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

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ADVISORY BOARD ON RADIATION AND WORKER HEALTH

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WORK GROUP ON NEVADA TEST SITE

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WEDNESDAY,
OCTOBER 29, 2008

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The work group meeting convened in the Frankfurt Board Room at the Cincinnati Airport Marriot, 2395 Progress Drive, Hebron, Kentucky at 9:00 a.m., Robert Presley, Chair, presiding.

MEMBERS PRESENT:

ROBERT W. PRESLEY, Chair
GENEVIEVE S. ROESSLER
BRADLEY P. CLAWSON
PHILLIP SCHOFIELD
WANDA I. MUNN

ALSO PRESENT:

TED KATZ, Designated Federal Official
JENNIFER HOFF, ORAU
JIM NETON, NIOSH
LARRY ELLIOTT, NIOSH
MARK ROLFES, NIOSH
MEL CHU, ORAU
ROBERT MORRIS, ORAU
GENE ROLLINS, ORAU
JOHN MAURO, SC&A
BOB BARTON, SC&A
LYNN ANSPAUGH, SC&A
NICOLE BRIGGS, SC&A
HARRY CHMELYNSKI, SC&A
JOYCE LIPSZTEIN, SC&A
LOUISE PRESLEY
JOHN FUNK, Petitioner
EMILY HOWELL, HHS
NANCY ADAMS, NIOSH contractor
LIZ HOMOKI-TITUS, HHS
JEFF COACH, DOL
HANS BEHLING, Sanford Cohen and Associates
BRYCE RICH, ORAU
BILLY SMITH, ORAU
ARJUN MAKHAJANI
KATHY ROBERTSON-DEMERS
KATE OH, Office of Senator Reid
ISAF AL-NABUSI

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

(8:57 a.m.)

MR. KATZ: Good morning, this is Ted Katz. The DFO of Advisement Board on Radiation and Warfare Health and we are about to begin the work group meeting, the NTS Work Group Meeting about a test site.

First things first is we're going to do roll call. Starting roll call, in a conflict of interest starting with board members in the room. CHAIR PRESLEY: I am Robert Presley, Chairman of the Nevada Test Site Working Group, no conflict.

MEMBER ROESSLER: I'm Gen Ressler, member of the Board, member of the Nevada Test Site Working Group, no conflict.

MEMBER CLAWSON: I am Brad Clawson, member of the working group at the Nevada Test Site, member of the Advisory Board, no conflict.

MR. KATZ: And on the telephone do we have either Wanda, either or both Wanda and

Phil?

MEMBER SCHOFIELD: This is Phil. I'm a member of the Board on the NTS Work Group. No conflict.

MR. KATZ: Hi Phil, thank for joining us.

MEMBER SCHOFIELD: Thanks.

MR. KATZ: And Wanda?

(No response.)

MR. KATZ: Okay, the next Board members. Now we start with the NIOSH ORAU Team in the room please.

MS. HOFF: Jennifer Hoff, ORAU Team, no conflict with NTS.

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

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

MR. ROLFES: Mark Rolfes, NIOSH, health physicist, no conflicts.

MR. CHU: Mel Chu, ORAU Team, no conflict.

MR. MORRIS: Robert Morris, ORAU Team, no conflict.

MR. KATZ: And on the telephone?

MR. ROLLINS: Gene Rollins, ORAU Team, no conflict.

MR. KATZ: That's it, okay, SC&A in the room?

MR. MAURO: John Mauro, SC&A, no conflict.

MR. BARTON: Bob Barton, SC&A, no conflict.

MR. ANSPAUGH: Lynn Anspaugh, SC&A, conflicted.

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

MS. BRIGGS: Nicole Briggs, no conflict.

MR. CHMELYNSKI: Harry Chmelynski, no conflict.

MR. KATZ: Harry Chmelynski. That's it for --

MS. LIPSZTEIN:: Joyce Lypstein, no

conflict.

MR. KATZ: I'm sorry, say again.

MS. LIPSZTEIN: Joyce Lypstein, no conflict.

MR. MAURO: Arjun has gone on --

MR. KATZ: Arjun, okay, not yet. Okay, then the members of the public in the room.

MS. PRESLEY: Louise Presley, no conflict.

MR. KATZ: Louise Presley, no conflict. and then on the telephone starting with Congressional representatives and SE -- Congressional representatives, any?

(No response.)

MR. KATZ: Okay, how about petitioners?

(No response.)

MR. KATZ: John Funk are you out there yet?

MR. FUNK: Yes I am, non-conflicted.

MR. KATZ: Welcome John.

MR. FUNK: Thank you sir.

MR. KATZ: And other members of the public?

(No response.)

MR. KATZ: Okay, and then finally in the room other Federal employees or contractors?

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

MS. ADAMS: Nancy Adams, NIOSH contractor, no conflict.

MR. KATZ: And on the telephone, any other Federal employees?

MS. HOMOKI-TITUS: Liz Homoki-Titus, HHS, no conflict.

MR. COACH: Jeff Coach, Department of Labor.

MR. KATZ: Welcome Jeff, welcome Liz. Anyone else?

MR. BEHLING: Hans Behling, Sandford, Cohen and Associates, no conflict.

MR. RICH: Bryce Rich, ORAU Team, conflicted.

MR. SMITH: Billy Smith, ORAU Team, conflicted.

MR. KATZ: Okay, then that goes -- that completes the roll call issue. Let me also just say --

MR. MAKHAJANI: Ted, this is Arjun I just joined.

MR. KATZ: Arjun welcome.

MR. MAKHAJANI: I am not conflicted.

MR. KATZ: Not conflicted.

MS. HARRISON: And this is Monica Harrison-Maples, I just joined but I am not conflicted, ORAU Team.

MR. KATZ: Welcome Monica.

MS. HARRISON: Thank you.

MS. AL-NABUSI: Isaf Al-Nabusi from the OE, just joined, no conflict.

MR. KATZ: Welcome. Any others on the line?

MEMBER MUNN: Yes, good morning, this is Wanda.

MR. KATZ: Wanda welcome.

MEMBER MUNN: Thank you, I'm not sure how much I'm going to be on this morning. I am in extremis in Seattle and my spouse has had a severe blow to the head in a fall yesterday, the day before rather and is probably going to have to have some sort of extreme surgery done to his face here.

And so we're -- I'm not sure how much I'm going to be on. I'll be on and off.

MR. KATZ: I'm very sorry Wanda. I think a lot of people here are worried now.

MEMBER MUNN: Thank you.

MR. KATZ: But welcome, and you are not conflicted?

MEMBER MUNN: I am not.

MR. KATZ: Okay, and anyone else on the line?

(No response.)

MR. KATZ: Okay, and then I also,

just before we get started, wanted to say there are three documents that we'll be discussing today. Of those three documents only one has been PA-cleared and really very late yesterday evening, it was cleared.

It's been released since this morning and I ask that it be sent to the Congressional office, Senator Reid's office, but I'm not sure if that's happened yet.

And also to you John, John Funk, I've asked that it be sent to you from Laurie Breyer, and I think she has done that this morning.

The other two -- has a large document and it went through a lot of work and then redaction. But there's changes that need to be made related to redaction that just simply couldn't be done.

I just want to say that people worked through the weekend and into their evenings trying to get that done and I'm sorry that that wasn't possible.

The third document is a brief document full of personal identifiers that needed a lot of work but didn't get in the system to get PA-cleared.

MR. RICH: Ted, which document was cleared and which wasn't?

MR. KATZ: So, the document that was cleared is the -- is Lynne Anspaugh's environmental desk document.

The sample doses -- dose information, the symmetry information was not cleared although it's been through most of it's work, there's still redaction changes that need to be made.

So, that will be released probably in a day or two, but it has more work to be done. And the badging document has not PA-cleared.

Okay, last point just for all of you who are listening on the phone when you are not participating please mute your phones. I mean we can hear someone and we could hear someone breathing for a while.

So, star six or mute button either that you might have will work for that.

MS. HOMOKI-TITUS: Ted, this is Liz-Homoki-Titus. We don't have that third document for clearance. But if somebody -- if it's short and someone wants to get it to us we can certainly get started on it.

MR. KATZ: Right, Liz I know you don't have that document. It wasn't put in the system. It is relatively short but it's full of, it's full of Privacy Act information. And it will take a lot of redacting to make it a releasable document.

MS. HOMOKI-TITUS: Okay, I didn't -- I knew you put in short, but I thought we had a period of time.

MR. KATZ: Yes, but nothing that would get done before today.

MS. HOMOKI-TITUS: Okay.

MR. KATZ: Okay, thank you and I will turn it over to Bob.

CHAIR PRESLEY: Thank you very much Ted. Wanda?

MEMBER MUNN: Yes.

CHAIR PRESLEY: I want to let you know that we're all thinking about you very much.

MEMBER MUNN: Well, thank you. I really appreciate that Bob. I am sorry to have to weave in and out like this, but I'm afraid that's what's going to happen.

CHAIR PRESLEY: No problem, thank you. At this time we're going to start off with SC&A presentation on the discussion on the badging issue.

And again, I remind you that this has not been redacted. So, be really careful about what you say.

MR. MAURO: I guess I -- this is John Mauro. I'll sort of kick it off and then hand it off to Arjun. Arjun has led and has been leading all our efforts related to all the NTS matters. But by way of --

MR. KATZ: I'm sorry to interrupt. But someone is listening and breathing into the phone. It's very disruptive. Can you please mute your phone, star six if you don't have a mute button. Much thanks.

MR. MAURO: For the purpose of getting this started I'm assuming everyone has either a hard copy or an electronic copy of the document called SC&A Review of NTS Petition, SEC00084 Defeat of the Universal Badging Policy.

As long as everyone has that in front of them and it's probably a good thing and we'll start to flash our way through.

By way of introduction you may recall that this has been one of the highest-concerned issues that we've dealt with. The issue being that a number of workers have claimed and in their petitions and affidavits that it was standard --

MR. NETON: We don't have this document.

MR. ROLFES: John, what date was it sent?

MR. KATZ: It was the end of September.

MR. MAURO: The date on it is September 25, 2008.

MR. ROLFES: I'm going to look for it in my email and see if I can send it to everyone else that doesn't have it. Does' everyone else got it?

CHAIR PRESLEY: I have got it.

MR. ROLFES: Okay.

MR. NETON: Did it come from Nancy Johnson?

MR. MAURO: Yes.

MR. ROLFES: I think I've got it here. Yes, I do have it. I'll send it to --

MR. NETON: Go ahead.

MR. MAURO: Okay, a lot of this will be familiar to -- the issue is that a number of workers had indicated that it was standard practice for them to leave their film badges behind for a variety of reasons.

One of which was the concern that they may exceed their quarterly limits for external exposure and as a result be taken off-line so to speak from doing their jobs.

You may also recall that during one of the meetings that we had at the test site Senator Harry Reid was present and he introduced a number of individuals in the audience who stood up and indicated yes, that was something that was standard that often occurred.

The reason this is an important issue has to do with an SEC issue, has to do with if that was in fact a widespread practice. It puts into question the ability to do dose reconstruction. So, it's one of the core issues.

NIOSH had addressed this subject originally and in fact in terms of trying to get a handle on the extent to which this practice may have taken place -- and if you scroll down in your report to table one, the very first table, I believe this was taken from a NIOSH report, the evaluation report which effectively states that well, based on our investigation, your investigation that is, we're talking about perhaps 1.1 percent of the total number of workers may have engaged in that practice. And the judgement was made that at that level it's a manageable problem.

We, SC&A were then asked to investigate this matter further. Those investigations consisted of two separate lines of inquiry.

One line of inquiry was interviews whereby we would interview a number of individuals who had indicated that yes in fact they had participated in such a practice and gathered information regarding their experience either personally or their knowledge of such practices.

Independent of that, and that basically we're looking at right now, we were asked to sample workers from -- sample their records, and to see in fact if there is any indication in their records that there might have been badges left behind.

This was an idea that came up early on in the process as one way to look for hard evidence. And by sampling their records, and I'm going to stop in a second Arjun and then I'll turn it to you, the idea being that we know that when workers entered a controlled area they carried with them their film badge and their pocket ionization chamber.

The idea being if they wore their phone badge but left a pocket ionization chamber behind there would be an indication on the access records for those jobs on those days of the information contained on the PIC and the information contained on the film badge.

And if there was consistent disparities between these, whereby for example consistently see perhaps elevated readings on the PIC and as a result of that the film badges are pulled and then look at the film badges and not see readings for that month or that badge that were elevated and see that consistent way, that worker -- we all together looked at ten workers.

But just by going into their handwritten records for the daily logs and make tables and comparisons and just let the -- again, as I usually say, let the data speak to us, what do we find out.

So, by way of introduction Arjun, working closely with Nicole Briggs did that work. And the report you have in front of you is the result of those investigations.

So, at this point Arjun, I'd like to hand it off to you and Nicole. Could you take it from here?

MR. ROLFES: John, before --

MR. MAURO: Arjun, before you speak -- one second, Mark has something to say.

MR. ROLFES: John, have you

provided copies of those interviews to NIOSH yet?

MR. MAKHAJANI: That's the first thing I was going to explain is not all of this work is complete because we did a set of interviews including some of the people who stood up at that Board meeting and said you know that they routinely take off their badges and we were able to, you know, re-verify that and detail, make detailed documentation of the interviews.

But, we have had a significant amount of difficulty getting approved text of the interviews back from everyone. We have many of them, and then we don't have many of them. And it's been a lot of back and forth trying to complete that process.

So, we now decided in the last month that we could not wait any longer for everything to be complete. And there's a person on the line that I might request you sent yours back please, check yours, and make any changes, and send it back to us if you please will.

But, including one petitioner we have not heard from in terms of an approved text. And so what we have done is -- and this relates really primarily to the more recent experience of workers.

And I can describe that briefly in terms of some of the conclusions that were indicated is that they reaffirm that they took off their badges, but it was in quite a different context than the 63 to 67 set that we examined.

The major context seems to be that workers were afraid that if they damaged their badges three times, it was a three strike and you're out policy that they believed. We were not able to find any documentation about this and they were not able to point us to anybody that would.

It was apparently a common belief. And so workers would have badges in their back pockets or take them off and put them in their lunch pail, something like that at the job.

And that process of investigations is unfortunately not yet complete. What we have decided to do is take the verified and check interviews and compile them into a summary. We've just finished that process and then we compile the unverified interviews.

So we have the -- our process is that we make a interview record and send it to the interviewee for the approval and any changes and corrections and so we've compiled all of the ones that are corrected.

All the ones that have not been corrected we compiled a summary from the corrected ones. And we're looking for some direction from the working group as to how to proceed in the absence of a complete set of interviews, including one from the petitioner which is required of us and it was one of the petitioners that actually was quite strong about this point.

MR. MAURO: Arjun, I have a quick question. Is there any -- in this process is there any DOE clearance type reviews required of this material?

MR. MAKHAJANI: Well, there is a DOE type clearance required for all interviews obviously for Nevada Test Site and the individuals that have completed -- I know Kathy Demers is not on the line. I called her and reminded her, but I forgot to call yesterday, I called her this morning, and she's in Washington State so she may not get my message for a while. So, I will ask her again when she does.

But my best memory of that is that the summary of the interviews has gone through the DOE process and the individual interviews that have been finalized have also gone through the DOE process.

I'm not 100 percent sure whether there are interviews that have not been finalized have gone through the DOE process. They may have. But that wouldn't be much use because you have to go through the DOE process again if and when they do get finalized.

So that we can definitely send those. And this has recently happened, we can send those to the working group for SC&A review in short order. But we are not -- we have not done the actual verification and further analysis from the records of these since we don't have a complete set. And that's why I'm looking for some direction from the working group about that.

MEMBER ROESSLER: Arjun, this is Gen. After you get the complete set what is your plan for doing the -- what is your analysis plan?

MR. MAKHAJANI: Gen, we will pull the records in a similar way that we have done here and we also have -- at least one interview that I recall doing personally with a supervisor who did not take off his badge.

So, he said he did not take off his badge, although he knew that his colleagues did, because his badge was not at risk of being damaged given that he was a supervisor.

So we will make some kind of comparative analysis similar to what we have done here from the records, at least some of the individuals who have said that they did this in the later periods, in the 70's and 80's.

Now, we decided to separate these periods Gen because from `63 to `67 there was a separate ID badge and a separate film badge. Well, in `66 they were joined together.

And it's always been sort of an article of discussion that when the badge was integrated it would be much more difficult to leave it behind in your truck because you wouldn't be able to enter the work place.

But, the phenomenon that we were talking about in the later period was sort of different workers said that they did things to the badge to prevent damage to the badge like putting it in the back pocket or in the lunch pail that might be right near the place of work and not say leave it behind the truck or between lead bricks or something like that.

CHAIR PRESLEY: Arjun, this is Bob Presley. How many completed datasets do you have?

MR. MAKHAJANI: I think we have about ten or a dozen. And we could proceed with a partial analysis if you authorize us to do that.

CHAIR PRESLEY: Well if you have 12 out of 14 I would say that's probably a pretty good --

MR. MAKHAJANI: No, I didn't say 12 out of 14, I said I think there are a number of interviews that I don't have any data from. After the break I will be able to give you an exact count Mr. Presley.

But there are a number of interviews that we have not received back and

I'm not -- you know those 12 are not all workers who said they took their badges off. Some are petitioners, and some are workers who took their badges off, and others are officials, and supervisors and so on.

So, I could give you an exact count after the break if you like. But we can proceed the completed interviews. Or if you like we could actually pull the records of all of the claimants we interviewed and begin analyzing that. It's not a large number of them, maybe ten in all including completed and incomplete.

MR. ROLFES: Arjun, do you have copy of the questions that you went into the interviews with, just to give an explanation of what the interview was about, et cetera that you could send to us?

MR. MAKHAJANI: Well, Kathy has been managing and I don't have them in my interview records. Why don't I -- why don't I actually have the completed interviews and the summary as well as the ancillary materials prepared and forwarded to the working group in a couple of days.

MR. ROLFES: I'm just saying to keep in mind that we need to -- you know this, because it's an important issue we need as much detail as possible.

MR. MAKHAJANI: All right, you know -- the question -- we will forward raw interview records that is completed and when the raw interview records it includes the question that questions that were asked.

So the full interchange in terms of what the question was and what the response was is in the text of the interview itself.

MR. ROLFES: Okay.

MR. MAKHAJANI: And then in the summary -- those interviews are the individual interviews with the name and obviously you know that's all privacy protected. But we will send you the raw data that will have the questions and Q&A essentially with the interviewee.

Then we have a summary, which takes all of the issues in the interviews and summarizes them by issue. So in that version the questions are not there. But you will definitely see the question.

MR. ROLFES: Okay, thank you.

MR. MAKHAJANI: Mr. Presley, we can actually proceed with this work. It won't take long, but we have not had the situation before where we were not able to get back critical interviews and so have not proceeded to the next step, but we can do that.

CHAIR PRESLEY: Ted, do we have money to do this?

MR. MAKHAJANI: Sorry?

CHAIR PRESLEY: I asked Ted if we had the money to do this.

MR. KATZ: Yes.

CHAIR PRESLEY: We do have the money to do this?

MR. MAURO: Well, by way of a -- I

believe what we'll have to look is our contract ends on December 1st. We have at least a million or more money will be left over.

CHAIR PRESLEY: Brad, what have you got?

MEMBER CLAWSON: Well, we've got to put this to bed one way or another. Now I think one of the things they followed up with requests -- Arjun, have you followed up with these people to get these interviews back in?

MR. MAKHAJANI: Yes, we have made repeated follow-ups by phone, by letter, by email and you know it's -- we've even thought of going and knocking on the door but we have not done that.

CHAIR PRESLEY: Okay, Gen?

MEMBER ROESSLER: When do you think you'll have it finished Arjun?

MR. MAKHAJANI: Well, you know I am not confident that we will get our interview records back and my recommendation to the working group would be that we go ahead and pull the records of all the interviewees that are claimants and make an analysis and then submit to the working group and the Board and NIOSH these presets.

You know, I am looking for guidance because this is completely unprecedented that this has happened. The completed interviews, the summary that is based on the completed interview and the separate file, or all the uncompleted interviews that I do not believe we can actually put into any analysis.

But we can certainly analyze the records of these workers.

CHAIR PRESLEY: Mark, has this already been done during the interviews?

MR. ROLFES: I'm sorry, could you repeat the question Bob?

CHAIR PRESLEY: Has any of this already been done when we did the claimant interviews?

MR. ROLFES: I'm not sure what

you're referring to?

MR. MAKHAJANI: These are new claimant interviews that we did after the Board meeting at which the workers stood up, you know there were a number of welders as you remember Mr. Presley who stood up and they said that they had done that.

And you had authorized us to conduct a post board meeting inquiry into that and that included a extensive set of interviews. I think we were in Las Vegas for two or three days and actually Billy Smith was one of the people we interviewed then.

And so this happened after the Board meeting. And so the analysis of these records had not been done. The document you see before you is a separate set of records. And I'll let Nicole tell us how she pulled them.

CHAIR PRESLEY: Wanda, have you got anything or Phil?

MEMBER MUNN: No, my only concern

is whether if we go over this material now, we will simply have go over an extension of the same material later.

From my perspective the real question here is do we want to accept the work that has been done as being adequate. And that simply raises the question does SC&A consider the work that has already been done adequate for their purposes in reporting. If they do not then we have a problem.

MR. MAURO: Wanda, this is John Mauro. I consider these two lines of inquiry completely independent and separate. The interviews that Arjun described is one way to come at the problem and get information that might be valuable to the Work Group.

Independent of that, what we get that from that is the report that you have in front of you, which is complete, and which has information that I believe is valuable to the Work Group in terms of it reveals whereby ten workers independently pulled, has nothing to do with the interviews now, workers that were selected where we went into their records.

And as we move through this you will see the results. So, this is a stand alone document. For example, in principle, even if we never have done any interviews whatsoever, the line of inquiry that Arjun is referring to this document would still have great value, the one we're looking at right now.

MR. MAKHAJANI: Yes, I mean, John, let me explain this. You know as I said earlier there are two separate periods that were sent to workers that we're talking about.

The analysis before you is complete and this will not have to be revisited. There was only one claim out of ten in which we had some questions and we're not sure what the answer to that is and I'll explain that.

But, we will have questions about nine out of ten records and three out of four years in the one case that we had questions about.

So, the second set that we will be talking about relates to the group of workers who were different set and more recent after the integrated bade was introduced mainly you know from workers that we say welders and associated field workers who were afraid that their badges would be damaged.

What I was suggesting is that an analysis parallel to this be done even though not all of the interviews are complete. And then that of course would go with the set of interviews.

And in a way of -- would have a persuasive power in our results because it is accompanied by interviews that have claimant record analysis along with that.

This is based on claimant analysis files and you know as an analysis it stands completely on it's own. The document you have for 63 and 67.

CHAIR PRESLEY: Gen?

MR. MAKHAJANI: And I would recommend you know that we go ahead and complete that work because it's an important part of the petition and it was a very important statement made before the Board and that we go ahead and finish that analysis so the Board will have a document that corresponds to some statement that we made before that are very important.

CHAIR PRESLEY: Gen has the floor.

MEMBER ROESSLER: I think having come this far on the interview process that we do need to complete it. But I'm -- it's easy for me to understand looking at the hard data and the film badges and the PICs and coming up with a conclusion.

It's harder for me to think about what your analysis is going to be and your conclusion. I would hope you have a conclusion after the interviews. It's an entirely different approach to evaluating the problem. Basically I think we have to continue with it.

MR. MAKHAJANI: Well Gen, from the interviews I can tell you that there was a pretty uniform conclusion from the workers themselves and their supervisor. Now, we also interviewed you know one person who was in the health physics.

Can I name a person who was part of the oral --

MEMBER ROESSLER: You probably don't have to.

CHAIR PRESLEY: No.

MEMBER ROESSLER: I think we know.

MR. MAKHAJANI: No, okay and so there was at least one interview in which -- well official, of a person in an official capacity who said that this did not happen.

MEMBER ROESSLER: He's no longer available.

MR. MAKHAJANI: However, the workers themselves who stood up and at least one supervisor there was a pretty uniform set of statements as to what they did and why they did it.

It's very different from the statement that was made that badges were taken off to hide or reduce the total dose because the dose was coming up against the dose limits.

In this case workers did not say that, they said that they took off their badges because they were afraid that the badges would get damaged and that they have had that happen three times they would lose their jobs or be sent --

MEMBER ROESSLER: And one more quick question then I think we'd probably better carry on. So what you're saying in this latter group, the interview group, is it's a different time period and a different set of workers than the one's we're going to talk about --

MR. MAKHAJANI: Yes, there's a certain time period of certain workers had different reasons for taking off the badge.

MEMBER ROESSLER: So we could come up with two different conclusions based on the two different reports?

MR. MAKHAJANI: I do not believe that the latter analysis will effect what you're looking at in any way. So I do not believe that we have to revisit this particular --

CHAIR PRESLEY: Larry Elliott?

MR. MAKHAJANI: We may want to look at more workers in this set, and that's up to you of course. We've looked at ten. But I don't think the two analyses have anything to do with each other. They are about different sets of workers, different reasons and different periods.

CHAIR PRESLEY: Larry.

MR. ELLIOTT: Arjun, this is Larry Elliott. I'm just curious to know in your set of interview questions on this set of ten did you include a question on where these events, where they removed the badge happened at the site?

