticket item has to do with fluoroscopic examinations. We agree that because that has, you know, we're basically ruling them out unless they're in someone's specific record. In other words in effect --

MR. GLECKLER: Currently, we're assuming PFG

X-rays up through 1960, but there is new information available to where we may in the not so distant future try to pull back on that. We may or may not pull back on that, but just brought that to your attention.

MR. CLAWSON: You're going to look into that, and you'll report back.

DR. MAURO: Yeah, we're going to have our X-ray guy look into this, your responses, and I think the only thing in my mind is the sensitivity of this. This is something that, depending on where we come out on all this, could make a big difference in the external dose.

MR. GLECKLER: It makes a big difference in a lot of compensability decisions.

MR. ELLIOTT: Even though we've got new information, it says to us that PFGs were not used. Am I right?

MR. GLECKLER: Correct.

MR. ELLIOTT: And we are using a claimant favorable assumption that they were used up to a certain timeframe. We're not going to back away from that. That's the way NIOSH policy's working right now. We didn't have the

information when we started doing these claims, and we've seen a number get comped because we're using PFG.

We're not backing away from that. So we're going to finish the claims out for Pinellas with that assumption. We'll characterize more clearly and appropriately how we're dealing with X-rays in the site profile. That's what we committed to.

MR. CLAWSON: Okay. And that's basically where we're at.

MR. ELLIOTT: I'm sorry, Brian, I don't want to override you, but NIOSH's policy says we're not going to downgrade doses just because in this instance we got better information that says that PFG wasn't there. Since we've already comped them it wouldn't be fair. It's another disparity that would be created in the program. And Lord knows this law's got enough disparities in it already.

MR. DARNELL: Actually, what I thought we said we'd do is provide the record of the nurse interview and --

MR. ELLIOTT: Yeah, yeah, we'll do that.

MR. DARNELL: -- and just put the record --

DR. MAURO: We're building a record on this.

MR. CLAWSON: That took care of all the primary ones. We went to the secondary ones which number five, NIOSH will clean up the information on PU-238 and the 239 on the site profile. SC&A will look into this and report back to us. And I can't remember who you had, who was going to do it. That's up to you, and I won't even try to spell that one.

And then we had, I thought we had one other --

DR. MAURO: We had two others, I think.

MR. DARNELL: Yeah, secondary issue three and four.

MR. CLAWSON: Secondary two --

MR. DARNELL: No, three and four.

MR. CLAWSON: Okay, let me go back and see if I -- okay, what do we have on three?

DR. MAURO: My recollection it had to do with tritium monitoring at the site boundary and compare the results of the monitoring program, the actual measurements, to the predicted values based on CAP-88.

MR. CLAWSON: Got it.

DR. MAURO: And four, a little bit more

discussion on certain, sounds like discussions we had.

MR. ELLIOTT: Or three standard deviations.

MR. DARNELL: Right, it has to do with the dispersion level.

DR. MAURO: Right, dealing with environmental exposures.

MR. CLAWSON: And did NIOSH have anything on that? Were they -- I think this was more SC&A.

DR. MAURO: The uncertainty question?

MR. ELLIOTT: I think that was ours. That's ours. Both three and four are NIOSH.

MR. CLAWSON: Okay, I'll move that over.

And four? I got three, but were three and four both those items?

DR. MAURO: No, no, four was the uncertainty one. They both deal with environmental issues. Three deals with looking at the tritium data itself, the measurements and site boundary readings.

MR. DARNELL: And how that coordinates with the models.

DR. MAURO: With the models in terms of model validation.

And separate from that, number four, had to do with uncertainty in this environmental modeling and address it, I guess, a little more completely than it currently is in the site profile.

MR. CLAWSON: And that's all I have. Anything else?

DR. MAURO: I have a question in the mechanics of all this. Is this something where, I guess, a white paper comes out or is it something where we just sit and wait until the next version of the site profile comes out?

In other words in the past usually when we come conceptually to some agreement on some actions to be taken, as an interim for the next work group meeting, one or more white papers are issued saying, okay, we were asked to do this, this, this and this. We did it, and here's what we found. And we sort of distribute it before the meeting, and then we chance to sort of say, okay, it looks good. Is that how we're going to act on this? Both from SC&A's and NIOSH -- because it's really a question that goes to both.

MR. SCHOFIELD: I think an actual white paper needs to be issued. So I think that's your approach.

DR. MAURO: Put something --

MR. SCHOFIELD: Yeah, just put it --

DR. MAURO: I call it a white paper. Just write something down before the next meeting.

MR. SCHOFIELD: Right.

MR. DARNELL: I'd like to work with either you or Chick in doing this, but I'm unsure of the procedures that we follow.

MR. ELLIOTT: I think that's appropriate. I think you guys can work together. And maybe the way, you know, that we capture in paper is in the matrix, very concise, short responses. I think that we'll -- they don't have to be as elaborate as what we may do in the revision of a site profile.

DR. BRANCHE: But if they prove to be of a certain length, then you would.

DR. MAURO: In the past when we do collaborate, the technical people from NIOSH and from SC&A, talk to each other about matters, we have in the past done that. But when we do that, someone puts out a minutes

for the benefit of the work group that this communication has occurred, document that it occurred. In some cases the work group members like to sit in on it. So before we do that, we probably want to just check in with Phil and make sure that we're about to do this. You may want, you or any other work group member, may want to sit in on that conversation.

DR. BRANCHE: That will be at the full discretion of ^.

MR. SCHOFIELD: Did you want to say something, Brad?

MR. CLAWSON: I just wanted to say we just wanted to be kept apprised of what was going on and we have an idea of the issues and so forth.

DR. MAURO: What we're going to do is if we're going to schedule a telephone call, we'll let you know beforehand that we're about to do that. And, of course, you folks can decide whether you want to join us or not.

MR. SCHOFIELD: Okay, yeah, that'd be --

DR. BRANCHE: Please make sure you copy me.

DR. MAURO: And I will certainly copy you.

DR. BRANCHE: Mr. Schofield, is there anything else?

MR. SCHOFIELD: I think that's it unless somebody else has something for us to reconsider or for consideration.

DR. BRANCHE: I believe we're adjourned.

(Whereupon, the working group meeting concluded at 12:30 p.m.)

CERTIFICATE OF COURT REPORTER

STATE OF GEORGIA

COUNTY OF FULTON

I, Steven Ray Green, Certified Merit Court Reporter, do hereby certify that I reported the above and foregoing on the day of June 11, 2008; and it is a true and accurate transcript of the testimony captioned herein.

I further certify that I am neither kin nor counsel to any of the parties herein, nor have any interest in the cause named herein.

WITNESS my hand and official seal this the 22nd day of July, 2008.

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STEVEN RAY GREEN, CCR, CVR-CM, PNSC

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CERTIFICATE NUMBER: A-2102