MR. MAKHAJANI: No, this set of ten was not interviewed. This set of ten is simply pulling records of workers and following, you know, in a way --

MR. ELLIOTT: Okay, the question still remains, did you --

MR. MAKHAJANI: -- and did this kind of comparing taking the records. And there are no interview records associated with this.

MR. ELLIOTT: But did you ask the question where, because they could be on the site in a situation where they don't -- where the badge is not needed in a rad control area.

MR. MAKHAJANI: We didn't find significant issues in this set of ten. So actually --

MEMBER ROESSLER: No, we're talking about different sets of ten.

CHAIR PRESLEY: Larry is asking

about the next set.

MR. ELLIOTT: For the interviews you did -- for the interviews that you've done that we haven't seen the results of did you include a question about where on the site they might have been when they took their badge off to protect them from being damaged?

MR. MAKHAJANI: I am very sure that we did, you know, but he process has gone back and forth. I must say I haven't read the interview in a little while. I just wanted to report the status to you and I had to go back and check. I am pretty sure we knew what they were doing.

MR. MAURO: I might be able to help out a little bit here. Coming to the meeting today our intention was not to talk about that as you can see.

MR. ELLIOTT: There's a lot of open questions.

MR. MAURO: Yes, because just to let you know it's part of the process and it's still on the way. Our intention was to describe the results of the report that's before you right now which has nothing to do with that, and the results that it has.

I apologize, I wish we would be able to give you a nice story to tell about what we found out. Everything you're asking --

MR. ELLIOTT: It piques our interest.

MR. MAURO: Yes, I don't blame you. And we are very interested too, but unfortunately there was steps along the way that just tripped us up.

MR. MAKHAJANI: I am sorry that this got rather lengthy, and maybe it's my fault. I didn't quite separate the two analyses there. They are very independent and we will send you -- Larry we will send you the completed interview records and summary in a couple of days.

MR. ELLIOTT: Thank you.

MS. ROBERTSON-DEMERS: Arjun, this is Kathy Robertson-Demers.

MR. MAKHAJANI: Thank you, can you answer Larry's question?

MS. ROBERTSON-DEMERS: Yes, we went through a series of questions on where they were, whether they were actually in posted areas and so on and so forth. So we tried to get to the bottom of --

MR. KATZ: I'm sorry Kathy, let me just -- I'm sorry Kathy, let me just interrupt. Someone again is listening to the call without their phone on mute and we can hear you breathing and it's completely squelching Kathy's remarks. Thank you.

MS. ROBERTSON-DEMERS: Okay, do you want me start over?

MR. KATZ: Yes, that's great, thank you.

MS. ROBERTSON-DEMERS: Okay, when we interviewed them we tried to get to the bottom of whether they were in radiological areas or not. So we asked a series of questions about where they were, how far from the radiological source they were. Whether they were in a posted or an unposted area and so on and so forth.

That kind of information is included in the interview.

MR. ELLIOTT: Thank you, thank you Kathy.

MR. MAKHAJANI: Yes, and Kathy could you send the completed interview set that has been verified along with the summary to Ted and -- has Nancy formated everything?

MS. ROBERTSON-DEMERS: I haven't been on the email.

MR. MAKHAJANI: Okay, we will send it to you in a couple of days.

MEMBER MUNN: This is Wanda and I -- can you hear me?

CHAIR PRESLEY: Yes Wanda.

MEMBER MUNN: Okay, just one question before we leave this. When this investigation is complete and we do have the SC&A information in hand are we still going to be in a position where we can take a valid position that the information we have is now adequate. That's my real concern.

Our earlier expectations were that the information that had been gathered prior to this time was adequate enough to get a rough feel for how extensive these types of activities were, if they did in fact occur.

Now, there were questions raised with regard to that conclusion and it was from my understanding at the outset that these investigations that are being undertaken were partly to address that specific issue.

I have not heard anything so far this morning that leads me to believe that that question would not still be a issue. Am I correct in my assumption?

MR. MAURO: Wanda, this is John. I could take a shot at that. The challenge that we have here is when you look at the records -

- let's put the interviews aside and statements made and affidavits and just look at the records.

And the intent here is that is there anything in the records that would indicate a widespread practice. Now, we're going to get into these. I don't want to prejudge them, but the way I look at them is, is there anything in here when we look at case one, case two, case three that says, it look here's a consistent pattern where people have high PIC readings and very, very low zero film badge readings.

That in my mind would be -- especially because the economy selected it would be indicative that it might have been widespread practice if we saw that.

Now, if we don't see it and you'll make your own judgement when you look at it. If we don't see it that means well if it's going on we didn't catch it. So, in effect the work we're doing right now and that we'll be talking about and this probably goes also toward any follow-up of the records of the workers that are being interviewed separately, we're never going to be able to prove the negative.

All we have to do is look real hard to see if the positive is there. That is look real hard to see if something looked amiss. And if we can't find it doesn't mean it didn't exist, all it means is that we couldn't find it.

And at that point we're in a difficult position of making a judgement of what a Work Group is and what do we do with that information. We're never going to be able to prove the negative, all we can do is say we cannot find the positive.

MR. RICH: I think that's right and ultimately it's going to be -- once you have the analysis then it's going to be a judgement call on the part of the Working Group or the Board of course.

MR. MAURO: It's almost a due diligence that is I think quite frankly the Board or Working Group or all of us are doing everything we can to probe the records to see if there's any way we can find a way -- to see if things don't look right.

And when you're done then you're wrestle with the hard decision well, if there's anything about it that we just looked at that indicates that we do really have a problem here or is the evidence just not there.

And then you know it's a matter of due diligence to weigh the evidence as always. And so I'm hoping that after we go through the ten cases that we have in front of us right now that was done by Arjun and Nicole, you folks can see the tables, see the comparisons between PIC and film badge, and make judgements for yourself whether or not there is any indication here that something looks amiss.

MR. MAKHAJANI: Yes, I think that is right. I think it maybe -- you know my suggestion Mr. Presley would be we go through these cases so the discussion is less abstract and it will be clearer at least for the earlier period where we can go with this.

CHAIR PRESLEY: Okay, let's go ahead and start through the cases and we'll make our decision down the road.

MR. MAKHAJANI: Yes, we picked these ten cases at random and the overall objective as john has stated was to compare the results of the PIC which we know can be sort of not as reliable as the film badge results. But it seems as though it's a systematic pattern of the PIC results being higher than the film badges. And also to see whether the PICs were worn and reported or whether there was some problem with them, or gaps with the PIC results.

Let Nicole explain how those cases were picked and what those three scenarios were that we have three scenarios that we examined in relation to these ten workers.

Nicole, you want to tell the Working Group how those ten workers were chosen?

MS. BRIGGS: Sure, Arjun if I can make a minor correction. These cases, these ten cases were not chosen randomly because we were looking at very specific time periods.

MR. MAKHAJANI: That's right.

MS. BRIGGS: We were looking at specific job categories and we were also limited to the cases which had available area access registered data. Those area access register forms that contained the daily accounts of the PIC data.

So, with all of those limitations we really couldn't pick a random sample. So they were really handpicked according to what data we had available and for the very narrow time period we're looking at which was 63 to 67.

We decided to take advantage --

MR. KATZ: I'm sorry, let me interrupt you again. I'm very sorry but and I think the Work Group is losing it's patience. There's someone who is listening on the phone who has again taken themselves off mute and we're listening to your breathing. And if we have to we'll cut the line for you. So please keep -- stay on mute, thank you.

MS. BRIGGS: Okay, I'll continue. We decided to take advantage of a large amount of data that we collected for another NTS petition investigation where we collected data for 120 cases.

So, the ten case studies from this badge issue analysis were chosen from that data set.

MR. MAKHAJANI: See that's where my error arose because that data set was picked at random.

MS. BRIGGS: Right, the 120 cases that we used for our investigation were chosen randomly. And then we essentially hand picked these ten case studies from that set based on like I said specific job categories, the time period of 63 to 67 and also what really limited us was the number of cases that had these available area access register data forms.

So that really narrowed down the number of cases that we could pull from. We decided like I said ten case studies. We chose the worker categories based on worker categories we used for our other analysis.

Lynn Anspaugh helped us choose these worker categories, which those workers may be at a greater risk of taking part in this practice. Those categories include miners, radiation safety workers which include health physicists and radiation monitors, welders, laborers, security personnel, and also the category which we call wiremen, but we also decided to include carpenters in with the wiremen group.

And we chose of the ten three miners, two radiation safety workers, two welders, one laborer, one security guard, and one wiremen. So this just gives us a sort of an overview and we did a very detailed case study that each of those workers where we pulled from the 63 to 67 time period all of the film badge data and all of the available PIC data that were in the case records for these workers and compared them side-by-side.

I guess we could summarize it. Of the ten we really only found one case that had any kind of discrepancy in the data. All of the PIC data --

MR. MAKHAJANI: Nicole, let me interrupt you.

MS. BRIGGS: I'm sorry, go ahead.

MR. MAKHAJANI: By discrepancy we mean where the PIC results seemed to be quite a bit higher than the badge results. That's what we mean. Go ahead Nicole.

MS. BRIGGS: Okay, if you'd like we

can go case by case. You know what I'll do, I'll discuss the scenarios that we found.

CHAIR PRESLEY: This is Bob Presley, wait just a minute.

MS. BRIGGS: Sure.

CHAIR PRESLEY: We've had one question. What's a wiremen?

MS. BRIGGS: That's their term for electrician.

CHAIR PRESLEY: Okay.

MS. BRIGGS: But that's how they were described in the case records as wiremen.

CHAIR PRESLEY: Okay, thank you.

MS. BRIGGS: Okay, after we looked at the data we -- oh well when we looked at all of the data the cases could fall into three possible scenarios.

One is if all of the workers PIC data readings totaled zero then there was really no further investigation because if the -- if the PIC -- if the film badge was zero and the PIC data was zero there was really no further investigation.

And many of those cases we did see fall into that category. And the second category are workers that had PIC readings below 100. If the -- the policy I believe at the time was that the PIC readings read 100 or above for a given shift or a given day. That worker -- soon that data was pulled for analysis to confirm the reading on the PIC with the film badge.

And any of the -- so the film badges weren't read for that day. If they had a PIC reading that was below 100 then the film badge wasn't necessarily pulled. So, we don't have the fine detail in terms of the data.

The most important instance is the PIC reading for above 100 for a given worker and that means that most likely their film badge would have been pulled for that day and analyzed on that day. And we had a really good -- in those instances we can compare directly from the film badge to the PIC readings.

Let's see, I think we have five of the ten case studies fell into this category where there were elevated PIC readings. I guess I could go case by case Arjun if you think --

MR. MAKHAJANI: Why don't you do that. Why don't you go through those five, just go by case by case. It will be fairly rapid I think.

MS. BRIGGS: Okay, we'll go quickly through these ten cases.

MR. MAKHAJANI: It's very important.

MS. BRIGGS: Can I mention the case numbers. Is that okay?

MR. MAKHAJANI: No.

MS. BRIGGS: No, okay. Let's see, one case was a miner and let's see all of his PIC readings were from October of `67.

MR. MAURO: Excuse me, Nicole?

MS. BRIGGS: Yes.

MR. MAURO: I think you can make reference to the table number in the report. Everybody has got the report in front of them.

MS. BRIGGS: Okay, you know what you have -- not all of the data is presented in -- I guess I'll go through the --

MR. MAKHAJANI: The data went through -- its' either one, two, three, four. Just start at the top with the first person whose data we examined and whose serially and everybody will know.

MS. BRIGGS: Okay, the first worker was a miner and that's on Table A-1. And you can see we put side by side the area access register data next to the film badge data.

I guess I'll work through one line of data so you can see how we did -- how we were looking at this.

In all of the area access registers data for this individual was in 1967. Like I said, we didn't have PIC data necessarily for every year for this time period and not even for the whole year. I believe that the area access registers were put into place for very specific periods of time through very specific activities that were going on site.

So for this particular worker the majority of the PIC data comes from October of 1967. And in that PIC total is 250 millirem and we can compare that to the total film badge readings from this worker for October of 1967 which is 285.

And as you can see those values are very close and the film badge reading is actually above or higher than the PIC reading. So in this particular case there doesn't seem to be any discrepancy.

And I'll move on to the second case which was another miner on Table A-2. For this worker all of the PIC data came from October and May of 1963 and their PIC readings totaled 140 millirem and the film badge data for those months totaled 350 millirem.

So, as you can see again we have a

situation where the film badge data is well above the PIC data and there doesn't seem to -- there's no discrepancies between this data.

Let's see, the next case is our third miner, case A-3. This individual had a lot more PIC data available. For I guess it looks like it's the last quarter from September to December of 1967 which totals, let's see I guess it's 1,860 millirem. And all of the film badge reading from the entire year of 1967 for this individual totaled 1,525.

There is obviously the film badge data is slightly lower than the area access register data. But it's not too -- it's not far enough I guess of a difference. It was our understanding that the PIC data is actually a much more crude method of analysis than the film badge.

Arjun, maybe you can step in with that. Is that a valid assumption that we were going on. That the film badge data is even --

is just slightly --

MR. MAKHAJANI: Sorry, I was on mute. Yes, that's right. You can proceed on that basis.

MS. BRIGGS: Okay, as we work through with our next case. This next individual for Table A-4 is a health physicists. And he had a tremendous amount of data. Both film badge data and PIC data.

We found that to be the case for all of our investigations. The radiation safety workers often had a tremendous amount of data to look at. So much so that I decided to collapse the data into Table 1 of the main body of our report. And we can compare the PIC totals year by year to the film badge totals.

And in each instance the PIC total were much lower than the film badge totals. And so there didn't seem to be any inconsistencies with this case.

MR. MAKHAJANI: Again, just for the

record and for clarity, when we say inconsistency we don't mean that no inconsistency, we don't mean to say that the readings were equal.

Since we're looking for evidence that film badges were taken off the criterion for this is film badge readings are much lower than the PIC readings. So, the film badge readings are much higher than the PIC readings we don't investigate that, or look into it because there's no evidence that film badges were taken off.

MEMBER ROESSLER: Nicole, this is Gen. I think you meant you collapsed it into Table 2 in case anybody is following along.

MS. BRIGGS: I'm sorry, I misspoke. Okay, I'll move onto our next case in Table A-5, which is a laborer. And this individual had PIC readings mostly for 1965, and some readings in 1966.

And we compared the film badge readings -- we decided to focus just on the

1966 readings were all very low. We decided to just focus on the 1965 readings.

And let's see, there really didn't seem to be any inconsistencies here. I think the totals for 1965, let's see -- oh here we go. The total for `65 particularly in -- I guess it was July and August, I think we decided to focus on July and August. There wasn't that much of a -- there were no inconsistencies between the totals there.

MR. CHU: You don't have the film badge reading on this table, is that correct?

MS. BRIGGS: On Table A-5, I have the film badge readings for this individual.

MEMBER ROESSLER: On the right hand side.

MR. MAKHAJANI: In the attachment tables actually the readings are the individual film badges, right Nicole? I mean where we're doing the comparisons you have the individual PIC readings. And when the film badges is read you have the reading at the time that it is read.

MS. BRIGGS: Right, yes. Yes, the film badge data for these cases were presented by issue date, which means that the period that's represented by that value is the period between issue dates. And that's what we were comparing.

We were comparing the totals and then in the instances where the film badges were pulled or there was any kind of elevation, we looked at the specific film badge period that would coincide with that day that the PIC was read.

MR. MAKHAJANI: Another way to understand some of these tables -- because the film badges were not always pulled as Nicole -- can you hear me, am I on mute or not?

MS. BRIGGS: Yes, we can hear you.

MR. KATZ: We can hear you Arjun.

MR. MAKHAJANI: The -- when the PIC readings were less than 100 and the film badge was not read at that time you look at the cumulative PIC readings from the days for the period representing the film badge readings.

So, the film badge was read once a month. You had the PIC readings for that month and compare it to the film badge readings. So, that can also be done and we have done that. And you know when you accumulate the PIC readings and compare it to the film badge readings, that's the relevance of comparing the periods.

And then when you have the reading of a PIC that's more than 100 you can compare the individual badge readings or the individual PIC readings. But you can't always do that because the badge wasn't always read every day.

MS. BRIGGS: Okay, I'll continue with our cases. We're almost through. Table A-6, this case was a welder. All of his PIC data came from November and December of 1965 and it totaled 1,150 millirem, compared to his film badge data for those months, which was

1,250 millirem. Again, they are in parity there. So there's no inconsistencies for this case.

Table A-7, this individual was -- I believe he was a health physicist. For this case is the only case where we saw some inconsistency between the PIC data and the film badge data. Again, he was a health physicist so he has a tremendous amount of PIC data from 1965, 1966, and 1967. So we had a lot to compare.

One of the issues that we found with this case is the -- this individual often did not check out on the PIC forms. At the beginning of the shift, the worker would sign in and put the date that he entered the site. And then at the end of his shift he would sign out and put the time that he signed out and also write down his PIC readings.

We found that, for this case there were a lot of blank spots. This worker would check in and then not check out. Now one of the issues that we found was that many of these workers, particularly the radiation safety workers worked double shifts.

So what we would do is check on the next shift to make sure that they checked out on the second shift. But for this worker we noticed that he didn't sign out at all. And there were -- even though he checked in with a PIC he didn't necessarily sign out.

And I think we saw that on a number of occasions. I think about 20 different occasions over the course of the three years where that occurred where he didn't necessarily sign out.

And also one of the other inconsistencies we noticed is the 1967 PIC data is 750 millirems greater than the film badge data. Again, that doesn't necessarily mean that there was -- doesn't mean that they were hiding the badge, but we just were indicating that there was an inconsistency in that data.

MR. MAKHAJANI: The relevance of this particular case is the combination of the higher PIC reading in one year and the frequent practice of this individual not to log out. And so yes, this was the only problem, question that we found.

We have not further analyzed, and you know we look for guidance. We want further analysis as to the cause of this. We have not attempted in any way to contact the individual or don't know if, you know, they are alive, or -- you know we have not done -- at least I don't know. And Nicole do we know if the person is alive or?

MS. BRIGGS: I could look it up. We could check their records.

MR. MAKHAJANI: But we have not attempted to --

MS. BRIGGS: No, we haven't done that.

MEMBER ROESSLER: Arjun or Nicole, what would be the implication of him not checking out. I mean what would be the rationale. I can't quite get it.

MR. MAKHAJANI: You know it may be, and you know people from NIOSH and ORAU, people who were there and Billy Smith might want to comment on this. But, one implication could be that you know if you don't check out with your PIC and you are also trying to kind of not report your full film badge dose then there might be an issue there.

Now it might also be that the discrepancy is simply a technical issue with the PIC readings and we can't second guess as to why the individual did not check out because it could be a lot of different reasons. And you know until we have some information for that person it's very difficult to tell.

So, at this stage, you know, this was an exercise where we were wanting to report any issue that came up that may indicate a problem but not -- this is not conclusory in any sense that we're saying that there is a problem. It's just we're reporting that this was the one time in one year where there was a question that arose.

MR. SMITH: This is Billy, point of clarification if you don't mind.

MR. MAKHAJANI: Sure, please.

MR. SMITH: Common practice for people going into a radiological area was that we called them radiation monitors, monitors, they are now called RCPs.

Monitors would take the individual's security credential, fill out the access log and issue the PIC. When the person would leave the area, they would provide that PIC information, or the PICs to the monitor and he would read that and enter it on the log. So there was no signing in if you will and signing out by the individual worker.

MS. BRIGGS: Okay.

MR. MAKHAJANI: Nicole will you clarify -- we did find log entries for everybody else, right?

MS. BRIGGS: Yes, there were log entries, yes. I guess signing in was a bad term. They were indicated on this form that they had entered this area, were issued a PIC, and then, at the end of the shift, their PIC reading was logged in and the time that they exited the area was also logged in.

And like I said, it happened to be for this one health physicist worker, there were 20 case instances where he essentially never checked out. Where the PIC that he was issued for that day, the number was not entered in.

MR. MAKHAJANI: Yes, so that's a specific example. If you look at the entry on 3/6/1967 you'll see the comment column says no PIC data, did not time out. And then, you know there are PIC data in other dates in March and April. And you go down to 5/5/1967 again it says no PIC number, data no time out. So that's what we mean, Billy.

MR. CHU: But there appears to be a PIC reading on the one that you just read, Arjun.

MR. MAKHAJANI: 5/5?

MR. CHU: No, you read the one on 5/31.

MR. MAKHAJANI: No, I said 5/5/1967.

MR. CHU: Yes, well that's where he had no PIC, no id number, and no time out.

MR. MAKHAJANI: Yes, both the columns are blank. And the other one that I said was 3/6/1967.

MR. CHU: My point is that at other locations where you said he did not time out and there's no PIC numbers, but there is a PIC reading.

MR. MAKHAJANI: I only have two -- maybe I made a mistake in what I said. I thought I only read two different rows.

MS. BRIGGS: Well there are some cases where the PIC reading is there and the individual just didn't write a time out time. Right, that wasn't included in our -- we took that into consideration.

But there were many instances where the person did sign in or, whereas this person's name was put on the access register with a time in or sometimes it just says name was there to indicate that he had I guess entered the area, but there was no time out and no PIC reading. Those are the instances that we were focusing on.

MEMBER CLAWSON: Hey, Billy, this is Brad Clawson.

MR. SMITH: Yes, Brad?

MEMBER CLAWSON: How did Nevada Test Site deal with abnormalities like with your PICs. What I'm trying to figure out here is I know that they were very sensitive a lot of times and I know, in very strenuous work or so forth like that they can be dropped and so forth and they'd either go off-scale or they'd zero out.

How did they handle that down there?

MR. SMITH: The first thing they would do is that they would indicate whatever the reading represented on the PIC and then look at the other people that were working alongside the individual to see whether or not that reading made any sense.

Then they'd start up a preliminary investigation to see whether or not there was any particular cause for the PIC reading to be as high as it possibly was.

So the fact that those changes are really substantive is the biggest concern if you have -- particularly when you're working either on a drilling or underground or something like that. But there were investigations and entries could have been made, would have been made on the access logs by the RPT if there was a problem with the PIC.

MEMBER CLAWSON: Okay, I was just

wondering because I know we've got into situations where we've hit them or something with a wrench and the reading was way out from what it was. And they just -- in our sense they just followed with what our badge reading was

I was just trying to come up with --

MR. SMITH: What would happen. I mean the person is still there it would have been exchange if they had expected if he had gone over 100 mr.

CHAIR PRESLEY: In this case there's one on here that's like that where on 5/1/1967 he has no PIC reading. But it says that his badge was pulled and his badge registered 265 mr. And it says that his badge was pulled, I think. Robert, do you have anything?

MR. MORRIS: Yes, I would like to make a point. I think I've heard you say in the past, Billy -- this is Robert Morris, excuse me, that sometimes the access logs were filled out ahead of time with expected people who would be on the site?

MR. SMITH: That's true.

MR. MORRIS: And the fact that there may be a name on there with no entry time or exit time might be a fact that they anticipated the person being there and that person did not show?

MR. SMITH: That's true.

MR. MORRIS: Do you think that that could have been a factor in some of these confusing entries, Nicole?

MS. BRIGGS: Sure, that's certainly a possibility, sure. Yes, I wasn't aware that that was done.

MR. MAKHAJANI: As I said, we haven't you know attempted to contact co-workers or interview this person or anything like that.

MR. CHU: Bob, going back to yours and if you're tracking it. This badge was pulled on 5/29 and the period that you talked about, 265, covered 5/1 to 5/31.

CHAIR PRESLEY: Right, right.

MR. CHU: So, it looks like we have the 30, 20, and 65 and the 150 that's pretty close to that number.

CHAIR PRESLEY: Nancy?

(No response.)

CHAIR PRESLEY: Nicole?

MS. BRIGGS: Yes?

CHAIR PRESLEY: You want to go ahead?

MS. BRIGGS: Okay, I guess we can complete. The last three cases we actually had very limited area access data for Table A-8 for the security guard.

As the table indicates there was -- although the area access register sheets were there, there was no data on those sheets.

Table A-9, he was a wiremen or an electrician. He only had one data point for his area access register which read zero so we didn't have much data to work with there.

And the last one, Table A-10, that individual was a welder and there was only two pieces of data for his area access registers. And so we didn't have much data to work with.

That, I think, is really what we were limited by with how many of the cases actually had area access registered information for us to work with.

MR. MAKHAJANI: And Nicole, if I might ask you this about this data set. Of the 120, how many has area access data, and we picked ten.

MS. BRIGGS: Right, you know I don't know off-hand but I could look into that. I know we were, you know we didn't have much to choose from.

MR. MAKHAJANI: Okay, fine.

CHAIR PRESLEY: And the conclusion of this is?

MS. BRIGGS: Excuse me?

CHAIR PRESLEY: And the conclusion

of this is?

MR. MAKHAJANI: Well, Mr. Presley, the conclusion is that you know we examined ten cases and as Nicole had said we were limited largely by the area access register data.

And out of these ten cases, in nine cases we did not find any evidence that the film badges were being taken off because film badge readings were about the same or higher than the PIC readings.

And in the one case in three out of four years, why there was the question of no PIC entries in some cases and no evidence of log-out. We didn't find a number discrepancy, but we did find a number discrepancy in one year.

And so in the vast majority of cases we did not find a problem. But you know we only looked at ten and as Nicole had said it's largely limited by the amount of information we had in the cases that we had pulled.

So, I guess the rest would be for the Working Group to decide whether this investigation provides you with sufficient information of your conclusion about that.

We certainly did not find positive evidence that badges were being hidden in this investigation. Most of the indication, as I said nine out of ten was negative, and in the one case most of that was negative. There was this one question that we put before you but we do not know the cause of that.

MS. OH: Arjun, this is Kate from Senator Reid's office. Can I ask you; the film that you have done this study on, one or two or three welders or --

CHAIR PRESLEY: Ma'am, can you speak up please and say your name again?

MS. OH: Sure, I'm Kate from Senator Reid's office.

MR. KATZ: Kate Oh, Senator Reid's office. Thank you, Kate.

MS. OH: I'm just curious are you guys confident that the number of cases that you guys studied is representative of the worker categories. I notice that you only have one or two welders and such.

MR. MAKHAJANI: No, Kate, if you're asking me whether one or two welders can be representative in any statistical sense, it cannot.

MS. OH: Right.

MR. MAKHAJANI: I mean we did look -- we pulled ten out of 120 and I think we tried, as Nicole explained and pick at least one from the various job categories. And we could do more than ten. But we are limited by the amount of information available in terms of these area access registers.

Nicole, do you have a number on that or can you get a number later in the day?

MS. BRIGGS: I could probably try and get you're a number later.

MS. OH: Okay.

MR. RICH: Arjun, this is Bryce Rich and I'll ask just a quick question. As you've -- an Nicole perhaps, as you've gone through the records, do you find any of the individuals that were approaching the limits, most of the data that we see, there have been no limits. So, there was a concern for exceeding the limits this might be one other area that you could look at to --

MR. MAKHAJANI: I didn't see any individual approach in a quarter here. I don't remember them.

MR. RICH: No, I don't think so. And that's one area that really would be another indicator I would think because if you were approaching limits --

MR. MAKHAJANI: Yes, so I think maybe you know if there is another question is we will go meet them, rely on NIOSH maybe in the dose reconstruction get completed or search the records in some other way to find individuals who were close to that 3 rem limit per quarter or 5 rem per year.

As I understood from what our office has said there were many. The one -- let me kind of explain a little bit more about that. There was one time where there were individuals who were approaching the dose limit.

But that was -- and where a lot of the controversy and some quite important presentations to the Board arose in terms of the interpretation of the data and maybe data manipulation and taking off badges.

And that was in the pre-1963 period, so it's not in the period that we've investigated. We did look at that particular -- we did look at the files in that particular case. And a good bit of that confusion arose from the poor state of the record and non-comparable sets of records reporting, you know apples and oranges comparison.

So some records had tritium and

external dose added up and others did not. And a great deal of confusion, I think, arose out of that.

In any case the one instance where this has arisen and there being numbers on the table was not in the SEC period being examined.

MEMBER ROESSLER: Arjun or Nicole, just to clarify in my mind. On these ten cases you said on nine there's no inconsistencies. You identified one where there were inconsistencies and I'll refer to the table numbers so I can make sure I'm looking up the right data.

That's Table A-7 that you're talking about inconsistencies. Is that right?

MS. BRIGGS: Yes.

MEMBER ROESSLER: And then on that one, just to summarize, it seems that the inconsistencies have to do with the worker not checking out with his PIC which we already -- I think Bob explained maybe how that could have come about.

If I'm right in this evaluation then in my view I don't see any inconsistencies that effect the data.

MR. MAKHAJANI: No, that's not 100 percent right, Gen. In the sense that for this one individual and one year we also found the sum of PIC readings that was quite a bit higher than the sum of badge readings.

And I don't think there is -- now I have not personally looked at the records. Nicole, is there any indication in the records that there was some kind of investigation of the PIC having been knocked about and the PIC readings being suspiciously high and therefore to be rejected?

MS. BRIGGS: Of these ten cases?

MR. MAKHAJANI: No, in this particular case?

MS. BRIGGS: In this particular case, no I didn't run into that.

MEMBER ROESSLER: Arjun, however on

that same individual, you don't question the difference in the other two years where the PIC reading is a whole lot lower, you know significantly lower.

MR. MAKHAJANI: No, no I think in the other two years that the numbers, the numbers are --

MEMBER ROESSLER: So it would seem that that individual, if he were prone to hiding the badge or something, that he didn't. It's not consistent over the years. And to me the difference in that one year in 1967 between his PIC and his film badge, the PIC is higher, but you know that's not -- it's probably in the realm of uncertainty with the PIC. I don't see a problem.

MR. MAURO: If I may that's what we're doing here today -- this is John -- is in effect we're putting on the table in front of everyone, this is the results. We went into the process, we pulled numbers out, made a table, tried to disclose it as clearly as we possibly can at a high level of resolution as we can and then everyone can make up their own mind because, I mean certainly you look at the data and let it speak to you.

And that was our intent. And it was -- as you notice we're hesitant in saying what we conclude. I'm sure everyone has in their own mind, I know I do have in my mind but I don't feel its appropriate.

I'd rather leave it to the Work Group to look at the data and let it speak to you and you decide whether or not you see if there's anything in here that makes you concerned. Including the fact that we only look at 10, we picked 10.

By the way Nicole, in these ten how many pages -- these were hard copies that you --

MS. BRIGGS: Well, I mean I didn't print them out. I worked, you know, from the database.

MR. MAURO: And is this a lot of

pages. I mean is this 100 pages, 1000, I mean --

MS. BRIGGS: Let's see, my memory is that for each case depending on, some cases more than others, certainly in the hundreds of pages. Even in the cases where there was very little data we're talking about having to go through 200, 300, 400 pages.

And there were a couple of cases, particularly this case for Table A-7, I'm pretty sure there was about 2,000 pages of information. Not necessarily the film badge data but just, you know, pages of information for this case.

MR. MAURO: So it's a matter of surgically going through a handwritten and typewritten records or electronic on PDF I guess and extracting the information.

Was there, in terms of the extraction process I recall that we did some quality control checks in terms of going through such an immense amount of information, extracting from the thousand of pages and trying to boil it down to what we're looking at. How was that handled?

MS. BRIGGS: Let's see, either myself or some of our other members of the SC&A team would go in initially, collect all the data, and then we made sure that it -- another individual went into the data also and confirmed all the data that were logged in.

MR. MAURO: Thank you.

MR. BEHLING: Nicole, this is Hans Behling. I have a question regarding the one individual whose PIC data exceeded the film badge. Do you know off hand what his -- for that one year where there was the inconsistency that you keep mentioning. What was his total cumulative exposure -- but then in fact let me rephrase it.

Was there an exposure that would have -- was potentially going to put him over the 3 rem per quarter or 5 rem per year dose limit that might have given him the incentive to do something with his film badge?

MS. BRIGGS: I don't think so because his -- well his film badge totaled for the year that we're talking about is 1967. His film badge total for that year was not quite 2 rem. It was 1,945 millirem and that was his film badge total for the year. His PIC total for that year was about a 2.7 rem.

MR. BEHLING: And what was -- in terms of time line, what was the quarterly doses because sometimes, as you approach the end of year, you may have reasons to question whether or not you're going to finish out the year and still come under the wire with regard to the dose limit?

And so sometimes it's obviously a function of looking at the data in terms of the times for which these assigned values apply.

MS. BRIGGS: I didn't break it down by quarter for this case.

MR. MAKHAJANI: But we can do that.

One point to consider might be that his 1965 total was pretty close to 5 rem.

MR. NETON: You know this is Jim Neton, I --

MR. MAKHAJANI: 1966 total rem was 2 rem and odd, so his doses seem to go down. Maybe that was because, you know he was doing some other work, different tests, or maybe an indication of something else. It's very hard to tell.

MR. SMITH: But he was the radcon individual.

MS. BRIGGS: He was a health physicist.

MR. SMITH: Yes, and those are the people with, from what I recall, were people who were among the highest exposed individuals.

MR. MAKHAJANI: For external dose maybe, not uniformly. Well we'll come to that in the afternoon.

MR. NETON: This is Jim Neton and

I'm looking at the 1967 data and I agree with Gen. I don't think that there's any statistical discrepancy between 1,945 cumulative for the film badge versus 2,700 millirem for the PIC data.

I brought this up the first time this project was proposed and I said, what are you going to accept as reasonable agreement because I think if you look through literature that type of agreement is very consistent with what you see in the field between a pocket ionization chamber and a film badge.

But I don't think any hay can be made by this difference of these two numbers personally.

MR. MAKHAJANI: No, we're not saying it should or should not be made.

MR. NETON: I agree, but I'm just stating my opinion that these numbers are not really different.

MR. MAKHAJANI: Right, the one -- if you look at the text where the totals by year are given this individual, we haven't remarked on this in the text.

But this individual did approach five rem in 1965. And doses, it seemed to go down in 1965 to `66 and then from `66 to `67. So we have three years of data here.

And the PIC totals, you know, in the first two years were quite low and much, much lower than the film badge totals and the reverse was true in the last year.

So, I -- it's my intent and also, you know PIC readings were not reported numbers of times in all three years.

CHAIR PRESLEY: Thank you, Arjun.

MR. MORRIS: Robert Morris. I think there's one materially important fact that probably needs correction in your working draft. And that is this idea of signing in and signing out.

I think the idea is portrayed incorrectly in your description of the -- you're narrative of how things happened at this company.

I just wondered, since this is a working draft, that your plan was to go back and make that kind of correction there.

MR. MAURO: We'll take our direction from the Work Group. Certainly if there's any factual information or other representation. Especially if this material is going to be cleared and posted, we certainly would want this document to be as clear and accurate as we possibly could make it.

MR. MAKHAJANI: Billy, may I ask a question about that since what's just been said was based on what Billy told us?

Billy, was that sort of an informal practice or was that normal written practice that you created a register of people that you expected to go in and then there was a notation that the person actually didn't show up?

Normally one would expect that if

the person didn't show up there would be some kind of notation that they didn't show up.

MR. SMITH: Well, it was not an informal practice. Although the logging that took place was done by monitors. Those cases where, generally you could tell when a monitor was working in his bay station and he had the daily reports which were the reports of the last film processing of the last previous days that he had the listing.

You could tell the access logs that were probably pre-prepared in that most often they were alphabetical. Whereas when people just, you know when they were not prepared in advance, then the people would be randomly signed in by that particular monitor as the person would enter the radiological area.

And in some cases these access logs were used just to identify people that were going into areas and they were not necessarily issued PICs. So the comment that was made earlier that all people that entered radiological areas wore dosimeters and PICs is not a true statement.

They may have entered a radiological area with or without a PIC.

MR. MAKHAJANI: Now, this would be true that the same people would be issued a PIC sometime and not other times. Is that what you're saying?

MR. SMITH: It depended on the job. If a particular -- let's say you were talking about a reactor where the work location was designated as a radiological area and everybody was issued PICs, then everybody would be issued PICs all the time until it was declared not a radiological area.

MR. RICH: Billy, this is Bryce, just a clarification. It could still be a radiological area but the assignment of the work area would not be in a radiation area requiring a PIC.

MR. SMITH: That's right.

MR. MAKHAJANI: This person was

obviously in radiological areas for all three years. The film badge readings clearly indicate that they were radiological areas. I think that that's not an issue with this work.

MR. SMITH: The other point is you know that the use of PICs is a tool that's used for exposure control. The suggestion that the agreement between the PICs and the film badges needs to be 100 percent really doesn't make a lot of sense in our business.

MR. MAKHAJANI: We haven't actually chosen agreement as the criteria as I explained a couple of times. We only chose the criterion as the PIC reading being greater than film badges indicates a problem, not the other way about.

So, if you look at this particular worker you'll see in 1965 their total PIC reading was only 355 millirem. But their film badge total was 4,415 millirem and we didn't call out a discrepancy over there even though the readings don't match.

That's because the purpose of this wasn't to investigate how the PICs worked and whether the readings were accurate when they were up or down relative to the film badge. But simply to find whether there was any evidence of film badges not being worn.

But in this case I think this is the only worker actually who ever approached 5 rem in any year of all the ten cases that we did examine. And none of the -- actually the PIC reading and film badge readings don't match in any of the years, they're not even close.

CHAIR PRESLEY: Gen?

MEMBER ROESSLER: I have a suggestion with regard to this draft report, that in that section where you discuss this particular worker where it says that there are two inconsistencies, I think the wording there implies -- it just implies something that isn't there.

I think I would say that there are

two interesting observations and then go on to explain what you all have been talking about. What they were and what it meant.

I think to call them inconsistencies says something that we really we don't have evidence for.

MR. MAKHAJANI: We looked at the same term as in all the other nine cases in that one. We did not find any evidence that you know that the film badge readings were higher or about equal to the PIC readings. We called that no inconsistencies.

MEMBER ROESSLER: But you're leading the reader to a conclusion.

MR. MAKHAJANI: So would you suggest that we go back and change all of it?

MEMBER ROESSLER: No, Arjun, I think with the objective of this particular study to use that wording leads the reader to a conclusion that really isn't there.

MR. MAURO: I think we need to use a terminology -- this is John. We went through this exercise. We felt that it might help. And these comparisons, really what we're really saying is when we make these comparisons is there anything about these comparisons that would raise our attention to this issue or inform us related to this issue.

And I would say, and I was trying not to do this, but there's nothing about these comparisons that I would call a smoking gun. Okay, the fact that the two numbers differ, whether one is higher or lower or lower or higher is not in my mind the important point.

The important point is, do we see after we are done consistent results that show every time we have these paired numbers that we see over and over again readings where you have positive PICs in a given and zero, or it would be zero -- this film badge during that particular time, or you didn't wear it. A zero reading consistently found.

I went into this with the idea

that, does a pattern emerge from the ten that would inform us about whether or not there seemed to be something amiss. And up until now we've been zeroing in and focusing on one particular worker where there seems to be something where oh, it looks like in this particular case the PIC was a little higher or somewhat higher than the film badge.

I think unfortunately we forgot about the other workers where the results came down that were surprisingly compatible between the PIC and the film badge readings.

So, I mean --

MR. MAKHAJANI: Well John, I wouldn't say we forgotten about them. I think we represented -- we represented our investigation accurately. You know we said in nine of the ten cases the film badge readings were the same or higher than the PIC readings and there was no reason for concern in terms of film badges being taken off.

We also in response to Kate's

question, you know we haven't looked in worker categories that represented a number. I don't know that we could from the data that we've pulled. I don't think so.

MR. MAURO: Well, I'm going back to Gen's concern.

MR. MAKHAJANI: We found an issue with one how it is to be characterized. I think that's, of course entirely up to the Work Group.

MEMBER ROESSLER: And that's my concern. Again I recommend not only the wording under that particular individual, but on page -- what is it page six on my report that's the end of section 2.1 where you talk about there are no inconsistencies in nine out of the ten cases. There was -- and that's true, we've agreed on that.

And one case is that sentence that I think could be misinterpreted. I think someone down the line could take that without fully understanding what we've been discussing and say, well, you know one of the cases was suspicious. And that's not true. And I don't want that to be misinterpreted.

MR. MAKHAJANI: You know of course, we can go back and revise the report. But the main, I think you need to look at the worker'' data in its entirety as it's presented there.

He did have one year in which he approached 5 rem. And Lynn Anspaugh has often pointed out that you know if workers are afraid of being laid off and approach 5 rems they are not going to let their, their not going to let their badges approach 5 rems or 3 rem and a quarter that they might preemptively do something.

And we don't know that and we actually, you know, we have to conduct a much different and much more detailed investigation than we have done to actually come to some kind of conclusion.

The words that are used to describe these set of numbers and I think it should be seen as a whole for this particular Work Group. You know, of course you know, different people use different words, but I think the numbers say something and whether that needs to be addressed further in what conclusion the Working Group wants to draw, you know, it's for the Working Group.

MR. BEHLING: Arjun, this is Hans and I think it's important to make a statement here. If the question that you are raising is did in fact workers take off their badge and put them in their lunch boxes or in their back pockets was the central question and we're trying to solve that particular question by looking at the data, you may not get there.

What I'm really saying here is that you may in fact have had workers telling you the truth and still your data doesn't support it for the simple reason that when you take your badge off then there's only one on the chest and put in the back pocket it's going to read the same thing because we're talking about an ambient radiation field that will probably give you the same results whether the badge is on your chest or it's in your back pocket or even in your lunch box provided the lunch box is in the same area that the worker is located.

So, you may have the situation where the workers were telling you basing what they did as being truthful and yet your data will not allow you to make that statement as to whether they wore their badges on their chest or whether they wore it in their back pocket.

MR. MAKHAJANI: Hans, that's why -- that's the reason why I think we've been rather careful in how we've said all of this. We didn't find any evidence of this. We're not representing this as a conclusion investigation that will show, you know we had some people in various positions of authority including one person who was very involved in the health physics of the Nevada Test Site who had said that this happened.

We've got a lot of workers that said they did this and I certainly don't have any reason to disbelieve them. But this was an attempt to make an empirical investigation as to whether it was -- you could find evidence of that. And then as John has said it's very difficult prove negative.

MR. BEHLING: And basically what you've only pointed out is the fact that people in the later years were not concerned about exceeding a dose limit, but more concerned about damaging their badges.

MR. NETON: Hans, I think there's two issues here. Now this is Jim. I recall that the assertion was not that they put them into their back pockets in this earlier period, but they actually left them at the control point or somewhere outside the radiological area.

MR. BEHLING: That's correct.

MR. NETON: And so that's

applicable to this period. I'm glad to hear you say that people putting badges in their back pocket in their later years is not that significant of a difference in the dose.

MR. BEHLING: Right.

MR. NETON: Because that's what you're currently investigating and I would suggest that that's not a huge issue even if they did for the same reasons that you just stated.

MR. MAKHAJANI: Now, in one of the interviews that I had done earlier that we documented in the site profile review even being the assertions of you know badges being left in the trucks or between lead bricks or rocks or something like that.

MR. NETON: Right, that's what we would be investigating.

MR. MAKHAJANI: So there's a suggestion of shielding and the badges not being in the work place. And that would have happened before 1966. That was the specific context of that interview.

MR. ROLFES: This is Mark, I had a quick question for clarification. This individual also worked at another site during the year of 1965. I wondered if you possibly added any of that dose from the other site into the dose that you reported for that year.

I wondered if it was so many that you just --

MR. MAKHAJANI: All the doses were added. I don't know if we noted the site. Nicole?

MS. BRIGGS: Sorry, I'm on mute. No, we didn't note the specific site. I think he was the only individual where that happened.

MR. ROLFES: Okay, I'm just looking at the details of this case and there was covered employment in 1965 for the great majority of the year at Hanford.

MS. BRIGGS: Oh, for the cancers, oh no, we would -- I didn't take that into consideration.

MR. ROLFES: Okay, so it was only Nevada Test Site?

MS. BRIGGS: Oh yes, it was only Nevada Test Site.

MR. ROLFES: Okay, okay.

CHAIR PRESLEY: Let's take a break for ten minutes. I've got 10 to 11. Am I about five fast or not. In about five minutes to 11 we'll come back and I'd like to get started at that time on the occupational and environmental dose. And we'll take this up at two o'clock under Working Group discussions back on what we've been talking about with the film badges. Is that acceptable?

(No response.)

CHAIR PRESLEY: We can talk about this all day long.

MR. KATZ: Okay, we are putting the phone on mute, but we're not disconnecting the line.

MS. BRIGGS: Thank you.

(Whereupon, the above-entitled matter went off the record at 10:44 a.m. and resumed at 10:59 a.m.)

MR. KATZ: This is the NTS Work Group the Advisory Board on Radiation Worker Health. We're getting started again after a short break.

Before we get started I just want to -- I have a message for John Funk. John, I assume you're still on the line here. I just want to let you know we had you on the agenda for 11:30 a.m. But as you see we're quite off agenda. Right now we're about to start Lynn Anspaugh's presentation about environmental dose at the site. And he has quite a lot to present.

So, here's what we'll do, John. John are you there?

(No response.)

MR. KATZ: John Funk, you may be on mute.

CHAIR PRESLEY: Is anybody there?

MEMBER MUNN: Yes, this is Wanda, I'm here.

MR. KATZ: Okay, good someone is there; that's a good sign. But, John, one last call then John, are you on the line?

(No response.)

MR. KATZ: Okay, okay so John is not on the line then.

MR. FUNK: Ted, my mute button stuck.

MR. KATZ: So you are there, good. John, listen, did you hear what I said so far?

MR. FUNK: No, I was getting a drink of water.

MR. KATZ: Okay, so John we are off track in terms of time in the sense that we spent more time on the badging issue than we expected and that can always happen, of course.

So, although we have you set up for 11:30 a.m. after Lynn Anspaugh makes his presentation and there's some discussion.

Lynn is starting later. So it may be that we have time for you before lunch, but if we don't we'll just move you to after lunch so that you can still have the benefit of Lynn Anspaugh's presentation and discussion before you make your remarks, providing that you can be with us after lunch. Is that good?

MR. FUNK: I will be here all day.

MR. KATZ: Okay, great.

MR. FUNK: It's fine with me.

MR. KATZ: Okay, thank you.

MR. FUNK: All right, fine.

MR. KATZ: It's all yours.

CHAIR PRESLEY: Before we get started, I'm going to pass something around. I'd like to have everybody please -- Lynn, it's yours.

MR. ANSPAUGH: In order to facilitate this discussion, I assume everybody has a copy of my report and it will be easier if you separate this. Some of the figures are available separately because I am going to refer to some of the figures.

And unless -- before I might forget it let me tell you I made one mistake on figure 21. And I discussed a photograph of a drill rig. And as many of you probably have sharp eyes have noted that is not a drill rig in there. It's a crane. And the drill rig has already been removed and that path marked by the black lines may be where the drill rig was drug off or drug in. But I did make a mistake in not looking at that close enough and it's not a drill rig it's a crane, commonly called big boom.

So, this report is very different than what we discussed before in the sense that there are no personal information in here and that's why it got cleared easily, I guess. This is a report that's really a review of a methodology and as such, it only discusses the methodology, nothing to do with individuals.

And the review is about the document that's part of the Nevada Test Site

Technical Basis Document. It's the part four of that document called Nevada Test Site Occupational Environmental Dose.

And the purpose of this document is to examine how to calculate radiation doses to workers when they were outside of controlled areas where they would have been subject to monitoring by air samples and other means.

So basically it involves people working out in the field mainly while their running bulldozers in non-controlled areas or working on drilling rigs or so forth.

Basically my interpretation is it's anything when they were outside of a radiation control area that would have been subjected to air sampling for example.

And this particular report has been revised now twice and this is also the first time that there is consideration of incidental ingestion of soil which is another pathway of some importance.

I might mention that this is a

report from me. It's -- in order for me to participate in this activity there was special dispensation because I am conflicted. So there is a little bit of a Chinese wall between me and the rest of SC&A. So this is my work alone.

So, basically I examined the methodology of this document and the page two, I think, is a very important page because it talks about the fundamental assumptions that were made in the NIOSH methodology in terms of driving this occupational environmental dose which is basically involves not only the incidental ingesting the soil, but also the inhalation of material that came about from resuspension or in my mind it should include the amount of material that came about from current activities going on at the Nevada Test Site.

And so some of the fundamental assumptions that were made in the document from NIOSH was that there was no contamination of the Nevada Test Site after July 1962.

This is a very important consideration in the methodology that was developed. And a second important fundamental assumption was that air samplers operated on the Nevada Test Site during 1971 through 2001 can be used to derive air concentrations that would have been seen by these same air samplers during 1963 to 1970.

So, basically can you take current air samples and extract them back for nine or ten years. And the third fundamental assumption was whether or not air concentrations measured by air samplers outside of cafeterias or dispensaries or those kind of locations are representative of those actually experienced by workers at the Nevada Test Site when they were doing their work out in the field.

And then the fourth fundamental assumption was that there was no clean-ups of radioactivity at the Nevada test site between

1962 and the 1980s when the surveys were made by the Radionuclide Inventory and Distribution Program.

The fourth assumption, maybe, is not so obvious, but it's important to know that in order to extrapolate back to look at air concentrations from radionuclides other than plutonium, the data from RIDA program, Radionuclide Inventory and Distribution, were used to formulate that extrapolation.

So these assumptions, the first one is the contamination of the NTS after 1962 and it stated repeatedly in the NIOSH document that after the atmospheric testing ceased there was -- the only source of air concentrations seen on the Nevada Test Site were due to resuspension of aged materials.

And that's basically how the procedure goes. I think this assumption is not valid for several reasons. And if you look at Table 1 for example. These are five very large planned releases that occurred and we need to remember that, even though there was a limited test ban treaty the Plowshare activities were specifically exempted as long as that activity did not cross international borders.

So we had some very large experiments at the Nevada Test Site, the five mentioned here that were basically cratering events that lofted a great deal of activity into the air. And Buggy itself was a five-row shot as I recall that was designed to simulate how one might create a new Panama Canal with nuclear explosives, which was a very serious consideration at the time.

And you can see that these events released amounts of material on the order of megacuries and sometimes propelling ten megacuries.

So these were very large releases and I just might mention that Schooner event violated the test ban treaty very clearly. Activity was seen as far away as Finland. And that was the end of the Plowshare cratering event.

The President was very angry at the time because of the violation of the test ban treaty.

MEMBER ROESSLER: Lynn, could I ask a question on that table?

MR. ANSPAUGH: Sure.

MEMBER ROESSLER: When you -- Table 1 on page two where you say released curies at H+12. What is H+12, I mean is that something above the ground or --

MR. ANSPAUGH: Well, this is a very important point and, because radioactivity decays so rapidly after a nuclear explosion, if you measure it five minutes after the event you're going to get one answer. If you measure it ten days after the event you're going to get a very different answer.

MEMBER ROESSLER: So that's always --

MR. ANSPAUGH: So this is a

normalization of what it would be like 12 hours after the event.

MEMBER ROESSLER: I thought it had to do with height or something.

MR. ANSPAUGH: No.

MEMBER ROESSLER: Okay, okay so 12 hours after the event. Then at what point?

MR. ANSPAUGH: This is total release.

MEMBER ROESSLER: Okay, so that's taking the source term, so to speak, and that's so some of it could be confined and some of it could go out.

MR. ANSPAUGH: Well basically this is a material that is beyond the original crater location.

MEMBER ROESSLER: This goes out into the atmosphere, that amount?

MR. ANSPAUGH: Well not necessarily all the way into the atmosphere. This would include the base surge. And most of this material is still on site. But it's just not at it's original point.

MEMBER ROESSLER: Okay.

MR. ROLFES: The refractories would have stayed on site and some of the particles would have been --

MR. ANSPAUGH: There would be fragination, more of the volatile's would be on site and more of the refractories would be on site. And when we're talking about Buggy in fact that did produce the highest contamination that was measured on site in RIDA. And this was acknowledged on the NIOSH report as this area had the highest contamination.

But because it was in a location not deemed very accessible, it was disregarded. But there is very clear evidence that that was a significant source of contamination.

The other thing is there were all sorts of releases that were not planned. And if you look at Table 2 in fact there were 225 releases between the 1963 to 1970 period. And this includes the Plowshare shots and the plutonium dispersal tests that are shown in Table 3, but it does not include the test of the nuclear rocket engines.

So, some of these releases were very, very small, just barely detectable. Some of them were very, very large. And I think it's important to remember that containment at the Nevada Test Site was not very good for the years `63 through 1970.

And the last major event occurred on December 18, 1970, this was the Baneberry event. And that was such a large release that should not have occurred that the test site was actually shut down in terms of doing any testing for several months while they tried to get a handle on that, and they created the Containment Evaluation Panel. And I mentioned for Baneberry the geologist told them ahead of time that you're going to have trouble with that shot and they went ahead and fired it anyway.

So, the geologists obviously didn't have the attention of the decision-makers. But after that point they had a lot of influence and this kind of activity came to more or less an abrupt stop after the Baneberry event when there was a lot more careful consideration of whether or not such events were going to occur.

Table 4 is a list of the events at the Nevada Test Site which actually produced activities that was seen off-site. So these are the larger events and you can see that Baneberry released a million curies. And there was other events that released similar amounts and most of them somewhat less.

Pike was a bit of an unusual event because it had a cloud that headed straight for Las Vegas and people were very concerned about that. And that also led to revised planning in terms of, don't you ever shoot an underground shot if it's going to head for Las

Vegas.

And so there was changes that were going on. This was a learning process. I mean you don't confine a nuclear explosion underground perfectly without a lot of careful working. And it took a while to get that experience to really know how to do this.

The next table is tests of nuclear rocket engines and we tend not to remember these nuclear rocket engine tests. But in fact there were about 25 of them in the 1963 to the 1970 period.

Some of them released large amounts of activity. Some of it went off-site. And some of it -- a lot of it stayed on-site depending on what the particular situation was.

And the particular sites where these events occurred were heavily contaminated and in fact they were rather thoroughly cleaned up before the radiation, before the Radionuclide Inventory and

Distribution Project ever made it's measurements.

And then the final Table 6 is the nuclear ramjets. These were relatively small release of activity and it's just put in there for completeness.

Now one of the things I looked at was the site environmental surveillance program in terms of well what were these measurements actually reporting during this period of 1963 to 1970. And how well could measurements in 1971 to 2001 capture these releases.

So, there's a lot of discussion in here on the environmental surveillance program and what it's purpose was and what it's purpose was not.

And on page seven, I would call your attention to the quote that says, the results of environmental surveillance and sampling activity values cannot be used in calculating personnel exposure doses, and it goes on to explain what they were.

And then the first results really from this environmental surveillance report were given in this Glora and Brown report which started out with 12 air sampling stations and that are shown in Figure 1 of the report which unfortunately doesn't have the test site superimposed.

But you can see that they are fairly widely scattered throughout the test site. They were using 8 X 10 glass fiber filters which, as you all know, are not very efficient in capturing radioiodine.

The statement was made that they were going to operate caustic scrubbers to look at radio iodine but they never showed any data. I suspect these caustic scrubbers didn't work very well in the desert environment and probably dried out very rapidly.

Any way, we don't have specific data for them. And one of the things that occurred shortly after this network was set in place was the problem of shot Pike that I mentioned before. And you can see in Figure 2 here that there were dramatic increases in air quality or air concentrations of gross beta and gross alpha, I've got gross beta shown here, that were increased as far much as a factor of 100.

And it was noted that these increases occurred in nine out of 12 air sampling stations and they occurred in both upwind and downwind locations.

So, this is representative of this unplanned release causing a considerable disruption in terms of the concentration of airborne activity on the site.

The next problem or next reporting period is for `64 through `65 operating on fiscal years. And during that period there were a few more air samplers running.

And locations are shown on Figure 3, although this is a difficult figure to interpret. We have to look at the upper left quadrant to know whether there was an air sampler operating there or not. But I draw your attention to Table 7 which indicates the locations and you see where the samples were located. They are by and large, they are by and large at cafeterias and dispensaries or guard gates in some cases buildings at Mercury or NRDS.

And so I think it's fairly clear that these locations were not picked to represent where workers were in the field, but they were probably strongly influenced by where they had stable sources of power and where somebody could more or less keep their eye on them.

So, I think that's an important point that continues for this period of time when these samplers were operating. They were not out in the field, they were at locations that would not represent active activities.

Now there are some data here shown

in Figure 4. And the biggest thing is -- the biggest point here is from a Chinese test that you can see that occurred in October of 1964. But let me just mention that one of the drawbacks of the data in these reports is that you have maybe 11 or 12 air samplers operating and they're operating for a week and what you see up on it here is the mean and the range for all of the 11 to 14 air samplers.

So it's not possible to look at this data and to tell which station had the highest result. You know I think that's probably -- excuse me -- I think that's probably one of the reasons why these data weren't used more extensively, because you can't tell which sample is which in these graphs.

So in the later part of this Figure 4, it's stated that the pick-up in air concentration is related to activity at the NTS. And then the next period is July `66 through `67.

There were 20 stations and there were some activities that increased which were due to NRDS and NTS. There was one sampler at the HENRE site which is -- that was the former BREN tower that now has an accelerator on it, where Billy Smith actually worked when he came to the test site first.

And this air sampler did show a high activity which evidently was caused by the Nash event which was another one of the things that, items that leaked.

This was also the first time they had some background stations that were looking at environmental gamma exposure rates. And those background samples operated for a few years, but usually what happened, if anything really was noticed, was they saturated and weren't that useful. So they were -- didn't operate that long.

Now going onto some things that were more interesting if we look at the period from July 1967 through July 1968, which gets us to -- Figure 9 shows where the stations were and Figure 10 shows some of the air sample results. We see that there are two very strong peaks that actually go off the scale here.

One of these was due to leak called the Hupmobile shot. And you see the peak value there is 1.5 times, no 5.15 times 10 to the minus 11 which is somewhat off-scale.

And then we have the Buggy event which has the highest activity which is about 200-some magnitude beyond what the highest values are elsewhere in the graph. So, again this was a very substantial input of radionuclide material that resulted from the Buggy event which, again, I remind you was found to have the highest contamination by the Radionuclide Inventory and Distribution Project. And this Buggy event occurred on March 12, 1968.

And also at this time there was something which did not occur very often, but due to the Buggy event there actually was a reported contamination of potable water supply in the Area 20 dispensary. Now, I don't know how an event like that would contaminate a potable water supply, but it did, at least it was reported that way in the data.

And the background radiation monitors also showed some strong saturation due to the Buggy event and also due to the Door Mist event. This was in the `67 to `68 period.

Now the next period was July `68 through `69 which includes the Schooner event which again was that cratering event that I discussed with you before, that was the end of the Plowshare cratering program because it violated the test ban treaty with the debris crossing the Canadian border and this took place in December of 1968. And you can see in Figure 12 that we have some very strong increases in air concentration that were due to the Schooner cratering event.

MEMBER ROESSLER: Some of those numbers should be negative, shouldn't they? Shouldn't that be minus 10?

MR. ANSPAUGH: Yes.

MEMBER ROESSLER: Yes.

MR. ANSPAUGH: Well, it's 4.7 times 10 to the something, and I suspect that --

MEMBER ROESSLER: That's off.

MR. ANSPAUGH: -- I got too vigorous in doing my cropping.

MEMBER ROESSLER: Yes, 10 to the minus 11 probably.

MR. ANSPAUGH: I'll have to consult the original diagram.

MEMBER ROESSLER: Yes, okay.

MR. ANSPAUGH: That was my fault for being, cropping that too strongly. Anyway, the Schooner event was again something that also contaminated potable water supplies, and you can see that, in Figure 13, this is now a graph, the first graph that's shown here of contamination in water supplies, you can clearly see the peak from Schooner.

Then the last thing of real note is what happened in December of 1970, and unfortunately this report, which deals with this period, and is producing this kind of very poor quality material.

So you can see here what the average is. This is the gross beta, and also the plutonium analyses. And this thing indicated by a B, where you see this very sharp increase in activity is actually due to the Baneberry event.

Now you look at the bottom here, this is several years worth of data, which is the first time they combined so many years in the report.

And if you look at the next two Figures, 16 and 17, you can see a very predominant increase in activity due to the Baneberry event, which produced a serious contamination problem at the Nevada Test Site.

Figure 17 is actually taken from

what they called a changehouse in Area 12. You may remember that the Baneberry event went up to the Area 12 camp, and there were about 900 people there who took refuge inside the tunnel, but the tunnel became contaminated, as well. Then they moved them out to another location, and eventually down to Control Point 6, where these 900 people were scanned and processed through. Some of them were sent to Mercury for further studies of their thyroid. Some were sent to Las Vegas for whole-body counts and so forth.

So Baneberry was a very substantial event, and as I mentioned before, it brought about an abrupt stop in the period of testing until there was firmer controls on when not to test.

So, Table 11 now is also very interesting, because it shows by station now - this is some of the first data we actually have in the reports by station - these data shown in Table 11 are for plutonium, and you can see here that there are some very unusual values that are cropping up here that we have -- like I draw your attention particularly to Area 9, the 9-300 Bunker, where 1972, we have 429 times 10 to the minus 17 microcuries per mL.

Now this number is very key to the NIOSH dose reconstruction because that number was picked as a number to base essentially all of the NIOSH methodology on. And you can see it is a very high number compared to most of them. The only one higher was Echo Peak, Area 19, but that was averaged with the Area 19 sample at PM substation to get a lower value by area.

The reason given in the report about why the air concentrations at the Area 9, the 9-300 Bunker were increasing and were erratic was because there had been alpha contamination in Area 9 in this vicinity. There had been extensive clean-ups that consisted of washing the Mercury-Highway and grading contaminated soil. And the speculation was that the reason contamination was getting so high in this area now was because these clean-up activities, where material had been stored, or wind was degrading and releasing the plutonium into the airborne material.

So, I think just to summarize what the environmental surveillance data tell us is, number one, it's very clear that environmental contamination did not cease at the Nevada Test Site in July of 1962, and I think it's showing that there were events, such as Pike, and Nash, and Hupmobile, and Buggy, and Door Mist, and Schooner, and Baneberry, that caused widespread contamination at the Nevada Test Site, and it's my opinion that there's no way that you can take an air sample from 1971 through 2001, and reproduce these excursions that were noted to actually have occurred in the `63 to 1970 period.

And another important point is this

contamination of the potable water supply which had not been addressed in the NIOSH procedure work. So that pretty much takes care of the first two issues, and I would like to now move to a slightly different subject, and discuss what the NIOSH method to reconstruct doses is. I already mentioned this important measurement of plutonium that was airborne in 1972.

So the NIOSH method assumes that that value can be used to represent the plutonium contamination all the way back to 1963, and you don't have to worry about half-life corrections because plutonium is sufficiently long lived.

So the question then is what to do about all the other radionuclides that you don't have data for except in terms of gross beta and gross alpha. So there are a couple of ways that one might approach that. One would be to go back to the original data that we just looked at and try and make sense of the gross beta and gross alpha material, but you would have to get the original bystation data, which I understand is available on microfilm, but it's not in the reports.

The other method that NIOSH actually used was to take the data from the radionuclide inventory and distribution program, when the measurements were made in the 1980s, and assume that those are the long lived radionuclides that somebody would be inhaling, and to use that as a basis for extrapolation.

So that is what was actually done. The data from the radionuclide inventory and distribution program were decay corrected back to 1963, and the assumption was that this was the material that could be resuspended.

There was an additional correction for short-term resuspension with the assumption that, although this material was deposited in July of 1962, and this increased the projected inhalation pathway for the years of `63, `64, and `65, and then yet an additional correction was made, and this took a great deal of work to do this, but as an attempt to correct for all of the short-lived radionuclides that are no longer there, but have decayed, then there was a lot of work done to actually look at what radionuclides would have been there based upon the tabulations and calculations that were published by Harry Hicks. And these have very extensive lists of radionuclides that would have been present all the way from zero time through fifty years.

So that's what was actually done as a very serious attempt to correct these values for the short-lived radionuclides, assuming that everything was deposited in 1962 in July. So that represents a lot of work. There is some details given here about that.

I also discussed how NIOSH did the occupational environmental ingestion doses, which is basically goes back again to the radionuclide inventory and distribution program in looking at the different kinds of radionuclides that would have been available for ingestion with soil.

With all of the, basically the same assumptions that went into the resuspension pathway. So now I'm on page 20 here looking at basically assumption one, and that was no contamination of the Nevada Test Site occurred after July `62. I think that's clearly not true.

There were many events that produced contamination, and you can see it in the air quality observations, and you can see it in the radionuclide inventory and distribution program.

And then the assumption two, you can look at the air concentrations in 1971 through 2001, and use that to extrapolate back to what the concentrations at the same air samplers were in `63 to `70. Again, I think that's a bad assumption. And you can see from the plots that very clearly there were some very serious excursions, and particularly the ones from Pike, and Baneberry, and Schooner, that you would not see from looking at data after that time point.

And then assumption three is something that may be one of the more serious issues, and that's whether the air samplers of the environmental surveillance program really represent the air that would have been breathed by people working at the test site.

And there are a variety of different kinds of situations where it's known that there can be very large increases in the mass loading due to different kinds of occupational activities. And for example, there's driving bulldozers out across the area. There's driving tractors. There's even driving a car on a dusty road. There's doing construction work, and so forth. And one of the more important ones, perhaps, is related to the movement of drilling rigs, and Figure

18 now is a photograph of a large drilling rig at the Nevada Test Site. And you can sort of get a feeling for how large this thing is by looking at the trailer that's in the foreground there, that's seriously dwarfed by the size of this big drilling rig.

Now, some of the craters at the Nevada Test Site are very close together. We're talking about subsidence craters. If you set off an underground shot, typically what happens is after some period of time you have created a cavity, and this cavity is going to collapse. And it collapses all the way up to the surface, and you get a subsidence crater.

And actually you can look out in places like Area 3, and you can see these subsidence craters that are not separated by a very large distance. And so you've got a -- for example, you've got an enormous drill rig like this, and say you want to move it 200 yards. Now if you wanted to take that drill rig apart and truck it over there, you know it might take you four or five weeks, and it would take all kinds of trucks to move the thing.

So that's not what they did. They decided, why don't we jack this thing up, put it on some coasters, and we'll just drag it with a whole bunch of bulldozers over to the next site. So that's what they did.

And the next photograph shows one of these coasters, they had four coasters that -- first they would jack this thing up, and they put a very large beam right through this thing. And they had four of these coasters, two very large beams, and they would just jack this thing up, hook up four or five bulldozers or more, and just drag the thing across the desert.

So you can imagine that this is one situation where there would be an enormous amount of dust-loading. And the next -- Figure 20 shows these very large beams. And so one of the issues is what kind of desert material was this thing drug over, and I believe Figure 21 shows the path of one of the operations of either moving a drilling rig into this position, or moving it out.

Now this particular photograph, as I showed before, the drilling rig is already gone, and what is shown there is a crane, and part of some other construction activities going on.

Now eventually at this site what you're going to see is something that looks like a missile launch tower, and they're going to build a scaffold around this thing that they're going to insert down the hole. On top of the bomb itself there will be what they call a rack, which contains all of the scientific experiment.

So this is also a very complex operation which involves the use of cranes, and some construction of what looked like missile towers.

So basically the question is, do what these air samplers measure represent what the worker was exposed to. And I think it's fairly clear that it does not, and I also went back to look at some of the material that had been written about Yucca Mountain, where they are seriously worried about, if there is a volcanic eruption at Yucca Mountain, what kind of results would that be. And they are very worried about resuspension.

They talk about resuspension in several different environments. One is the inactive outdoor environment, which is typical of where these air samplers we're talking about at the Nevada Test Site were operated, where you have, not serious ground disturbance, but perhaps some nearby vehicular traffic and so forth, and based upon the measurements that they made at the Yucca mountain site, and other locations like Amargosa Valley, they came up with description of that as -- with a triangular distribution that had a mode of .06 milligrams per cubic meter, or 60 micrograms per cubic meter.

And I can tell you that, from my own experience in having measure mass loading at the Nevada Test Site, that volume corresponds to very closely what I had measured as well.

So the active outdoor environment now, we're talking about driving tractors, doing construction work, and driving bulldozers, and so forth.

Now the Yucca Mountain people I actually contracted to do some measurements with this, and they are not the first ones to do this. This has been an active area of work for some time looking at resuspension, doing farming activities, doing harvesting, and so forth. And the Yucca Mountain people also hired the Desert Research Institute in Nevada to come out and actually make some measures in the Amargosa Valley, which is just to the West of the Nevada Test Site.

And so their interpretation of those measurements and how they wanted to do their model was that they could describe it with the triangular distribution with the mode of 3 milligrams per cubic meter. And if you look at the relationship then, the ratio of an active outdoor environment to an inactive outdoor environment, it turns out to be three divided by .06, or 50 times higher.

So my feeling is that in order to be claimant-favorable, you can't assume that these air concentrations recorded by the air samplers represent what the workers were exposed to, but there is a substantial difference between the air concentration the workers could see and what the samplers see.

And then the final assumption was whether or not -- well basically the assumption was made that, between 1962 and when the measurements and the radionuclide inventory distribution program were made, there were no clean-ups, because the values from the RIDA are being extrapolated back all the way to 1963.

And of course if in the meantime they had been cleaned up, then you're extrapolating back with the wrong data. And in fact, it's clearly stated in at least one of the reports from MacArthur and Meade mentioned that the Nuclear Rocket Development Station in Area 25 had been cleaned up extensively before these measurements were made.

And I know from my own experience as well that there was an active program of cleaning up material that had resulted in contamination of the Nevada Test Site, and these clean ups were taking place over a good deal of this time.

The RIDA measurements were not made for purposes of dose reconstruction. In fact, they were actually made for use in helping to guide the clean-up and control. So in that sense, it was not an attempt to deduce what the contamination had been originally, but to consider what the contamination is right now, and to help assist in what might be done in terms of future clean-up.

The one final point I just wanted to make is related to Figure 22, and I think there is a misconception of what a controlled area at the NTS actually means.

Now some areas are very rigorously controlled, and some are not. And of course it depends on how serious the contamination is. And what I show in Figure 22 is an example of this is called a controlled area you see by the sign, but there is a road right through the middle of it.

So this is one example of control that's certainly not vigorous, and these kinds of areas are available for people in this case to drive through or to -- there's no physical barrier to enter into such a place.

So that basically is what I wanted to say about the paper, and if there are any questions about it, of course I would be happy to try and answer them, or whatever you would like to do.

MR. NETON: I'd just like to say one thing before the discussion starts, in that this relates -- goes back to the last meeting that I attended. There seems to be a fundamental misunderstanding of how we apply environmental dose in these programs, and that's what constitutes a worker.

A lot of the categories of worker you were talking about, people dragging things through the contaminated areas, and that sort of thing, would be covered by our occupational dose program. That would be workers such as, you know, I don't know what the categories of those workers are, but anybody that had a work activity that would be in the field would be assigned a dose based on the bioassay measurements, as opposed to this environmental thing.

And I would suggest that the

environmental doses that are being assigned are exactly the areas where those sampling locations will be. People that were in cafeterias, dispensaries, those sort of areas. This is not intended to be an occupational dose for a worker who may be a wiremen, or a driller, or any of those type of activities.

So I think you're way off the mark here Lynn in terms of how you've analyzed it, how you interpreted how we apply environmental dose.

Now that being said, I think there is some merit to the issue that you raised, and I think you can address some of those issues. But I think you really got to look at how we apply this dose.

MR. ANSPAUGH: I certainly hear what you're saying, Jim, and I guess my other comment about that is we're implying that all these people were in a bioassay program.

MR. NETON: I'm not. I'm saying that we would apply our co-worker model to those people, and that's the subject of an entirely different discussion that's going to happen later today. We've taken that co-worker model where we apply the 50th, 95th percentile of the bioassay workers.

But all those workers that you were talking about go out in the field doing drilling and dragging and those types of operations. So a lot of what you said is really not relevant to this discussion.

MR. ANSPAUGH: Okay, well I will defer my comment until we have an opportunity to discuss that, but I think I'm going to have some disagreement.

CHAIR PRESLEY: Can I intercede here. We've heard Lynn's comments, and I appreciate that. It is getting close to lunch time. Our discussions and rebuttals are going to take longer than -- as you know, we're not going to finish those up between now and lunch.

I propose that everybody break for

lunch, gather your thoughts. We'll come back here at 1:00, and we pick up on the comments and rebuttal on Lynn's proposal.

Do I have any problems with that from any of the Board members?

MEMBER CLAWSON: Just on --

MR. KATZ: That's fine, I told John that we would have this discussion, and then he would come after the discussion. I think John prefers that.

CHAIR PRESLEY: John, are you on there?

MR. FUNK: Yes, I'm on here. I -- Ted's already told me what's going on.

CHAIR PRESLEY: Okay, all right.

MR. KATZ: That's all right, Brad just wanted to be certain.

MR. FUNK: Yes.

CHAIR PRESLEY: We're going to break for lunch now, and then we're going to come back at 1:00 Eastern Standard Time.

MR. FUNK: Okay, let Lynn keep

going, he's doing fine.

MR. KATZ: Okay, thank you everyone on the telephone. We'll disconnect now and start back up around 1:00.

(Whereupon, the above-entitled matter went off the record from 11:50 a.m. and resumed at 12:59 p.m.)

A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

12:59 p.m.

MR. KATZ: Hello everybody on the phone. This is Ted Katz with the Working Group, Nevada Test Site Working Group, Advisory Board and Radiation Worker Health.

We're starting up again post-lunch. And just a reminder for everyone who's on the telephone, please at this point mute your phones or use star six, except if you are going to address the Board. Much thanks, bye.

CHAIR PRESLEY: John, are you on

there?

MR. FUNK: Yes, I am.

CHAIR PRESLEY: Okay, thank you.

MR. KATZ: Just checking, John, thanks.

CHAIR PRESLEY: Okay, Jim you were in discussion before I so rudely interrupted you.

MR. NETON: No, I was actually finished with the brief statement that I wanted to make, and then I turn it over to Mark and his folks if they had any -- unless anyone else has anything else from the Working Group to say first. But I'll have Mark and Mel and others comment on what our feelings are in the report.

MR. ROLFES: All right, mine is pretty brief. I just wanted to point out that some of the - I'm sorry - the numbers, the dose that we're talking about from environmental intakes here are really pretty small.

Just to show an example of the internal dose from the gross beta, one of the highest measured gross beta concentrations that was presented in Lynn's report was roughly 1 e to the negative fifth microcuries per cubic meter.

If we assume that that individual, an individual was breathing 2,400 cubic meters of air at the Nevada Test Site in one year, and was exposed continuously to that highest air concentration of 1 e to the negative five microcuries per cubic meter, that would give him an intake of roughly 24,000 picocuries of gross beta activity per year.

Now to assume a worst case scenario strontium-90, Type F solubility material, the internal doses resulting from such an intake per year for the highest non-metabolic organ, we're talking a committed effective dose equivalent, which is the dose received over 50 years, would be less than a millirem, it would be a fraction of a millirem.

The highest -- one of the highest doses would be roughly 190 millirem, and that is spread over 50 years. So we're really talking about very low doses, or very low impact on a dose reconstruction.

I can pass around, you know if anybody would like to see a listing of what I've done here. This is basically an intake estimate and the resulting internal doses and the integrated modules for bioassay analysis.

I don't know how long we would like to continue to go back and forth, because the doses that we're discussing are really pretty small in most cases.

The bottle that we've already got in our approved site profile for the Nevada Test Site basically is assuming that an individual was exposed to the maximum documented air concentration in any area of the Nevada Test Site.

We're also assuming that that individual would have been breathing without any respiratory protection factors applied, would have been breathing that air at that worse concentration for 2,000 hours per year.

So we've applied a maximum documented environmental air sample result with a maximum occupancy factor, essentially. And we've also applied maximum scaling factors to assign intakes of other radionuclides, which this accounts for the decay of short-lived fission products, et cetera.

So if we were to go back and look at the specific air monitoring results, look at a distribution of the results, rather than select the highest single air sample result.

If we look at a distribution, that would further refine the dose estimate for the intake amount and subsequent dose estimate.

Additionally, if we would actually consider the occupancy, you know, it's unlikely that one worker would stay in that area for the full 2,000 hours per year. It's much more likely that he could have entered that area for you know a shot, for say a month or something, perhaps.

So once again, that would reduce things by, you know, roughly an order of magnitude or more. So anyway, I feel like what we have done already is pretty strong and defensible.

I think that's what I have to say, so --

CHAIR PRESLEY: Go ahead, Gen.

MEMBER ROESSLER: Well thank you Mark, because as Lynn was talking, and he's got a lot of numbers here, and I was trying to digest the significance of the numbers, or what the magnitude or impact would be, and I just took one, because on this one chart, I've forgotten where it is, but it has to do with plutonium, and I think it was that 400 number. And I was hoping I didn't make a real big mistake, but I'll go ahead and you can correct me.

But I wanted to get a feeling for what that meant. It was given in terms of -- well it was about 400 microcuries per milliliter. Microcuries, yes, so I took that, and took it into becherels, because I can think in disintegrations per second. And I came up with on the order of 10 to the minus 10 becherels per milliliter.

I have a hard time picturing even being able to measure that number, if I've done it right. Sometimes I -- you can check me here. I know you're doing it. So picturing that that could have any kind of an impact, you know with the occupancy factors you're talking about.

So I was hoping somebody could take these kind of numbers and take them to what you've just done, and put it in perspective.

MR. ANSPAUGH: I would like to make a couple of comments about that. We know, for example, that the Baneberry event resulted in evacuating 900 different people. And we know that the people were screened, all 900 people were screened, and so some of them were sent for more detailed analysis.

And the highest dose that was reconstructed on the basis, not of air samples, but of the documented iodine in the person, is actually four rem to the thyroid.

So that's getting up to the point where it's interesting. And the other -- I'm not quite sure what you were referring to when you said the highest documented air concentration. Are you talking about the environmental surveillance program, or --

MR. ROLFES: What I had selected is from one of your figures. There were some ranges of gross beta concentrations in air.

MR. ANSPAUGH: Are you talking about my report?

MR. ROLFES: Yes, correct. Well it was from one of the -- it was what you had put together, you had referenced Brown and - I'm sorry, I forgot the other author's name.

MR. CHU: Glora.

MR. ROLFES: Okay, thank you. From one of the figures, I didn't write down which figure I selected that value of 1 e to the negative microcuries per cubic meter. But it was a gross beta concentration that I had selected. Just as a simple back of the envelope type calculation.

MR. ANSPAUGH: Okay, well my only comment on that, and I know Jim would have a strong disagreement, but whatever that number is, I would multiply it by a factor of 60 if I wanted to represent what was actually the dust-loading template. And we'll have to check some of these numbers, but --

MR. NETON: Well that number looks like it was Figure 4, which is the weekly means and ranges of gross beta activity and air samples in 1964.

And that's the highest end of the range of all of the air samples was 10 to minus 5. But anyway, yes. So of all the composite air samples, the range of the highest values is 10 to the minus 5.

I think when you talk about the dust-loading, though, then I think you're getting into what I would consider the occupational area of dosing, because again, this would not be assigned to someone who was a bulldozer operator, or something of that job category.

And we would rely on a co-worker model, which again, I know there's another separate analysis of that done by SC&A. But that would be based on bioassay measurements from the workers to assign dose, not rely on air sample measurements.

So these values would be applied to people who were principally in support roles that might primarily be administrative, clerical, those type of things. But anybody with a job category that is more defined as an occupation out there, doing the work so to speak, this model would not even come into play.

MR. ELLIOTT: It wouldn't be applied to those who were monitored.

MR. NETON: The bioassay samples would incorporate that exposure. It would reflect that exposure. So that's, I guess, where we're coming from.

MR. ELLIOTT: The 900 folks that were brought out of the Baneberry event, Dr. Anspaugh specified that there was some screening activity, and some were removed to have further monitoring placed upon them. So we would utilize that information.

MR. ROLFES: Right, that being the most important piece of information that we would use for a dose reconstruction in the first place would be the bioassay data for the individual.

That would likely result in a much higher internal dose assay, as you alluded to, when we would reconstruct someone's intake from their actual bioassay data, rather than an air sampling result.

MR. ANSPAUGH: Let me just make one remark about that, and that is, you have a lot more optimistic attitude about the frequency of the bioassay data than I do. And I realize that's a separate discussion for later.

MR. NETON: No, I agree with you. I mean, there are some -- you know, the report by SC&A on the table that we're going to hopefully get to today, but --

MR. MAURO: I think there's something very important conceptually in that it's almost like a way of thinking about the workers, the groups of workers that were at the site.

When we last met, I certainly understood that there were a group of workers that had, were under radiological control, there was access control for certain areas, because certain kinds of activities were going on in those areas where it was deemed you need to have access, you need to use controls.

People wore badges, and so forth and so on.

And then there were another group of workers at the site who were working in just more of a general capacity. They were out there and doing various physical things. But they are not a part of what I would call an access control type of operation.

And it was my understanding, and these could have very well have been people driving around, perhaps towing bulldozers and doing all sorts of physical activities out there, and not entering access control areas.

And the intent of your model was to apply to that group of workers. Now what I'm hearing, though, is that, if there were people out there on bulldozers doing whatever type of ongoing maintenance and activities that were taking place continually, they would fall within the group that you had assigned your occupational and internal exposures to.

And that's a new concept, because I think that the last time we spoke, we didn't parse it that way.

MR. MAURO: I need to be careful what I'm saying, because I have not reviewed this in detail. But my feeling is that would be the case, because you're in a heavy dust loading environment, I would agree with Lynn that these ambient environmental measurements were taken -- I like to call it ambient environmental, not occupational environmental. That's really what this model is intended to apply, in other words, ambient environmental exposure.

But someone actively involved in disturbing soil, digging things up, would not be covered by this, in my opinion, this model, this ambient environmental model.

MR. NETON: I hear you saying --

MR. MAURO: In fact, it would not even be used.

MR. NETON: From our last discussion, I forget the fellow that was sitting to my right, we talked about that.

And it was made very important to distinguish between two groups of people. But really now we have only three groups of people.

MR. MAURO: But see I guess my point is, how would you know. See how would you know. If you have a unmonitored worker, and he's got a job category in bulldozer operator, whether he really entered these areas all the time or not.

MR. NETON: So let's assume for the time being that you have a worker, and you're going to have to drop him in one of three bins. Okay, he's going to be this person that we know entered access control areas, was badged, and we have another worker who was working generally at the site, but was not under an active program, but he was doing work where he could have been kicking up some dirt.

And then we have this other category of worker that is the worker that you would use your model for. I'm not quite sure how you're going to fit, how you create those bins.

But now let's get to that third bin, which you're saying is the bin at which this particular model would apply to. I guess it's at that point then, within that context, that we have this third bin that we can put people into. Now I guess I would pose this question to Lynn.

In light of that, what we're thinking about it, this other group of people, let's say for example cafeteria workers --

MR. CHU: The Base camp people in Mercury.

MR. MAURO: The Base camp people in Mercury. So there are certain people that you have in mind that if you think --

MR. NETON: That clearly fall into that.

MR. MAURO: -- and now I guess the next question is, are some of the concerns Lynn that you had raised related to this model, would those -- are any aspects of those concerns applicable to this other category that's been defined for us, such as the Base camp workers, and some other groups of people, I guess.

MR. NETON: Dispensary, cafeteria --

MR. MAURO: Okay, is there any aspect now given what we just -- because I have to say, when I read your report originally, I was thinking more in terms of all of these people that are out there working who are not necessarily going into controled access areas, but were still out there outdoors working.

MR. NETON: And just to point out, there are signs in the middle of the road.

MR. MAURO: Yes, right.

MR. NETON: I mean, controlled areas. And you would certainly have to cover those areas.

MR. MAURO: And I would have to say, my understanding is, well that model that you have just described for ambient would be applied to those workers. But you're saying no, they wouldn't, and that's an important distinction.

So given that, let's move on and okay, this third bin group of people, is there anything about the model in light of your research that says, well there may be some problems there also.

MR. ANSPAUGH: Well I would like to make a couple of comments. I think this bin has very big boundaries, and that's part of the problem, and the other part of the problem we're really focusing on one out of the four points I had. And there's still the other three points.

And so whether the point number three about the relationship between these environmental air samplers and the people out in the field I guess is really subject to the vague bin boundaries.

When I read the technical basis

document, basically it says it's the dose individuals received at the Nevada Test Site while outside operational facilities, but on the site. And again, operational facilities is kind of a vague bin, too, and I think that's part of our problem here.

MR. NETON: I think you raise a good point there. We need to firm up what we really intend to apply this to. But, and I'm hoping I'm on the right path here, because I think how we define that -- and it was my idea that this would be --

MR. KATZ: Joyce, could you hold on? Jim Neton is still speaking.

MR. NETON: -- it's just my idea that this would apply to people where, you know, they are not disturbing the soil, you're not actively engaged in operations that would be disturbing soil, and that stuff like that.

MR. KATZ: Okay, Joyce go ahead.

MS. LIPSZTEIN: I think on the SEC evaluation before us, there were four scenarios that were described, worker group scenarios, and the environmental models would be applied to scenarios three and four. There are three of them on the evaluation report, and that would comply workers from the weapons safety test, nuclear rocket development, the combination facility, radiochemistry lab, well logging operations, radiation instruments calibrations, low level waste, and many others.

So that's what basically should be the evaluation report that for those group of workers, whenever the bioassay results, they would apply it in environmental model.

MR. NETON: I didn't catch all those facilities, but it sounded like it was fairly encompassing. But again, I think we need to interpret what they're doing.

I mean by the job categories, I keep going back to thinking about this tip that we talked about yesterday that defines the categories of workers to which environmental versus the 50th percentile or maybe the 95th, or however we parse that out is applied.

And that's defined in this Technical Information Bulletin. I have to admit that I can't recall exactly what was said in the evaluation report, and how that would apply here, but suffice it to say right now, let's for sake of argument suggest, and I think John has brought this up, that if these were applied to areas where there were non-disturbed soil, because clearly in my mind you can't apply these environmental samplers to areas where people are actively disturbing soil, because like you suggested, I mean the factor may be ten or more would be more appropriate.

But again, that is one issue out of four though, and I think maybe you can put that aside for now, because if the model is not valid to begin with, then that's what Lynn is suggesting based on these other three factors, we need to maybe talk about that and why, you know, why we still believe that the maximum plutonium values that we've used is bounding for let's -- for argument purposes apply to this class of workers the people in cafeterias, dispensaries, Base camp workers, that sort of thing.

Because clearly we need to be able to define how those people were exposed. Ultimately we could use bioassay data for other classes of workers if we can come up with a valid co-worker model, which again is a subject of another discussion.

I don't know if we have anymore to say on Lynn's analysis other than the fact that, I mean we've had this for a week, so we haven't had time to give it a detailed analysis and compare our value in relationship to what, you know, what Lynn has said.

So maybe that's where we're at right now is that we're not right now willing to say that this model is invalid as suggested, but we need some more time maybe to study it. And that's what we have for now.

CHAIR PRESLEY: Does anybody else have anything?

MEMBER CLAWSON: I'm just -- I'm still, I sound like the rest of us. I'm trying to figure out how this would apply as far as people wise and so forth, because, and the reason why I'm saying that is because I remember one of the petitioners talking to us that, well they called me out as a welder, but my area was the central area, but I was never there, and that's where I was based out of.

MR. NETON: Right, and that's what I'm talking about. I'm sorry to interrupt.

MEMBER CLAWSON: Yes, and I'm just trying to get a handle on how we would capture this one way or another, because many of the people that classified themselves as clerical or whatever, well they are the ones that went out there and helped take the readings and so forth like that out in the field and so forth.

And I'm just trying to -- I really can't get a clear line of how we would separate it.

MR. NETON: And I think maybe that's my action item as a result of this which is one, to clarify the boundaries as to where this model would be used, and then secondly, to react to Lynn's analysis on a point by point basis, and justify what we're doing, or agree that, you know, we need to make some changes.

MR. ROLFES: One of the important things that we would have to consider also Brad in there for looking at what the individual was doing is we would have to take a look at his external dosimetry records and for example his access logs to see if he had entered a radiologically controlled area.

That would be like a starting basis for us to determine whether he could have been exposed to higher concentrations of airborne radioactivity.

What we would have to do then is look to see if he had bioassay results, and if he did, those would be the first source for us to do a dose reconstruction for his intakes.

It's -- you know, if the individual did not enter a radiologically controlled area, and was issued a dosimeter, and never had any positive dose, we would probably be okay just assigning ambient internal exposures based on what we have in our site profile.

It's, you know when we complete a dose reconstruction, however, even though we have these ambient environmental intakes in the approved site profile, we have typically used higher air concentrations to assign as an overestimation for, you know, any work that that individual might have done.

For example, our TIB 18 approach, we've assumed that certain workers have entered radiologically controlled areas, and could have been exposed to some fraction or even maximum permissible air concentration.

So if there's uncertainty for, you know, whether a worker entered into a radiologically controlled area, and may not have been bioassayed, there are other approaches that we have used for dose reconstruction which are much -- well so there are other approaches rather than just --

MEMBER CLAWSON: And I understand what you're saying. My issue is, and this has come up several times, you can go out through that whole site, and it's like one guy says once you pass through Mercury, you're really in a radiological control area, because everything else -- now when you get up in the tunnels, that's a totally different entrance into radiological controls.

They've got kind of different boundaries, and we really kind of have these at all the sites kind of like this. And I guess the terminology of radiological control area --

MR. ELLIOTT: They have access

controls that they relax at times. We have log books that would show that, in certain instances, they allowed individuals to go into an area that, you know, previously was a very strict RAD controlled area, but they have relaxed the controls on it to allow that entry for those specific activities.

So I think you have to understand, you know, that operational process dictates what happens to an individual whether they are monitored or not monitored for that access. Am I correct in that?

MR. ROLFES: Exactly. Something that's a radiologically controlled area one day could be decontaminated, and the next day it could be open to anyone who needed to conduct work in that area.

There is still typically documentation of the entries into those areas by --

MR. NETON: I think we also have to be aware of the fact that what's called a radiological control area varies depending on the time frame we're discussing.

I mean, I'm looking at this picture that Lynn apparently took on May 23, 2008. That's taken in accordance with the DOE regulations of today, which would imply that anybody who has a potential to receive 100 millirem of exposure you have to label as a controlled area.

That clearly would have not been the case back in 1962. It's a very different definition. So you know we have to be careful what we're talking about and looking at what was defined as a radiological area back then, you know, prior to 1980s they had a very different definition.

MEMBER CLAWSON: Yes, that -- maybe that's --

MR. NETON: In fact, I'm not even sure it was consistent.

MEMBER CLAWSON: Maybe that's why I'm having a hard time getting my hands around it, because what we consider a radiological control is really totally different than what --

MR. NETON: Well yes, in the 60s there would have been people at DOE facilities eating their lunch in areas that are now restricted access. I mean so it's very different.

MEMBER CLAWSON: Yes, well we enter through the gate.

MR. NETON: You're in a controlled area right there.

MEMBER CLAWSON: Yes, but that's just for every general thing, because you're right. Rules have changed and so forth like that, and I guess that's what I have a hard time -- control areas, that meant that there was something there, somebody, something to stop you from going into those areas.

And that's -- so we need to look, we need to look at how -- you're right. They were changed over the years and so forth like that.

MR. NETON: But I strongly agree that we need to also go back and very clearly define who's covered by which model here.

I mean I agree, that's the cause I think of a big disconnect here. And so we're going to revisit that, and shore that up. And then we'll also evaluate, in light of that, we'll look at Lynn's model, or the evaluation of our model and react to it.

MR. KATZ: Hello Arjun, go ahead.

MR. MAKHAJANI: Yes, sorry I didn't know it -- a couple of things, one, to react to what Mark Rolfes just said about Lynn's model, and how we might check it out, that if there weren't an external dose, there might not be a concern for internal intakes.

I think a great part of how I heard Lynn's presentation was that you'd expect episodic exposures in various kinds of situations like dragging a drill across the desert, or vehicles, or accidental venting and so on, and resuspension in the short term due to bursts of wind, to people working on the outside.

So I am a little skeptical about that approach to checking on the validity of what is being done. And also, this is going to be reinforced by what we're going to talk about in terms of the internal dose investigation.

We did not find that external and internal doses, or recent external and internal dose measurement frequencies were related. And so that's a kind of caution.

The other thing is, Joyce did read out a rather long list of worker types, some of which, some of whom would be clearly covered in terms of being vulnerable, or having potential overexposure in the situation that Lynn was talking about.

So I really agree with Jim Neton that there's some boundaries that need to be put around. And then the final thing of course you all already said is that there ought to be other points in Lynn's critique of the model that we addressed, independent of who gets assigned an environmental dose.

CHAIR PRESLEY: Okay, John?

MR. KATZ: John Funk, are you still with us?

CHAIR PRESLEY: John?

MR. FUNK: Okay, I got my mute off. I'm having a real hard time with it.

MR. KATZ: John, do you want us to now raise points that either haven't been covered or that you want to emphasize?

MR. FUNK: Yes, I've been sitting here chomping at the bit.

MR. KATZ: Chomping at the bit, that's good.

MR. FUNK: Oh yes. In fact, I've been sitting here chomping at the bit. I get a little bit of problem when we hear this bulldozer mentality. There is a lot of other people out there besides bulldozer operators.

In fact, the carpenters were down in the hole building a form for the tower pad, which is, by the way, four foot deep, and your head was about 18 inches above the top of the ground while a lot of this grading was going on around these paths.

And I'm talking about, they graded these paths so you could play golf on them. They were perfectly flat. So there was a lot of earth moving activity.

And as to what Mark's comment about you would have to spend 2,000 hours out in the field. Well I've got some news for you, I did spend 2,000 hours a year out in the field and sometimes more because we worked on the field crew. We were always out on one hole or another, and when you go into Area 3, like they said when you come over past gate 200, you are in a radioactive area. And when you go into Area 3, if you look at the maps from the surveys that were taken out there, it was the dirtiest area on the Test Site.

And we had the most tests in that area too. That's almost everywhere you went, there was a possibility for exposure from it any time that dust blew at all.

So, I got a little problem using that word for bulldozer operators only. That was carpenters, that was laborers, there was teamsters. There was equipment operators. So we got more than just bulldozer operators.

And we seem to have that same problem in the tunnels when we're talking about reentry. Listen to you guys, the only place you ever did a reentry was in the tunnels. There was 50 times more reentries done in the flats than was done in the tunnels. It was done by totally different people.

In the tunnels, the miners were the predominant force. In the flats, it was a crew that was made up of a composite group of people of carpenters, iron workers, laborers, teamsters, and operating engineers. There was no miners unless there was a shaft in the flats. And you only had -- shafts were very rare.

The Q1A was a shaft, but Q1A was closed I think in a year, I think it was only opened up towards the end of testing there.

So, when you talk about reentry, you got to start looking into issues of these other areas of the flats as well as the tunnels because there was a lot of reentry done down there too.

Excuse me, I'm having a little trouble breathing, I'm on oxygen. Let's see what's the next thing I want to go into here.

Co-worker models, he was talking about bioassay. I worked in the flats for four years. I know for a fact that I was exposed on three different occasions because I was chased out of the area by LASL. RICO's people told us to go in and work. LASL people would come in and chase us out.

I was never given a bioassay. I

don't know anybody else who ever was. And even PICs, nobody in the flats was ever given PICs. There was a few guys on the bowshot who got PICs, but they were the only ones who got it or nobody else.

And I went into the area where the guys were wearing the PICs, but nobody gave me one. It was a doghouse under the drill bit where the rad-safe guys picked up the core sample. We used to take him boxes back there all the time to put his soil samples in. We built his tables back there. And we'd come and went there all the time, and they never gave us any PIC to wear over there.

And the only controlled area, you keep talking about controlled area, if RICO had all the rad-safe people that you're saying they had -- now you got to keep in mind, sometimes we had nine to 10, 12 tests going at once. RICO did not have that many people to man all of these places that you are talking about.

They had to -- The rad-safe area would have had to been fitted - extended on the test site. In fact they were the less - the least, it was just a handful of them out there. Most of them were just trainees. I don't know where all these people were at that you're talking about. I sure as hell never seen them.

I was down there four years and like I said, I don't know anybody given a bioassay so I don't know what you're going to use as a co-worker. You can't use Area 2 co-workers for Area 3 because it's apples and oranges. Lawrence Livermore did things totally different than what LASL did them and a totally different time frame and there was nothing even similar.

Lawrence Livermore used a drill rig to drop the bomb in the hole, LASL used a cable and a crane. So everything is different the way they did things. So you can't be using -- I don't know where you're going to get the co-workers from.

Now let's talk about another thing, full-body scans. Now mine -- I got a lot of -- I'm an advocate for a lot of people, so I get their medical records. And then I see an awful lot of full-body scan forms that show no results. And I just happened to look at mine, and I got one of them in mine too. I've got two or three of them in there, full-body scans, papers with no results.

Well, I've also got in my briefcase three refusals of a full-body scan. However, they are not in my medical records. So the dose reconstructor does my dose, he looks down and he says well this guy had a full-body scan, no results, you know, he didn't have no problems.

What he doesn't know is I signed a refusal for that full-body scan, and that document shouldn't even be in my medical records. And I've got them, I'll send you copies of it if you want. And I don't know anybody else who did the refusal that have them in their medical records either.

So you're talking about going back to the records. There's a lot of these records that are missing and as far as culinary people is concerned, being in a controlled area, there's a contract on the test site that any time people were working in excess of five hours without a break RICO had to serve them a hot lunch in the area they were working, and that included in the drill rig too, in the post shop.

So they couldn't stop that drill. The guys couldn't stop working. They'd bring the food right in to them. And there would be culinary people that brought it to them too. They'd take it right into the tunnels too, past the RAD control points.

So, just saying that people from the culinary were never in a control, never in a dangerous area is absolutely wrong.

And even if you go to the Baneberry

report on page nine and ten. Let me see if I can find the document, you're probably aware of one of them. I'm referring to -- just a minute. Document NVO-410-29 on pages nine and ten.

You guys need to revisit this document and read about it because what you're going to find in here is that the culinary cleaned the mess hall up after Baneberry. The maids cleaned up the living quarters, washed the blankets and everything. The janitors cleaned up the recreation room and anywhere else. The warehousemen cleaned up the warehouses, and the fire department actually played one of the major parts in cleaning up the site. They washed all the roads down, washed all the roadsides down. They made a discovery that their X foam that they used for petroleum fires was also a great radiation abatement process.

However, this does not say so on the firemen's job classification by the way.

And they were used quite extensively at the tunnels. Every time they had a leak up there and they had to bring the equipment out to decontaminate it, the fire department had control of the foam. They had the machine that put the foam, and they did most of that. But it's not on their job classification.

And speaking of job classifications, also heard somebody talking about a welder. Please, if you're going to talk about a welder say what kind of welder you're talking about because every craft on the test site had a welder on site. We had a welder, our department had a huge welding group. The pipefitters had welders, electricians had welders, the miners had welders, even the operating engineers had their own welders. And I think the only one didn't have one was the teamsters.

But when you're talking about welders say what kind of welders because there was a lot of different kinds of welders out there. That's the whole problem with this whole thing is they used co-worker models from other crafts because they say he was a welder. They don't identify what kind. What kind of welding the carpenters did would be nothing like what the pipefitters did.

So that's where, we're getting a lot of confusion now with the job classification. And I'd like to finish out by saying these air sample stations were never intended to be used in the manner they are being used. There wasn't enough of them.

I sent you an 18-page report. I detailed the locations of them, the distances. I've also described the buildings, the obstructions, what they were open to. And I don't see how any information gleaned from this could ever be of any benefit to figure out what a person was ingesting.

And I'd like to make one other last comment. You're very cavalier about what you say that there was no possibility of anybody getting sick out there or getting radiated and to listen to you guys, they might as well turned into a park because there is a lot of danger out there and the Government knows it, that's why they got the signs up, don't go in here.

They got a great concern because the place is not habitable. So, for you to say that -- being so cavalier that there's nothing out there to worry about and the percentage is low, believe me it's not. And there's a lot of hawks in the Pentagon just waiting for this report to come out so they can put the nuclear bomb on the first-strike option and the report that they're going about right now is going to give them all the ammunition they need.

Now, I'll finish. Thank you very much.

CHAIR PRESLEY: Thank you John. We appreciate your comments. Does anybody have any comments to John's --

MEMBER MUNN: This is Wanda, I have one question, a terrifying question. John, thank you for the material you sent to the Board. Excuse me. It's been very helpful. One of the -- perhaps I did not quite understand what you were saying earlier when you talked about refusal of a full-body count.

Did I understand you to say that you were offered three whole body counts and refused them?

MR. FUNK: Yes Wanda, and I tell you why.

MEMBER MUNN: That was my question, why did you refuse a whole body count?

MR. FUNK: I will tell you exactly why. You were only offered the full-body scan when you were off payroll. Otherwise, we would clear the job when -- the only time you were offered body scan was when you were laid off.

So, you would go down to Mercury

and you would clear out everything and the very last thing you would do is go to payroll and you were on your own time. So we had to go up to Mercury Medical for a full-body scan.

It took -- the way they did it it took one hour. You went on a room, laid on a bed, you closed the doors and turned it on. One hour you could leave. But you weren't getting paid for that.

And the second reason they would not give you the results of it after the gave it to you.

And the third reason, I asked a guy how it worked, he said, "Hell I don't know. I just turn, I just close the door and turn it on and turn it off." Now, you going to let somebody x-ray you that doesn't know how it works? I said no, I wasn't going to do it.

So I said no, I wouldn't do it. So they have a regular form that you have a right to refuse it, and you can sign the form. And I have three copies and that's the only reason

I refused it.

MEMBER MUNN: That's interesting, thank you for that information.

MEMBER CLAWSON: I've got one question John, this is Brad Clawson. A lot of talk has been about access logs and so forth like that.

In your experience out there, did you use a lot of those going in and out of areas or what?

MR. FUNK: Well, we had -- it depends on what kind of access you're talking about. Now, on the tunnel access they did have -- when they did reentry they did have control points where you had to go back and forth through inside. They usually had a station where they had industrial hygienists and maybe a RAD safety trainee.

And they did log you in places in the hot areas in the tunnel. But in the flats, the only access that you had -- well access points, control points was at the post-shot.

And the way the post-shot worked, they put a snow fence around the back-drill and they'd make a complete fence and they had the RAD access points would be directly pointed at the snow fence area. Now that didn't cover the whole pad, that only covered the drill rig and the immediate area around the drill rig, which is probably about maybe a 200 feet in diameter, area.

The rest of it was not controlled. And when you got in -- when you went into the drill rig you did have to walk inside and put rubber boots on and put paper coveralls on and when you came back out, you had to walk through the loop and they had tape on the floor to take things off your boots. And just left the boots there and picked your own boots up and went on.

Now other than that there was no control point. There was no rad-ex control point they said they had because I worked there four solid years and I was on the field crew, I was in the field all the time.

I might work at nine, ten different locations and that could be verified with my time cards. You'll see on my time cards that I'm all over the place. And I also worked in the tunnels as well as in the flats, so I know what happened in both places.

Like I said we're getting tunnel mentality on the re-entry. There was a lot more re-entry done in the flats and quite differently. In the tunnels, the miners were the predominant craft that did the reentry because they had to cut out the plugs that we put in and but down in the flats, there was no miners unless you were working on a shaft shop, where they had to go down the shafts and then back in the tunnel like Q1A. Everything down there was done by carpenters, ironworkers, laborers, operational engineers.

Okay, very little rad-ex control out here. There is -- and back in them days when I worked there there weren't even signs up. And in fact, you're talking about a rad-ex control right across the road from Area 3 coming up where they called the Mercury Highway. There used to be a road that used to go up through there and going up to the -- what they called the batch plant going up to 19 and 20. And normally that road was closed all the time because that was a radioactive area.

So, when we had a job up to 19 and 20 they would open that road up for us to go up through there because otherwise we would have to drive all the way up to CT-6 and take the new road all the way back, which is about six miles out of the way before we even got going up to 19.

It used to take about an hour and 45 minutes to go from the shop up to 19. So, in order to cut down that extra eight miles off the trip, they'd open up that road and let us go up through there.

So, it wasn't that the radiation had dropped. It was just that money was dictating them when they opened areas when they did.

MEMBER CLAWSON: Okay, appreciate it John.

MR. FUNK: Thank you.

CHAIR PRESLEY: Okay, anybody have anything else on this?

(No response.)

CHAIR PRESLEY: Okay, we're about an hour and a half, two hours behind. The next item is SC&A's presentation on the coal worker model.

Does anybody besides the Chairman need a break for about five minutes?

MEMBER CLAWSON: I do.

CHAIR PRESLEY: Let's call about five or ten minute break. We'll be right back.

(Whereupon, the above-entitled matter went off the record from 1:45 p.m. and resumed at 1:55 p.m.)

MR. KATZ: Folks on the line, just to let you know, we're getting started again. I realize there's that obnoxious beeping. Someone has put us on hold. We're going to get them to disconnect that line. That should happen pretty quickly. But, we'll just have bear with it until -- any way we'll get that taken care of as soon as possible. We've asked for them to disconnect that line.

I mean, I could mute all lines coming in, if you want to continue with no one else on the phone who needs to speak right now. I can mute all lines coming in so that we can talk. But, they'll still be hearing you on the phone line.

MR. FUNK: Ted?

MR. KATZ: There it goes.

MR. FUNK: Ted?

MR. KATZ: Yes?

MR. FUNK: This is John, can I make a quick statement to Brad. He asked me a question that I didn't fully answer. I won't take more than a minute.

MR. KATZ: That' fine John, go ahead.

MR. FUNK: Brad.

MEMBER CLAWSON: Yes.

MR. FUNK: About your rad-ex control question, in the flats, one of the things I forgot to mention was that in the flats we did the reentries in a series of about seven to eight reentries.

The first time they went to do a site assessment, I'm talking about the area managers and superintendent and a rad site man.

And then the second entry we do that right away and we would get the doors open to the buildings because they were usually all over the place, you know, from the shock, it didn't come down level, and they had to get the data out.

The third reentry we went and put

the hard rocks under the buildings and level them up and get the flow data out.

The fourth reentry we would go in and start moving the alpha station test readers out. The fifth time we went in was when we set up the rad-ex control points for the phoshot. We had already usually worked enough two to three weeks before the phoshot even got there. I forgot to tell you that part.

MEMBER CLAWSON: Okay, I appreciate that John, see, one of my issues is the term that we use as a control point and so forth like that I think is -- especially in the Nevada Test Site is used totally different.

Being an ex-miner myself, I know that in the shafts a lot of times they use control point not just for the radiation but it was --

MR. FUNK: No, we was inside --

MEMBER CLAWSON: -- whose inside and outside and that was a mining law. But now I get down into the flats and using the same terminology of control points and controlled access, I think it kind of varies.

And I do agree with you, I was just trying to get a clearer description of that because some of the people we've talked to have expressed that they didn't have a lot of control point paperwork to go out and go into a lot of these jobs unless it was right after a shot or so forth.

MR. FUNK: Well, they did do brassing out there in the early days. Where they had to brass in and brass out so they knew how many people were on the ground. But they did away with the brassing shortly after they started those.

Now I have worked on jobs that -- like the same way with old copper mines and different places like that where we did brass in and brass out. And the whole purpose was to know who was inside and know who was outside.

MEMBER CLAWSON: Right, I appreciate that John.

MR. FUNK: All right, thank you.

CHAIR PRESLEY: Okay, are we ready to continue?

(No response.)

CHAIR PRESLEY: Okay, SC&A's presentation on white paper on the NTS coworker model. John, are you going to --

MR. MAURO: Yes, I guess I just introduce that this was a major investigation that we were asked to perform, and it has -- just a little introduction. It has to do with the evaluation report on Table 7.1 which is an evaluation report on Table 7.1 was a list of 100 workers that were selected by NIOSH as being good, a case of workers to use -- to go into and use their bioassay data as a means for building a coworker model that would be developed and then applied to other workers. And a judgement would be made that once you have all of that data you could decide amongst that data set which ones would be -- which individuals would be assigned the high-end value, the median value and so forth.

Our mandate, and there were a couple of aspects here. But I guess by and large it was to take a look at that data and see if, in fact, that the dataset was fairly complete in terms of characterizing the internal exposures these workers may have experienced.

Also, it was an important premise. It was assumed that the reason those 100 workers were selected by NIOSH was they had the higher external exposures, cumulative external exposures. And there was a general sense that, well, those are likely to be individuals that have the higher internal exposures and would therefore serve us well as the dataset for internal exposure.

So we were asked to look into this matter. And the lead on that -- there were two individuals in a very important role. We had was of course Arjun led the effort. We had our statistician involved, Dr. Harry Chmelynski, and Bob Barton did a lot of the heavy lifting in terms of going into the records and downloaded the records.

So, with that, and of course you should have what you have in front of them, something call a white paper, and it's dated October 21, 2008. I don't believe this has been PA-cleared, and at this point I'd like to turn it over to Arjun if he wouldn't mind.

MR. MAKHAJANI: Yes, thank you John. Well, as John said, this involves a major effort to collect all of this data. I will, you know, after I introduce it let Bob Barton describe that process to you as to how it was collected, documented, and checked.

You have, you have the first and main set of spreadsheets that came out of this thing. It's a somewhat larger collection of data. But you have the main thing that goes with the white paper. We will be communicating the rest of it to you shortly. But the main relevant part of it that goes to the heart of Table 7.1, just to remind you what Table 7.1 was, it was in the context of a NIOSH statement that -- about a somewhat under a third of the records that were supplied by DOE for claimants of the Nevada Test Site had "some internal dosimetry data."

So a little over two-thirds did not have any internal dosimetry data. And so there's a question of a co-worker model, and NIOSH selected 100 claimants with significant total whole body photo exposures cumulative of above 1 rem.

And I'm now just reading from the evaluation report. This is on page 10 of the white paper. There's a long quote from there. Sorry about the long quote. But I thought it was important to give you the full context of what NIOSH was trying to say.

NIOSH made a number of statements in that paragraph, and so we try to evaluate those statements. And in the bullet points just under that and on page 11. So one is, with the frequency of internal monitoring correlated with external exposure.

The external exposure is considered a proxy for internal exposure potential, then we should see that external exposure triggered bioassay monitoring or some other kind of internal monitoring. So, a lot of that analysis is done and that is actually being recorded.

We examined whether the workers -- this is in attachment C as well. Whether the workers in the NIOSH 100 dataset were consistently monitored or in some form by --

What you see there is urine bioassay there was really not very much other internal monitoring although, you know, in vivo monitoring, but we didn't find any significant rems in the in vivo dataset.

CHAIR PRESLEY: Arjun, excuse me, could you speak up please.

MR. MAKHAJANI: Sorry?

CHAIR PRESLEY: Can you speak up please.

MR. MAKHAJANI: Okay, sorry, I'm not speaking loudly enough. Can you hear me now?

CHAIR PRESLEY: Yes.

MEMBER ROESSLER: And tell us what page you're on in the white paper.

MR. MAKHAJANI: I am on page 11. There's a set of four bullet points. Let me start over on page 11.

MEMBER ROESSLER: I got it.

MR. MAKHAJANI: And there's a long quote from the NIOSH evaluation report. We say what we're going to examine in terms of the NIOSH statement about how they are going to go about doing the internal dose reconstruction and bounding the internal dose in the context of the SEC.

And this examination is done in the context of the SEC because either you have to bound the dose for the whole set of workers or do a dose reconstruction more accurately than a bounding dose.

And the four points that we examined derived directly from the NIOSH statement, so the selection of 100 was according to those with significant external exposure. So we examined whether the frequency of internal monitoring was correlated with the external exposure.

In other words, did a high film badge reading, for instance, trigger a bioassay. Whether the workers in the NIOSH dataset were consistently monitored with bioassay or some other internal monitoring.

Whether the rad-safe workers were representative of the groups with the highest exposure potential because that's one of the key points in the NIOSH dataset, and that's very important because of all the groups of workers, really the rad-safe were the most and best monitored in terms of being followed.

And whether the quality of the data is adequate to support internal dose reconstruction.

And we also divided the period of the SEC into four different periods. And there's, you know obviously some judgment that goes into that and you could divide it into two periods or maybe three periods. But in our judgement, you do have to divide it into periods because working conditions and monitoring conditions were different in these periods, `63 to `67. And when fuller bioassays started -- it was instituted in NTS `68 to `70. And that's ending date is the last date of a major rendering. And that's what I was explaining to you all.

`71 to `80 and `63 to `70 also had quite a lot of -- quite frequent, more than four per year. And then `70 until `80 relatively low testing period and `81 to `92, where the testing frequency went down even from that. But still, the monitoring actually seems to have increased in many cases.

Now you can parse the periods differently, but at least the `63 to `70 period should be separated from the later periods, in our view.

And so that was the framework of our examination. We did find that the rad -- and then we also selected 120 workers randomly. We wanted to do a job category evaluation with which we could make some statements with confidence.

And is Harry Chmelynski on the call?

MR. CHMELYNSKI: Yes, I'm on here.

MR. MAKHAJANI: Harry will you explain to the Working Group how we did the 120 selection?

We had six job categories and then there is a selection process at random --

MR. CHMELYNSKI: Yes, just did a simple random sample.

MR. MAKHAJANI: Okay, so we did a

simple random sample for each six job categories and we had 20 workers in each job category, and those six job categories are listed.

We had the rad-safe workers. We had laborers. We had welders. We had wiremen, miners, and security.

Now in response to what John Funk just said, we did not distinguish between different types of welders. But I don't think it would have made very much difference because we didn't find very much data for any welders.

So we had two sets of data basically. We had the NIOSH 100 data, and then we had a 120 claimants, for who we examined data at length into six job categories, one of which was rad-safe. So we were able to compare these to each other and also with the NIOSH 100.

Let me give you sort of the bottom line conclusion on this. Is that we did find the rad-safe workers were the best monitored. The data in most of the other categories were fairly sparse. We looked at five categories of, five categories of data: plutonium, gamma, bioassay, gross fission products, tritium and iodine. We looked at three isotopes of iodine and compiled all the data.

And the Working Group should have the spreadsheets in which those data are compiled. And every single data point was looked at. Maybe Bob Barton can describe the process by which the data was compiled.

MR. BARTON: Sure Arjun, this is Bob Barton and like John and Arjun have indicated, our intent here was faithfully capture what data there was out there in each of these select claimant files.

Mainly, what you see in this report is urinalysis data. And as far as QC goes, the records would be originally gone through and I just have the points collected into the database. After that our data capture team would went to two levels past that to check specifically the bioassay data points to try to ensure that they weren't being incorrectly transcribed. And then the last layer of QC was to look to make sure that we weren't missing or not interpreting correctly or missing chunks of data or, you know any of that sort of thing.

If you want specific information other than the bioassay data that we are looking in this report, it's all pretty much outlined in Table 1.

We looked at all DOE response files, tried to transcribe what was contained there as accurately and faithfully as we could, the only exception being the medical expert file we do not look at.

And numerical values were only pulled for annual external exposure and then what was contained in the internal monitoring file. This does not include lung counts, which we did not find many of. And we do not transcribe any data points for whole body counts. All we did was indicate whether there was a whole body count and whether we identified any results in the file associated with that whole body count.

MR. MAURO: Let me add one thing. I have gone in this process one of the -- as sort of an observer. And I'm just going on and found that when you go into these efforts and you start to look at these records and extract the information, sometimes it's difficult to interpret exactly what the information meant. There's notations used, there was a lot of information that needed interpretation.

And during this process, I believe we interacted closely with Marl Rolfes who helped us make sure that when we assigned a given number of what we thought it meant that we did that correctly.

So I think we did everything we can to present a data -- to build a database that accurately and faithfully represented the material that was in the records. And so that's the true value, this big database that went, in effect, we have the group of 100, we'll call it the NIOSH 100 and we'll call the SC&A 120.

These are people that we went in and extracted the bioassay data and put it into a form that we can pose questions to and ask okay, and look at and start to make some judgements related to -- for example, is there a relationship between the -- for people who have the higher exposures, are they internal exposures or they also the people that have the highest external exposures.

We asked questions about, amongst the group of 100 do they -- are there other groups like, for example, the wiremen or the welders. Is it possible that they have some measurements, whether there's plutonium or other readings that were higher than let's say the highest values we saw amongst the NIOSH

100.

So, we have a lot of data that we can ask questions of. We asked our own questions and processed the information and Arjun is going to summarize what we found regarding the inter-comparisons between these different groups.

My guess is, there may be other questions that you may want to pose to this data. Also of great importance is Joyce Lypstein took a real close look at the data to see if there's anything about some of the measurements, especially the plutonium and urine measurements that led us to question perhaps there was some data quality issues.

So, I guess I just wanted to hear that a little bit more to preface that there was a large effort that went into compiling the data and the true value of the data, and now what you, you know what we're trying to disclose is what at least we saw and what the data spoke to us and what it told us.

So, Arjun if you'll excuse me --

MR. MAKHAJANI: So let me summarize the quantity aspects of the data, and then I'll hand it over to Joyce to describe some of the quality concerns that we had.

If you go to page four of the report it summarizes the data quantity aspect of the data without regard to time period, and that caveat is very, very important. That I'll show you the polishing by time period and summary for plutonium, which is also a little bit below, table 7.1 and table 7.2 and 7.3.

But you can see at once that really the largest number of data points are with the rad-safe group of workers and that's also true in the NIOSH 100 set. NIOSH had 21 rad-safe workers and there are 100 in most of the data points except for tritium. Most of the data points really do relate to the rad-safe group. There are some exceptions.

But when you look at the job-specific categories that we did, 20 in each randomly selected, but plutonium you'll see that there's really no significant data that you can make statistical or sensical statements about.

Welders had actually zero, of 20 welders there were no plutonium samples. In 20 wiremen there were no plutonium samples. Laborers had only two and miners had eight. And that's really the gross number in which any sampling is indicated.

And when you get down in the weeds and look at what that -- what the context of that eight is it becomes even more questionable as to the actual number of useable data points is less than that.

And you see the same pattern repeated in most of the sampling categories. There is an exception and you see the security guards had a lot of plutonium measurements, it would appear. But almost all of them were in the 1980's and that's the value of actually separating this by periods because the periods were radiologically different. It's very important to do that.

But we kind of wanted to give you some kind of overview to show you where at least the records could be plentiful. Again, in the dose gamma, you see there are not very many samples, especially when you see that there are 20 workers many of whom work for quite long periods of time.

MR. MAURO: Excuse me Arjun, would it be helpful to direct everyone to a particular table? For example I'm --

MR. MAKHAJANI: I thought I said that. I'm on page four. You see laborers has one tritium samples; 20 laborers working there for many years had one tritium sample among them. Among the welders, there were 12 and among the firemen there were --

Now, miners had many tritium samples, and this is a very important dataset because you can see in summary that consistently all of the values for the miners, whether the maximum 99 percentile, 95 percentile, were greater than the rad-safe dataset and also the NIOSH dataset.

The NIOSH dataset is sometimes comparable because the NIOSH dataset also had miners in it if you're really comparing, for the most part, miners to miners.

You can see iodine data also quite sparse. And then down below over to the next page on page six you'll see one -- this is an example summary table. You have more of these tables in detail in the attachment in Attachment A.

But if you look -- I looked at the NIOSH 100 dataset and took out the rad-safe workers and rad-safe broadly defined, you know health physicists, health monitors, radiation monitors, radiation control people and so on.

And you look at these other categories of jobs, you see that there are almost no plutonium samples except for the five -- among the four samples for the miners, three have no readings, one is noted as a zero reading for a plutonium-239 and gamma and counts per minute. So out of the four, there's really no interpretable result.

And what we've given you the raw numbers as they appear. And so really there are five results for security guards in the 1980's and almost no -- and three for laborers in the 1970's.

In the `63 to `70 period when there many ventings and, you know, much contamination some of the things that we were talking earlier about in Lynn's presentation that essentially no usable data.

And so the significance of this is how do you compare, how do you determine whether your rad-safe workers for whom you had data had the highest exposure potential if you have no comparison points.

And we know, for instance, that miners had higher tritium readings, pretty consistently than rad-safe workers. The scattered measurements that are indicated as higher in other cases, rad-safe workers were -- often had a higher reading than most of the these, but the comparison points are very difficult.

And we found the same thing in the 120 worker dataset that SC&A selected at random, and that is shown in Table S.3. And so we had really three overarching findings. That the monitoring frequency for internal dose was not correlated with external dose. And Joyce will go into that in more detail.

But overall, we did not find that a higher external dose reading triggered any internal dose findings. So the methodological approach of selecting 100 workers by saying they had a high cumulative dose and so they must have had a high internal exposure potential is questionable using that as a motivation because we didn't find that a high external dose triggered any internal monitorings. So we find it difficult to say that that would be the right dataset.

That said, we found the rad-safe workers in the two groups to be generally comparable. And the NIOSH 100 dataset compared to the rad-safe 20 workers were comparable or NIOSH was often higher in terms of their bioassay results.

Okay, then we found many inconsistencies in the bioassay results for gamma images and plutonium and this is a quality of data problem. And I'm going to let Joyce describe that as soon as I'm done with the other two overarching findings.

To the extent that data can be considered reliable, and that is a very big qualifier caveat, rad-safe personnel appeared to have had the highest exposure potential for internal dose for some radionuclides. But this is not the case for all radionuclides. And as I said most notably, miners seemed to have had the highest exposure potential to tritium.

And we can really not make statements about most other job categories. We don't have the data to do it. We simply don't appear to exist, at least for the sets that we examined.

One of the principle bases regarding the feasibility of internal dose estimation in the evaluation report is that "radiation protection and safety stop are considered representative of the NTS workers with the highest potential for external exposure." And that's from page 36 of the NIOSH report.

And we will not, we were not able to conclude that this was uniformly supported by the data. And in some cases data are too sparse to verify this NIOSH conclusion, in several cases actually.

And the last -- NIOSH also said that all "all 100 of the individuals identified as having significant external whole body photon exposures were monitored by bioassay during their employment." We did not find that this was supported by our review of the NIOSH dataset. As I said, the rad-safe 21 among these was significantly monitored. And there was some monitoring for some of the other workers, but generally we did not -- for instance we have shown this plutonium monitoring. There was very little plutonium monitoring for any of the other worker groups during the entire period.

So those were our overarching findings. I think the quality of the data findings is very important, and I'm going to let Joyce describe them. Joyce? Are you there Joyce?

(No response.)

MR. MAKHAJANI: She must be on mute. I hope she's on mute. Joyce?

(No response.)

MR. MAKHAJANI: Okay, Joyce is not there, so I will fill in as best as I can. There are a number of different concerns about the internal dataset. One of the concerns was, you know, as Lynn was saying earlier, you have a variety of fission products, gamma emitters at the Nevada Test Site. Many of them are short-lived.

We didn't find in the dose records themselves any indication of when the exposure was relative to the time when the urine samples were taken. Now, it may be possible to go into like the access control records and so on and determine this, when the exposure might have happened and relate that to the individual worker sampling time. I don't even know whether that is possible.

But in the dosimetry records, this is not indicated. And so it calls into question how you interpret say a gamma bioassay or dosimetry product. Bioassay because you don't really know what the exposure was because you don't know what short-lived radionuclides have decayed away and what you're actually measuring, compared to what the person was exposed to.

The second -- this applies primarily to the short-lived radionuclides, which would include the iodines and the gamma emitters and the gross fission product.

The other problem which we found primarily in the gamma emitters and the plutonium monitoring was a problem with the minimum detectable amounts. There's minimum detectable amounts reported in the site profile. And then there are minimum detectable amounts also inclusive in the measurements as they are reported in the data.

The minimum detectable amounts recorded in the data are often reported as less than and then a number. And within the same year, within the narrow bound of time in a dataset, you get a lot of variation in the less-than, and that might be dependent on counting time and so on and we understand that. But the variation is quite large.

And then there are positive results

that are reported that are less than the implicit MDA values in the measurements and also less than the MDA values dated in the site profile.

And then in some cases, we have no MDA values reported in the site profile. So we have a lot of issues in this particular internal dataset, especially with gamma emitters and plutonium, to some extent also gross fission products and iodines in terms of time of measurement amount of exposure and minimum detectable amounts. So it raises a question as to how this data are to be used in dose reconstruction.

We had a number of other findings, which are on page 8 of the report. I'll just go through them quickly, and that will end my summary and maybe we can ask detailed questions, I hope. Joyce will come back and be able to fill in other questions about the quality of data. Otherwise, I'll do the best that I can.

So my other five findings were that in each of the six categories of worker they had some internal exposure in at least one of the five categories that we examined in the report, Plutonium-239, gamma tritium, gross fission products, and radio-iodine.

And rad-safe workers have data in all five categories but no reliable quantity to comparison statements with other groups of workers, especially when you divide it by time period, if possible based on this data.

Bioassay data for three of the six categories were sparse to non-existent: laborers, welders, and wiremen. Yet the data indicated that one or more categories for which there are some data points, the average in some cases, in some periods the categories were higher than the NIOSH 100.

I would -- and this is not in the report. But I would not attach much quantitative significance to this because when you average using -- we don't attach much significance to the average values because there are very sparse data, and so this is not to be taken as a quantitative interpretation of the data but just as a reporting on what you will find if you actually take the average. We don't attach any comparative significance to this because the data are very sparse.

Also, we used -- when they were less than we used half of the less than value to calculate the average, so the content of this average, you know, well, you can take it for what it's worth which is not a whole lot.

The data for miners are also sparse except for gamma and tritium bioassay. And especially in the earlier periods. Miners had higher exposure potential for tritium as I said. And data for security personnel are more plentiful, and I do not understand why, why the data for security personnel were very plentiful in the 1980's because for the most part in the 1980's, they don't seem to have had much external exposure, as indicated by the external exposure records.

We did the correlation of external exposure and did not find as I reported external exposure per the internal monitoring.

So that's summarizes our main findings. Overall, we concluded that NIOSH has not really demonstrated yet that those reconstruction as far as the radionuclides are concerned -- not only the five types of monitoring that I've indicated, but there are a number of other radionuclides that are mentioned in the site profile, other isotopes of plutonium, uranium, americium, curium, strontium, various isotopes of strontium, cesium.

The NIOSH 100 dataset, as presented in the evaluation report, hasn't demonstrated dose reconstruction feasibility or bounding dose feasibility.

MS. LIPSZTEIN: Arjun, can you hear me now?

MR. MAKHAJANI: You were there and were not able to be heard?

MS. LIPSZTEIN: Yes.

MR. MAKHAJANI: Okay, can you explain your concerns about the quality of the data? I don't know that I properly --

MS. LIPSZTEIN: You did very well, the MDA is very well, you did it very well. There are about an order of magnitude difference between the last values. And then you have a operational report that below the last values and this is in conflict also with some MDA that were given on the internal dosimetry when there is a MDA given in the internal dosimetry.

So we don't know what to expect from it. And the other thing that is very important that you were telling us about, it's about the one -- NIOSH has to demonstrate feasibility of those reconstruction to be identified.

And what we see on Table 7.1 is a

composite of the total external dose and the total number of internal results. So, what we try to do is at least put the external dose by year instead of total dose. And we didn't find any correlation. For the regional guides, the classification of regional guides that we have for the gamma and the fissure tests.

Yet we have enough data to do anything about it. But there a number of ways that we don't have -- either we don't have any data or we don't have much data to do any correlation that we couldn't write to any conclusion about it. I think that's it

MR. MAKHAJANI: Sorry, I missed that one point about parsing the external with the different kinds of internal monitoring.

MS. LIPSZTEIN: Yes, we did that because my -- when you have the total dose, you don't know what happens during the year. So it's the same amount of words per ten years and the other sets of words for two years, and they have the same total external dose, which completed this situation.

So we wanted to know by year if the number of sampling or bioassay would correlate with the -- at least with external dosimetry also, and it doesn't.

For any of the ones the guys that we tested, the integrity of the bioassay that we tested which was the plutonium, which was brass fissure purpose, which was gamma and fissure. The other regional guides, we didn't even have enough beta to test them.

MR. MAURO: Arjun --

MS. LIPSZTEIN: In the titanium --

MR. MAURO: This is John, I'd like to make one more statement because the genesis of this, when we first conceived of this investigation, it fundamentally went to the idea that okay, we've got these 100 workers for better or worse as a sample. Whether they are the bounding group or not.

And if we were to collect all of --

let's use plutonium for example, if we were to collect all of the plutonium data, all of the 100 workers, and if you look at Table S.1, it's a good place to -- in fact, table S.1 in my original model that I had in my head as what we're trying to do.

I guess if we could say well the premise is that the high end numbers -- let's say plutonium concentrations in urine amongst the samples collected from the NIOSH 100. If that high end value was higher than, let's say, these other groups that we sample from whether they are the laborers, the welders, the wiremen.

In other words, the idea being, well, we filled in this whole table and we looked at it said it looks like across the board the upper 95th percentile, or the highest content for the NIOSH 100 is always comparable to or higher than these other groups.

The idea simply being that it's a

way to confirm that, in fact, there weren't any groups out there that had any unique behavior or operational activities going on, like miners where it turns out that they in fact were different and were not bounded by the NIOSH 100.

Well, the only place -- and so it was my expectation that we'd have sufficient data in these samples for each of these categories to look at the table and say yes or no. Yes it is a value or no it's not.

And it turns out that we really weren't able to do that because it just -- except for miners and tritium. You know the work, it's strange when you enter into a investigation like this. You have certain model in your head or expectation of what you're going to get back. And you never do, you never get back what you think you're going to get back.

The only place we got back what I was hoping that we would get back is the tritium in miners where, yes, we had enough data and we were able to compare the upper-end 99 percentile, 50 percentile bioassay sample for miners against the NIOSH 100. And in that case, it turns out that the NIOSH 100 wasn't bounded. But the miners were.

I was hoping that we'd be in a position to be able to make those comparisons for all the categories and for the relevant isotopes. But clearly that was -- so, I want everybody to know that when we first started this it was with that sort of simple-minded idea that we entered into this process.

And the outcome, of course, is what we have before us, where a lot of other things emerged and became apparent to us that we felt important. So, in a way -- it didn't end up where I thought it would. It ended up someplace else.

And I think what we have here is a valuable database with which we could all ask ourselves, does the NIOSH 100 dataset represent the dataset that is, I guess, robust. The issues that Joyce brought up, some people didn't expect mainly that there was some problems apparently with the MDA's. The issues that there are a number of groups of workers that just don't have very much bioassay data what does that mean and what are the implications with respect to the ability to reconstruct exposures to all categories of workers?

And to top it off, something that we did when we parsed it by time period we find that well, there clearly are some time periods where you got a lot of data, but other time periods where you don't and what are the implications of that with regard to your ability to use the NIOSH 100 as your basis of the data as the basis for your co-worker model. So with that said I'd like to open it up for discussion.

MR. KATZ: John, go ahead.

MR. CHU: Well, as we talked about

in the St. Louis meeting too when you first thought about proposing this as a model to work with nothing I hear that you presented here should be surprising to you. I think we've already had some of that discussion already.

We already talked about the test site being the kind of an environment where you have the number of internal exposures in total number is going to be low. I think we already expect that.

Remember, this is a test site. Other than I would be focusing in on the tunnel entries here, which the miners picked up here. There's no question.

But if you look at the NIOSH 100, just looking at your dataset here and except for the few tritium had the 95 percentile or 90 percentile, which is only slightly higher than that, the NIOSH 100 and we have to now, we have to sort of agree to the very fact that the reason why you're not seeing very much exposures at the laborer category or the welder category and the wiremen category is because it just wasn't that kind of exposure of the internal exposure that happened to them.

And the rad-safe people, who were most likely the highest exposed, and we have said so in our -- what we have evaluated, that they should be.

So to me, if I look at your table here I think that the NIOSH 100 accept, agree, agree for the 95 percentile and the 99 percentile for the miners for tritinium. Everything else is well-founded.

MR. MAKHAJANI: Mel, this is Arjun, well you can't actually say that because there's no basis for comparison in most of the categories. You see in a lot of the entries there's no entries for percentiles, mostly. Most of those things are blank.

So you cannot say, this is a problem in that had there been some monitoring, especially when you parsed it by time period. I was very hesitate to leave Table S-1 in there, but it was a kind of the roll-up of the data that gives you a bird's eye view. But in a way, it's kind of a misleading bird's eye view because you do need to look at the various period.

And when you, in order to say rad-safe workers have the highest exposure or are among the highest exposure potential or are representative of the workers with highest exposure potential you need to be able to make a comparison.

Now if you take John Funk at his word for example and what he was just saying that laborers went down in the flats and did a lot of work inside and that the miners were not there, how do you know that the laborers did not have more exposure than miners, say, in the plutonium categories.

You don't have data for miners. You don't have data for laborers, and you can't even compare them to rad-safe. So in order to say, make a relative statement about rad-safe personnel, you need to have something to compare it to and the problem is you don't.

MR. NETON: Arjun, this is Jim. This is the same age old problem we've had and that I pointed out yesterday in that Fernald study that you were trying to get through, which was, you know there's no prior reason to believe that all of these workers had higher or equal exposures to most miner workers.

And so because they are not sampled, that may be indicative of the fact that their potential for exposure was lower. Now we have to go back and somehow convince folks of that. But you know because there is no monitoring data does not mean that they had significant levels for exposure that were unrecorded.

MR. MAKHAJANI: Well, on the one case that we can make --

MR. NETON: You can't have it both ways.

MR. MAKHAJANI: Well on the one case, that we could make -- It didn't come out that way. Why is it that miners have higher tritium exposure, for instance --

MR. NETON: Wait. We'll agree to the miners, and that would be well understood, given the knowledge we have of what went on at the site.

MR. CHU: Exactly right, if you would have asked me that at the last meeting, I would have told you that right off --

MR. NETON: But the other thing I'd like to point out, though, is the fact the plutonium data -- I'm gratified to see that all of these data points show that the internal exposures that were monitored are indeed fairly low.

In fact 50 percent or more of the plutonium samples that were recorded were below the detection limit of the measurement by this table. So you're not seeing any positive exposures and even the 95th percentile is pushing the limits of the sensitivity of the plutonium analysis, depending on the time frame that this was measured.

So this is almost no positive plutonium measurements were recorded here by my analysis of this table. So that's gratifying. Yes Joyce?

MS. LIPSZTEIN: Okay, I was thinking about this and if you look at the 100 results for plutonium, in 1963 there were four results, one positive and two results with positive backgrounds. In `64 there were no plutonium results. In `65 there were only two results. In `66 you had four positive results and many results had zero recoveries. In `67 you had only two results.

So no conclusion about plutonium can be drawn. And also the MDA, when you have the results, the situation must be in the MDA so big that you cannot see anything. And there was no lung measurement on the 100 results. We looked at the lung measurements. So there was no lung measurements either on the 100 or 120.

MR. NETON: Joyce, you know as well as I do that a lung measurement for plutonium would be useless here.

MS. LIPSZTEIN: No, that's what you, you know if you want to see something years after or something like that, there is nothing.

MR. NETON: You would have to have two --

MS. LIPSZTEIN: And another -- the number of urine results are very, very small. The two are basically two results per year or one result per year of those results. That's a big problem, and the situation of results also, that was the MDA at that time because the situation is more than the order of magnitude.

It makes it impossible to test conclusions, and that's what is going -- at least you have some measurements, uranium you don't have anything for the total 100 people. You have two results for uranium. And the americium doesn't have anything. Thorium you don't have anything. Barium you don't have anything. So, if you go by individual rate on the bioassay, it is more difficult.

MR. NETON: Well, there's a couple of reasons probably. I mean, the values are going to be very low, and we can certainly use some type of scaling factor. But I'll go back to your plutonium in vivo measurements.

The detection limit for plutonium in vivo at best, for a very thin person, it's somewhere around a couple hundred nanocuries of plutonium intake. Yes it is.

MS. LIPSZTEIN: Well, I agree with you, I agree with you.

MR. NETON: Well then, so those --

MS. LIPSZTEIN: I know, I know.

MR. NETON: So that would be a silly measurement to even have because these workers are in -- my understanding of the work situation is, that this is not working with pure plutonium like you would at, say, Rocky Flats.

This is plutonium that's dispersed throughout the site from the detonation of a weapon. So it's in some kind of matrix where, you know I don't know what the concentrations are. We can go back and look at that. But, it's not like pure plutonium. So the intakes are going to be small. And this is, basically, what the bioassay data confirmed. That the intakes were small.

The fact that some measurements were recorded below the detection limit don't bother me too much because that's actually acceptable. It's probably best practice.

MS. LIPSZTEIN: I agree with you. The problem with that for me is that no results. And for some years there are only two results in the whole year. Although only four results in the whole year.

So its, you know you can't take -- and when you look at the detection limits, it's also so much. So this is thinking of if you had results below detection limits.

But I'm saying that there are not data to do any statistical work. At least until 1988.

MR. NETON: Well, we're going to have to go back and re-look at this. Obviously, we just got this less than a week ago. But I think again, like with Lynn's report, we're going to have to go back and look at the data and I do agree that you raised some issues related to the distribution of samples throughout the year. That's something that we need to check.

I still maintain that the bioassay program was in place, admittedly small for probably a very good reason which was the intakes were very -- potential for intakes were very low. And the data that we have tend to bear that out. So we'll go back and look at that and react to this.

MEMBER SCHOFIELD: But if you're only sampling six or seven people out of maybe 200, 300 workers who are more likely to be exposed to dusty or dirty conditions they will not have a large external potential. But they have a great internal potential.

MR. NETON: Right, but --

MEMBER SCHOFIELD: And so that -- those numbers are six or seven they are really meaningless when you take the total number of workers that had that potential.

MR. NETON: Right, but you need to look at the magnitude of potential. How large is this potential for exposure. You know there's plutonium in all soil in the United States for example because of atmospheric weapons testing. It's all over the world.

You're not going to sample residents of the United States for plutonium just because there is a little bit in the soil here. So you've got to look at where the plutonium was concentrated and which workers were monitored and where it was concentrated. And that's what we'll need to take a look at and we'll get back and react to this.

MR. MAKHAJANI: Jim, in this context I might make a request also. When we discuss Lynn's report, and Lynn please feel free to comment, there were a number of different worker categories to whom what Lynn was saying would apply in terms of occupational internal dose and I felt that in many of these cases you have a high episodic internal exposure potential relatively speaking, whatever that high might mean relative to external dose potential.

And so I think this whole question of external dose driving internal dose exposure potential maybe that needs a relook. And this particular report might need to be looked at in conjunction with Lynn's report.

MR. NETON: I agree with you, Arjun. I mean I think probably one of the more conclusive findings that I've seen in a quick look through this report is that the correlation between external and internal at least does not appear to be there based on urinalysis.

And we're going to look very closely at that. I think that's of significance.

MR. MAKHAJANI: And Jim, just to be clear what Joyce did was to see whether external -- examine really what the practice was at the time rather than the dose correlation. We did an external exposure measurement trigger bioassay. That was a touchstone, you know --

MR. NETON: Yes, I don't think it would. In retrospect in thinking this through I mean the potential for external would put you in an area where there were, there was a potential for higher internal exposure. But really what you did in that area that drives you're internal exposure.

MR. MAKHAJANI: Right.

MR. NETON: Whether you're, you know, digging, shoveling, whatever, you have to have some sort of outside factor there to generate an airborne aerosol.

MR. MAKHAJANI: And also if you went in earlier you might have a higher external potential. But you know for those that went in a week later or the fifth team or sixth team or the sixth entry in the flat or so on, you know in terms of what John Funk was saying earlier there would be a lot of variation in terms of -- so I think maybe internal needs to be looked at.

MR. NETON: Right, this is a classic problem of where you have a potentially low internal dose site so there was a concomitant low emphasis on monitoring for internal exposure and, you know, we're going to have -- we've got to go do our homework and demonstrate that that's really the case.

That there was a low internal chance for exposure and that's why the monitoring program is as such and the program that was there bears it out. So, we'll go back and re-examine this and get back.

CHAIR PRESLEY: Anything else?

MR. MAURO: Does everyone have the complete database because that's where I think the value lies. In other words --

MR. MAKHAJANI: We haven't in the compilation. That doesn't really have anything in it. But it's supplementary to what we sent along --

MR. NETON: All the individual --

MR. MAKHAJANI: -- in a couple of days.

MR. NETON: I have some questions --

MR. MAKHAJANI: There's really nothing in it, but --

MR. MAURO: Well what I'm getting at is you know you collect all of this information, it's the data. That's the world we're living in. And it clearly, when Jim looks at it, when we summarize it in this table there's a lot of other ways in which you can sort it.

MR. MAKHAJANI: Yes, yes all the spreadsheets are long.

MR. MAURO: And let the research, the other folks look at it and see what it tells them.

MR. MAKHAJANI: Exactly, exactly.

MR. NETON: I had a few questions. For example your analysis of the 50th and 95th was that just sort of a rank order analysis. That wasn't a fit to any --

MR. MAKHAJANI: It wasn't actually, you know, this is actually one of the reasons we removed a lot of the numbers is that we did not do a rank order analysis and you might want to do that, it might be useful all of --

there isn't enough to do rank order. That was part of the problem.

So, Bob used a percentile function from Excel. And when we looked at that it wasn't giving sensical results because when you got two numbers it really -- the whole thing doesn't make sense.

MR. NETON: And I'm also looking at your report and you need to go back and look at some of the original data because by my calculation the 99th percentile plutonium result that you recorded was pretty darn high.

MR. MAKHAJANI: No, no it's a percentile function in Excel. And --

MR. NETON: No, I'm talking about the maximum concentration. The maximum plutonium concentration reported here is 318 picocuries per liter. That makes absolutely no sense to me.

Now that may actually be what was reported, but I would question the validity of that data point, knowing what we know about the exposure potential for workers.

MS. LIPSZTEIN: Maybe if you look at the maximum concentration it will tell you more, because the maximum was the real number.

MR. NETON: Well the maximum was 300 picocuries per liter which sounds implausible to me.

MR. MAURO: Yes, that's --

MR. NETON: That's 300, that's 3/10 of a nanocurie plutonium per liter in this worker. I just can't believe that would happen at the Nevada Test Site.

MR. MAURO: I am looking at Table S-1. I'm going to minus four --

MR. NETON: No, it's 3.1 times 10 to the minus 7 microcuries per cc which, by my head calculation, comes out to 318 cubic curies per liter plutonium. That just doesn't seem right to me.

MR. CHU: I got the same thing, it's 600 per liter.

MR. NETON: It may be actually what

they reported, but I think you need to go and look at that data.

MR. BARTON: I did check that one because it was not typical of --

MS. LIPSZTEIN: Because that's not one of the sections that we have it's not only clear but also we used gamma because there is some concentrations that are so high that you doubt that they are real. So, that's why Arjun was talking about the positive also.

MR. NETON: Well, you can always get false positives.

MR. MAKHAJANI: We have Billy Smith and Lynn Anspaugh on the line and maybe they might want to make some comments on the kind of -- whether the lab had, you know, was qualified at various points and what it was qualified for, and you know what the ups and downs of that situation were.

MR. SMITH: This is Billy, I'm here. We participated in the cross check studies and I was the laboratory director for more than 10 years and we ran all of the analysis for plutonium: the wet chemistry and then alpha spectrometry.

The GFP's were separated from urine and beta-counted and the urine was treated and counted in a -- in the early days in sodium iodide crystal and later a germanium detector and then later a higher curied germanium detector.

It's interesting that, Arjun, you asked the question why so many results for the test site guards. I thought we told you early on that there were two people that were in a regular routine ballot, or two categories of workers that were in bioassay programs because the stratification that you guys are trying to apply to the NTS workers are just not applicable because you can't stratify something where there is no strata.

The guards were on site, all over the place 24 hours a day. They went in tunnels, drill rigs, ACEP, Mercury, so if you talk about what kind of environmental exposures as an example did workers get then the scenario ought to be that there would be just like ours.

MR. MAKHAJANI: Well Billy, the reason I raised this question was that first of all guards seem to have been frequently monitored only during a specific period. And then going by NIOSH's criterion of external dose, there was almost no positive recorded external doses for any security guards in the 1980s to my memory.

Bob, am I right about that?

MR. BARTON: Yes.

MR. FUNK: Hey Arjun, this is John. Can I make a point here.

MR. MAKHAJANI: Yes.

MR. FUNK: I can answer that because the, see, the guards -- if you look at the number of positive gammas or external exposures overall of the test site population you've got less than one percent of the people that were badged that got any positive doses at all. Less than one percent of everybody that was badged

MR. MAKHAJANI: I think there were not even -- it was much less than that for security guards in the 80's. Bob Barton, do you want to make a -- do you remember the number. As I remember, you told me there was only one badge from the whole 20 security guards in that time that had a positive result. And yet they had lots of bioassays.

So, my question, Billy, was not related to --

MR. SMITH: The gamma dose -- the external dose did not trigger bioassay sampling --

MR. MAKHAJANI: Okay.

MR. SMITH: -- in most cases.

MR. MAKHAJANI: Yes, we did find that. I think that is a correct statement and that's part of the recommendation that, when you reevaluate what data set is to be used, maybe that should be taken into account.

MR. KATZ: One person at a time, please.

MR. SMITH: One of the things that happened, we analyzed essentially thousands of bioassay samples on an annual basis. If any analysis came out to be positive, that is, above the MDA for a particular analysis and one of the HPs, we would then evaluate the particular result to see whether or not there was a dose consequences associated with that number.

If there was no dose consequences associated with that number then that information was not put into the dosimetry record. That was included in the laboratory record set because there was no dose consequence associated with that.

So, if you don't see a lot of positive numbers, that just means that the analysis was below the MDA in such that there was nothing to put into the bioassay record.

MR. MAKHAJANI: That I did not understand, Billy. Are you saying that you made measurement for which there were no entries in the record at all to indicate that a sample had been submitted?

MR. SMITH: I am saying that samples were analyzed based on the urine samples that were submitted for analysis. If there was no dose consequence as a result of that record then no information from that sample would have been included in the bioassay record -- no, I'm sorry in the dosimetry record.

MR. MAKHAJANI: But there would be some indication in the files that the bioassay sample had been analyzed and what the measurement was, right?

MR. SMITH: There should be. There should be. But those would fall out under the analytical reports that may be included in the person's files. But that would not be in the dosimetry record.

MR. MAKHAJANI: Now we looked at all of the DOE files that were in the claimants' files. Are we saying that those are not -- that those results are not in the claimant file. I mean I'm not sure where we're headed here.

MR. SMITH: I'm not sure what's in all of the claimants' files, Arjun. It depends on the information that was supplied and the information that was requested. So those people that NIOSH needed additional information for then they would submit a request to DOE and they would provide them with whatever additional information that they had on that individual.

But simply because a person had a request in to supply dosimetry information would not necessarily trigger all the information that exists with that persons name on it.

Whether or not that was a sample form or a log book or an access log.

MR. NETON: Okay, well I think we all agree that we're going to go back and relook at the dataset.

MR. MAURO: Jim, I got a question to ask. When you're looking at the -- I'm going to ask it again. When you're looking at Table S-1, okay, and you're saying that, you're looking at the plutonium level and you're saying there be an error here.

MR. NETON: I don't know, it was your error what's in the database. If it's in the database it's --

MR. MAURO: So you're saying that right now looking at plutonium-231 the max value 3.18 minus 7 microcuries per cc, that would be for the NIOSH 100.

MR. NETON: Right.

MR. MAURO: And then we went ahead and, I guess we have numbers that are very similar to that where the -- and all the 120 down there and then when we spread out the rad safe. So you're saying that perhaps there's, it seems to me that in your mind that number might be high by what, several orders of magnitude?

MR. NETON: I'm not saying that you made a mistake. I'm just saying that I have trouble believing that you have hundreds of picocuries per liter in the urine of workers at the Nevada Test Site.

MR. MAURO: Okay, but now --

MR. MAKHAJANI: We actually, just a minute, John. We actually found the same order of magnitude as the highest measurement in the rad safe set that we had in our 120.

MR. NETON: Yes, I saw that.

MR. MAKHAJANI: 173.

MR. NETON: Yes, they just seemed high to me. This is the first time I've really gone through this personally in detail. So I have a concern here.

MR. MAURO: And let me say something about this. I think that, when it comes to SEC issues and the ability to do dose reconstruction, there is great value to pulling these data.

Now it doesn't mean we're all going to interpret the results the same way. What it means is -- what I'm hearing is you're looking at it and saying yes this all makes sense. Except for the numbers -- in other words, the kinds of numbers you're looking at you're finding useful and I'm hoping that the rest of the folks working on this find the dataset useful to start to help to probe to answer whether or not there are softnesses in the co-worker model and the dataset upon which it is based.

MR. NETON: I would agree with you. This is a good analysis. I didn't mean to imply it wasn't. But we obviously have some different ways of interpreting the results than you do and like I said I'm gratified that the numbers in general are very low. These are all non-detects for the most part for plutonium. There's a few exceptional high values that bother me that I can't believe are plausible.

Now that might bring in a question of data, quality of data as Joyce suggested. I don't know.

MR. CHU: And I think the distribution on the record for the job category is not sufficing John. Maybe that's why --

MR. MAURO: This issue -- one of the issues that you first conceive of this is breaking out by year. It seems to be -- that seems to be pretty eye-opening, the differences by year as being another surprise that it's important that we probe. And what are the implications of that and opposed to when rolling it all up, all of those years.

So, running by year the things change in a way that --

MR. NETON: Right, and they change that dramatic -- the rad conditions change that dramatically in those years and we need to address that. I mean you raise a valid point. I'm not sure they changed as much as you might think, but we will take a look at that.

MR. CHU: Okay, you have to look at the history of the test sites and things that happen and the kinds of things that happened in the 60's. It did change significantly as we talked about today.

MR. NETON: Yes, you look at the 95th percentiles and given that they are all near the detection limit, the values to me they are not substantial different. They are all basically non-detects almost, the 50th percentiles.

And that shows true in all job specifics, rad safe, security guards across the board. We have no laborers or welders but there may be very valid reasons for that.

MR. MAURO: Well the 50th percentile you know their trouble. Quite frankly I was most interested in 95th percentiles because I thought that's where your coworker model was headed.

MR. MORRIS: Well, our coworker model's headed toward 84th percent. Well, very rarely, it was only that compromised --

MR. NETON: The quality of the data issues were sufficient but we moved to the 95th percentile.

MR. MAURO: There is no doubt it's spread between the 50th percentile to the higher percentiles. We're talking about three or four orders of magnitude.

MR. NETON: That's good because the signal goes on --

MR. MAKHAJANI: Excuse me, please. You cannot take the percentile numbers as rank ordering, please. But I just want to tell you what the numbers are. They are not rank ordering.

So, if we want to talk about rank-ordered percentiles you have to recompile the data. We can do that or NIOSH can do that.

But we just need to take a pause on the relative numbers as if they were rank-ordered because we're not talking about rank-ordered numbers.

MR. MAURO: Arjun, I agree with you 100 percent. In fact originally, now that I'm back looking at the picture that I have in my hand we were actually going to make a table and say here's the highest plutonium measurement we made, here's the second, here's the third highest one.

And we were going to do statistics. We would just stack them up from highest to lowest for the NIOSH 100. Then we would stack them from highest to lowest laborers and just stack them up and not even -- and look at them.

So, as opposed to trying to try assign percentiles because if you only have two numbers it doesn't really help you very much.

MR. NETON: Yes, sure.

MR. CHU: We actually did that in Figure 1 of the distribution.

MR. MAURO: In Figure 1?

MR. CHU: Yes.

MR. NETON: In fact if you look at the distributions you plotted they overlap very nicely. They very nicely overlap which indicates that their -- to me on a visual inspection, from the same sampling population.

MR. MAKHAJANI: Well, they are from the same sampling population because when you look at the distribution they are really it's all rad safe with some exceptions.

MR. NETON: You know what, that's true.

MR. MAKHAJANI: And that's why you see that.

MR. NETON: Well, not all job-specific workers was not all rad safe though was it?

MR. MAKHAJANI: No, but the data, that's a set so, if you're counting how many people were monitored you're really talking about the rad safe sample.

MR. NETON: Okay, fair enough.

CHAIR PRESLEY: Okay, Arjun?

MR. FUNK: Ted, can I make a comment here for a minute about these workers?

MR. KATZ: Unless we have more technical talk.

(No response.)

MR. KATZ: Yes John, go ahead.

MR. FUNK: When they talking about using guards for resuspension it's not a good idea because there was no whacking of guards out in the areas when we would be doing this excavation work.

The main people who worked around the heavy resuspension would have been the surveyors, the operators, the teamsters, the carpenters, and the laborers. And not even rad safe was out there that much when we were actually doing a lot of the work on grading the path, a lot of the heavy resuspension, moving the drill rigs.

There was also, we're missing another thing here. We had trucks out there that had two trailers married together. With drill pipes and they were pulled with a jeep behind that. They were 72 feet long and they had 42 tires on them. They used to use them to move the power sections and the mud boxes. And they also put up just about as much dust as that drill rig did do and they ran all the time.

And there's another point. RICO must have had some concern about resuspension otherwise they wouldn't have spent all of that money spraying them pads with a special black emulsion that solidified the dust to keep it from re-suspending.

And there is two areas out there that had very heavy plutonium deposits. Area 11 had plutonium valley which is totally spent and consigned. And you have old Area 13 which has also had another plutonium disbursement test up there too. So, you have to pick the right people.

MR. MAKHAJANI: Now, can you say that list again. You said surveyors, laborers --

MR. FUNK: Surveyors from homes and arbor, operators who was the operating engineers they ran the equipment, the bulldozers and the surveyors, the wire masters were run by the teamsters, and the carpenters were building the foundation pads, laborers, that was it.

MR. MAKHAJANI: Okay, thank you.

MR. KATZ: Thank you, John.

CHAIR PRESLEY: All right, does anybody have anything else for any of the three technical procedures, white papers, whatever we are going to call them?

MR. KATZ: Going, going.

CHAIR PRESLEY: Okay, now the next thing is Working Group discussions and from this morning our discussion on the badging issues. SC&A has a proposal, asked to do the work. John, you said you've got something this morning. You had more work on -- wait a second, on the interviews.

MR. MAURO: That's still to be delivered.

CHAIR PRESLEY: Well, the question was do you want it -- do you, the Working Group, want that done?

MR. MAURO: I'm operating on the premise that you want us to take the initiative to do work. So right now unless you're giving direction otherwise you understand the -- some he challenges that we've encountered, Arjun described them, we're in the middle of resolving those.

Our plan was to finish those interviews, get them all written up and done. Then for those folks that were interviewed, go in and based on the interview information do something not unlike what was done here for this group -- not here, the group of ten that were done as independent.

I guess the question was I'm not sure how much longer that will take. Arjun, are you still there?

MS. ROBERTSON-DEMERS: This is Kathy.

MR. MAURO: Yes, Arjun and Kathy, right now what we're talking about is, it sounds like we're -- we're down the road quite a ways on the interviews and then the --

MS. ROBERTSON-DEMERS: Where we are is they've gone through and come back from DOE. And all their redactions have been taken into consideration and that was forwarded to Arjun and it's in technical editing right now.

MR. MAURO: Okay, is there a hold point that might make sense here. Let's say you finish, you get -- it sounds like we're in the home stretch of getting that.

MS. ROBERTSON-DEMERS: Yes, we're probably 90, 95 percent done.

MR. MAURO: Okay, but then the plan

being, once you have that done was to go into the records of these individuals and do something similar to what was done with the other set of ten that we --

MR. MAKHAJANI: John, that is what I would like to have some explicit directions from the Working Group about that, given the amount of discussion that we had about the ten and what it means.

You know from the interviews the story is pretty consistent with one or two exceptions and the story in terms of what the workers have said reaffirm largely what was said before the advisory board. And that will be the interview record.

A summary of course will reflect faithfully what the interview record says. Now beyond that, you know internal from different points of view that may come up. But, beyond that, if the Working Group wants us to pull the record I'd like some specific direction from the Working Group about that.

MS. ROBERTSON-DEMERS: Well this is Kathy. I need to remind you that not all of the interviewees were claimants.

MR. MAKHAJANI: Right, how many of the interviewees who said they took off their badges were claimants, a rough, five, eight?

MS. ROBERTSON-DEMERS: I'd say maybe a third.

MR. MAKHAJANI: So that would be maybe about like five?

MS. ROBERTSON-DEMERS: Well it gets complicated in that some of those people didn't respond to our request for a reading.

MR. MAKHAJANI: Well whether they responded or not of all the interviewees -- do we have five or seven interviewees who were claimants?

MS. ROBERTSON-DEMERS: I would say you have at least five.

MR. MAKHAJANI: Five, that would be my guess. I think we can pull the records of about five. And we could try to find more of the people who stood up.

Part of the problem, just so you know is that we attempted to find all of the people who stood up but could not successfully locate them all to do interviews with them.

So we were not able to do interviews with all of the people who stood up. But we were able to do interviews with quite a few of them.

MR. MAURO: I would like to make a suggestion. The group of ten that we looked at and we discussed this morning clearly -- I think everyone would agree that there was nothing in there that showed up what I would call the smoking gun.

In other words, there's clearly something amiss here. Out of the ten there was one item that seemed to be a little bit out of line to say even to use that term is questionable.

But it seemed to demonstrate that, you know we can't prove a negative and we certainly have not proven the positive with that group of ten.

So we'll do an exercise in good faith to see if there is anything that would reveal that there really is a serious problem here. And I would say that -- I will take the risk of coming to a conclusion that I hope -- there is plenty not to do around here. That there's nothing there that would say, certainly there is a problem with badges left behind based on what we looked at.

Okay, now we're going to have another group of affidavits or interviews of individuals who said yes, I did do that. Okay, and it sounds like out of that group there may be five of them who said yes, I did do that.

The question we have to ask ourselves now is if we go into their records exactly the same way we went into the group of ten will -- now will that be a matter of due diligence as let's close this thing down.

Let's go to those five that said they did it and now either that will show us yes, we're starting to see some incongruities or we're not.

Now, it seems to me that's -- you know what I would say is yes, it's worth doing. It sort of closes the book. We've done all of the things that --

MR. MAKHAJANI: Let me put a caveat down.

MR. MAURO: Yes, sure.

MR. MAKHAJANI: I think we were at great pains to separate these two categories of, you know, worker statements in terms of why they took off their badges. And I don't think we should be mixing the two up again because I don't think analyzing the next topic is going to tell us something about the first five.

We relay there that the reason the context was different and I think it just muddies the -- in my opinion, I'm sorry but I think it does muddy the waters a little bit to mix them.

MR. MAURO: I don't want to mix it up. I want to finish the --

MR. MAKHAJANI: It kind of needs to be kind of an independent discussion as to whether we want to put that second thing to bed to the extent that we can. And it's not going to be very far along. You know it just says ten is not a lot and five is going to been even less.

And so you'll be able to make statements about five or seven, but that's all.

MEMBER MUNN: There is another issue too, unless this was discussed during the period of time that I was off line. Do we have any assurance at all that the individuals who claim they hid or deliberately did not wear their badges?

Have any pending information against which to evaluate. Did they even have

-- if they had personal dosimeters then there really wouldn't be an issue would there. I mean I'm assuming that those folks for the most part did not have a pin on when they were there or when they went to work. Whatever they are doing that day.

MS. ROBERTSON-DEMERS: Wanda, there may have been a couple that mentioned that they wore PICs at some time.

MR. MAKHAJANI: Yes, I don't know that we can do the same kind of investigation. It's unlikely that, you know, we'll have a need to the extent, you know of PIC badge comparison is neat. But we'll have the same kind of neat result.

This will be simply to take this investigation one step further. If almost all the film badge readings are zero for instance you know, what that will allow you to conclude, I don't know.

I just want to stress that we have the no reason to disbelieve the workers that they did this. In fact you know, there's some evidence that this might have gone on. The question is what does it mean for dose reconstruction.

MEMBER MUNN: Well, and how widespread was it, really? How widespread was it?

MR. MAKHAJANI: Yes, exactly.

MEMBER MUNN: If it was a systematic kind of thing which has been inferred then that's one issue. If on the other hand it was a series of isolated events limited to small groups of individuals then that's an entirely different issue. With respect to both dose reconstruction individually and with respect to the overall program.

MR. MAKHAJANI: Or you know there may have been one type of worker -- there may have been one type of worker who the badge was at high risk of being damaged and their exposure potential can be established. You may be able to build a coworker model from some other group of workers.

I mean there are a number of possibilities and at this stage they are all speculative.

And I don't know what investigation of a handful of cases can do. But it is in the petition -- well, at any rate, we just want to report what is there for you to decide.

CHAIR PRESLEY: Well, number one out of the cases it looks like you're only going to be able to do a possibility of five. Number two, we don't know if any of those had PICs or not. The only possibility was two out of five.

The other thing on that is, you know, we don't know whether those people were in the field, in a rad area or not. I mean they could have been taking their badge off and doing some welding on a trailer at Mercury.

So, I'm just wondering if there is any added value to this or not. And you know --

MS. ROBERTSON-DEMERS: This is Kathy, we asked them pretty good their complete work history and we talked to them about what they were doing when they took their badge off and that's all in the interviews.

MR. KATZ: Thanks, Kathy, someone else is on the line and has not muted their phone. Would you please mute your phone?

MEMBER CLAWSON: Actually, I think this does to a point because we have in the public meeting these people stood up, addressed us. They wanted the Board to look into this. I think that we've got to give it all due dilligency to be able to bring most of the closure at some part.

They may not have had PICs or whatever. But also with this investigation I also feel that we will be on the request more point-blank questions to them that we can. And all we can do is the best we can. If we can't locate these people then that's what it is.

But I do believe that we owe it to the petitioners and also the public to be able to address these.

CHAIR PRESLEY: Gen, you got a thought on this?

MEMBER ROESSLER: I'm really not clear on what needs to be done that's beyond the scope of what was already agreed upon initially.

MR. MAURO: The original scope was to go to the -- to make judgements. In other words, once the interviews were done and we had this information on this group of workers. I say 10 or 12 or whatever the numbers are, and have them before us.

I think at that point the judgement was, well would it be worth going into their records. I think that -- so perhaps the right way to handle this is let's get these reports back out. Let's have these 10 or 12 reports on these workers, these people and see the story that's told about each one of them.

And at that time we can make a judgement of which amongst those are there any where we think will be productive to go in and retrieve their records and take a look at it rather than try to make that decision now.

CHAIR PRESLEY: I would agree with that. I mean if you don't have 10 or 12 I understand you got a five and that's it.

MR. MAKHAJANI: That is a guess. I mean we haven't actually -- it would be a handful, you know. But we can actually report to you the exact number if you'd like in a day or two.

CHAIR PRESLEY: Okay, that would be fine. Now, what are you going -- are you all going to give the copy of this to the Working Group that says you did it?

MEMBER ROESSLER: Excuse me, let me

butt in here just long enough to ask.

CHAIR PRESLEY: Go ahead.

MEMBER ROESSLER: Am I the only one whose getting so much cross talk that I can't hear what's transpiring?

MR. KATZ: I'm sure it's worse for you Wanda because you're on the telephone. I've asked for them to stop.

MEMBER ROESSLER: Well, we hear people discussing picking up their kids from school and work and --

MR. KATZ: Right, we're hearing it too, Wanda, and I've asked them to stop. It's probably late enough that we don't need to go through the motion of cutting them off.

MEMBER ROESSLER: Probably not.

CHAIR PRESLEY: Can anybody there hear us talking other than Wanda and John Funk?

MEMBER SCHOFIELD: I can hear you just fine, unfortunately.

CHAIR PRESLEY: Is that you, Phil?

MEMBER SCHOFIELD: It's interference.

MEMBER ROESSLER: It's very difficult to hear.

MR. KATZ: Okay, let me -- do we have considerable deliberation remaining because if we do I'll get this line cut off.

CHAIR PRESLEY: I think we're coming pretty close to the end. I would like to see that paper before it comes to us. We can make the decisions. I'd like to see the copy of the paperwork go to SC&A.

John, please don't make this last two or three months and we need it as fast as we can.

MR. MAURO: What I heard is we're on the home stretch. Kathy Demers, are you on the line?

MS. ROBERTSON-DEMERS: Yes.

MR. MAURO: Kathy, give me a date when you think we'll be able to get this material into the hands of the Working Group?

MS. ROBERTSON-DEMERS: Realistically, well --

MR. MAURO: And we have control over that. We can make that our number one priority. How many pages of material are we talking about?

MS. ROBERTSON-DEMERS: Probably about 100.

MR. MAURO: So it's 100 pages. That's been through PA already?

MS. ROBERTSON-DEMERS: Well actually we separated it into something that's going to come to the working group where it's the actual individual interviews compiled into one document. It's the long strain. And that, we will maintain the names in those. It won't go out publicly. This is a master interview summary where we are going to have to send it to PA in a week.

MR. MAURO: Right now my main concern is to get into the hands of the Work Group the material we have. I am not all that concerned right now about PA. PA, we'll move through in parallel.

It's more important that we get this material into the hands of the Work Group so a judgement can be made whether or not there's any follow-up that's appropriate or not. And in parallel, while that's being done, certainly we can move it to PA.

I hope that's okay with the -- with Emily and Liz.

MR. MAKHAJANI: John, you know, if you'll give us the appropriate priority with Nancy. It's just straight text. There's no complication: tables, graphs, charts, formatting. You know it just needs to be gone through and text-formatted and with the right cover.

MR. MAURO: What I am hearing is we're days away from having to deliver this.

MR. MAKHAJANI: Yes, I believe that that would be right.

CHAIR PRESLEY: We don't have to

worry about classification or anything like that?

MR. MAKHAJANI: No, that's being done.

MS. ROBERTSON-DEMERS: No, it's been --

CHAIR PRESLEY: All right.

MS. ROBERTSON-DEMERS: It's been through the review at DOE.

CHAIR PRESLEY: Okay, then we will --

MEMBER ROESSLER: So Veteran's day week we should have it, right?

MR. MAURO: How many -- how about a week. We'll make a commitment that we deliver within a week. Is that okay?

MS. ROBERTSON-DEMERS: This is a product of work time, but -- yes, I think we can do it within a week.

MR. MAURO: Good, we'll make sure it's --

MR. KATZ: That's not our call.

Their going to cut the line.

CHAIR PRESLEY: Work Group discussion, Brad, do you have anything?

(No response.)

CHAIR PRESLEY: Really, the only thing I see is NIOSH has to go back and look at the papers that were presented and make their recommendation and determinations.

John has to get us some interviews to where we can look at this to make a decision on whether the path forward is to go do some more research on badging. Is that the only thing that we have right now on trying to get this NTS site profile or technical data sheet in the hands of a yea or nay presentation?

MEMBER SCHOFIELD: I thought we were reviewing the SEC at this point.

CHAIR PRESLEY: That's part of it. Some of this stuff is for the SEC as well.

MR. FUNK: Chairman Presley?

CHAIR PRESLEY: Yes sir.

MR. FUNK: This is John, how is Area 51 going to impact all of this?

CHAIR PRESLEY: Area 51 -- hey, John?

MR. FUNK: Yes.

CHAIR PRESLEY: If you remember you had a letter sent to you that said Area 51 was part of the -- I'm having a senior moment.

MR. ROLFES: Area 51 is included as part of the Nevada Test Site for the years of 1958 -- there's a DOE letter that was issued to the Department of Labor and also really provided to John Funk as well. And that basically said that Area 51 would be included within the confines of the Nevada, within the boundary of the Nevada Test Site up through , and I don't remember the end date.

CHAIR PRESLEY: Yes, John it's covered up through some time after the last shot, if I remember correctly, in the 90's.

MR. FUNK: Yes, well `92 is all the --

CHAIR PRESLEY: And you should have -- if I remember correctly I saw where they sent you a copy of that letter.

MR. FUNK: I did receive it, yes.

CHAIR PRESLEY: Okay.

MR. FUNK: That's going to get worked into the discussion before they vote on, right?

CHAIR PRESLEY: No, no that is -- I understand from Mark has already been worked into -- or did you already work that into the technical datasheets, Mark?

MR. ROLFES: As far as individuals that worked as a DOE contractor employee for RICO for example, the people that would have entered would have been monitored in the same manner that the people that did not enter that area.

So, there is essentially no different requirements for those individuals' external dosimetry monitoring.

CHAIR PRESLEY: John, understand

that there is a tremendous amount of people that worked at Area 51 that did not work for DOE.

MR. FUNK: I understand that, I'm aware.

CHAIR PRESLEY: They are not covered.

MR. FUNK: I am aware of that.

CHAIR PRESLEY: Okay.

MR. FUNK: But I'm concerned about the RICO people that worked over there and the Holmes and Arbor people. They were covered.

MS. OH: This is Kate Oh in Senator Reid's office, can I address a little bit?

CHAIR PRESLEY: Who is this again please?

MS. OH: Kate in Senator Reid's office.

CHAIR PRESLEY: Go ahead, Kate.

MS. OH: I've been working with DOE on this issue and the Labor Department told me that you were working with DOE to get a list of DOE contractors. And I can just forward that on when I get it.

CHAIR PRESLEY: Please do.

MS. OH: Okay.

CHAIR PRESLEY: Thank you, Kate.

MEMBER CLAWSON: What did we come up with a the total. Wasn't that part of one o the early fifth in the earlier years?

MR. ROLFES: That's a completely separate area. The Tonopah Test Range is in the extreme northwest portions of the Las Vegas Bombing and Gunnery Range. The Tonopah Test Range information is included in the Sandia Site Profile as an attachment to that. So it's a completely separate area -- covered facility, separated from NTS.

MEMBER CLAWSON: But that's part of the Sandia though?

MR. ROLFES: Correct, correct.

MEMBER CLAWSON: Because there was other people that were talking about working in there.

MR. ROLFES: Right.

MEMBER ROESSLER: Since you're getting ready to wrap up what I'd like to do before Jim and Mark leave is to have them briefly state what they are going to be doing to follow-up on the occupational environmental dose paper and then also on the NTS coworker model paper just so we have it on the record.

MR. ROLFES: Well, for the environmental side, let's see --

MR. NETON: I think I've got it here. It will clearly define where the environmental models would be applied and evaluate Lynn Anspaugh's evaluation of our current model for what I would call ambient environmental dose.

And that would be in the form of some type of white paper. And similarly for the -- I believe we would do a review of the SC&A evaluation of the NIOSH coworker model for NTS.

MR. KATZ: But you would also, and

I have in my notes that you would also review the other factors that aren't really addressed, right?

MR. NETON: Yes, well that's what I said Lynn Anspaugh's evaluation report we would cover all, the whole thing.

MEMBER CLAWSON: So, Jim I'm sure this is probably under -- but when we were in the discrepancy of the category of workers or so forth that falls under Lynn Anspaugh?

MR. NETON: Yes, that would be the first thing we would do is establish clearly where we would apply our ambient environmental model and then we would also evaluate Lynn's for the four areas, the points that he made regarding out model and how he felt they would apply.

MEMBER ROESSLER: So what's the time line on this?

MR. NETON: I will defer to Mark on that. He's the lead of the technical charge there.

MR. ROLFES: Let's see, there's a lot of uncertainties with the end of the year approaching as well as right now with funding issues going into a new fiscal year.

CHAIR PRESLEY: We've got -- you all have got your plate pretty full with about three sites right now, too.

MEMBER CLAWSON: We can figure on about a week.

MR. ROLFES: Once again I can't commit to a time at this --

MR. NETON: Maybe we can commit to getting something to you guys within the next week or so. We'll reconnoiter and get at a time for you. But we really need to look at resource-loading and stuff is the way to go.

CHAIR PRESLEY: Well, that's true. Looking back at our calendar okay, we've -- right now John gets us his in a week. You know that gives us some time to look at that. We've got a week of a holiday at the end of November. Then we've got the conference call coming up on the 6th.

The only thing, I'm going to be honest with you, that I see that we can do there is report. We haven't had a meeting and here's what's gone on at this meeting.

The Advisory Board meeting is the 16th, 17th, and 18th I really don't see us getting back together some time after the 1st of the year. I really don't.

That gives Mark some time to work on this stuff. That gives Jim some time to work on, and it gives John some time if we say go ahead and do that to get this because I'm going to be honest with you, I would love to saw this off. I mean we can kick this around for about four years. And then we can start working on the SEC petition totally.

MR. MAURO: I would ask a naive question. The SEC matrix, I mean we've been focusing on these three big-ticket items.

CHAIR PRESLEY: That's correct.

MR. MAURO: I'm not even sure if

there are any other items on the matrix that are still alive and well that we need to address.

I haven't looked at the matrix and -- so this is it. So, that being the case we're in the home stretch on these three items. I mean that's where we are right now.

CHAIR PRESLEY: I think so, I really do. Hey, Arjun?

MR. MAKHAJANI: I understand that we -- the paper you have before you from the internal dose, you know the NIOSH 100 and the SC&A 120 was all analysis of the SEC, of course it has implications for the site profile.

But, it was basically geared to the statement saying in NIOSH's evaluation report and our verification and evaluation of it.

CHAIR PRESLEY: Right.

MR. MAURO: We are in agreement, Arjun.

CHAIR PRESLEY: We are in agreement

on that.

MR. MAKHAJANI: I am a little confused I guess.

CHAIR PRESLEY: Okay, does anybody else got anything for him?

MEMBER CLAWSON: I've got one thing. We have received a lot of information from Mr. Funk on the Nevada Test Site. Granted some of it goes to the TBD, some of it goes -- it doesn't effect part of the dose reconstruction but it does effect the TBD.

How are we able to track so that -- because there is a lot of information in there that is pertinent information and so forth.

So, I'm just wondering how we're tracking it. This has been implemented and it has been addressed. You know I can go back numerous pages of things and --

MR. ROLFES: Sure, sure, I would be happy to answer that. If you talk a look at that on the O: Drive we produced a couple of matrices and some correspondence letters that we put out there for the Advisory Board to review.

And I believe we've fulfilled all of our commitments with responding to the issues that have been received for the site profile worker claims.

MEMBER CLAWSON: Okay, and I remember reading several those. It was a TBD issue, it wasn't a site profile issue and you explained why they were and so forth.

I just don't want to lose any of the information that's being brought forth to us.

MR. ROLFES: Right, it's out there on the O: Drive still. It's certainly not going to get --

CHAIR PRESLEY: Okay, one of the things that Mark and I have been doing is every time that we get some information from John they pass onto me and I pick the phone up and I'll at least get an email and talk about has this been implemented or will this be implemented or where is this in TBD.

Now, does anybody else have any more going around the table of what we need to do?

MR. KATZ: So we're probably look at a Working Group meeting some time in January?

CHAIR PRESLEY: Some time in January. You know we will get back together and see what everybody's schedule looks like.

I would love to have it back up here -- you know let's see. We don't have -- to my knowledge I don't have anything down for January.

MR. KATZ: We are not going to be able to schedule it now.

CHAIR PRESLEY: No, no, no, no. Let's see how things shake out especially with John's stuff here and we'll get together and talk about rescheduling this meeting on an email basis.

But it does look like some time in

January for back up here. I think that's easiest for everybody to get here.

I know it's awful easy to have CDC, and, John, your people were able to get here pretty good.

Anybody else have anything, Ted, do you have anything?

MR. KATZ: No sir.

CHAIR PRESLEY: Thank you, everybody for coming. John, I appreciate your comments.

MR. KATZ: Yes, thank you, John, for participating.

MR. ROLFES: Thank you everyone, and one final reminder that I have for everybody here in the room is to make sure we pick up all of our papers before we leave, so that we're not leaving anything with Privacy Act information on it.

MR. KATZ: Okay, so we are adjourned.

(Whereupon, the above-entitled

matter was concluded at 3:41 p.m.)