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

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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

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WORK GROUP ON ROCKY FLATS

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TUESDAY
JULY 14, 2015

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The Work Group convened via telephone at 10:00 a.m. Eastern Time, DAVID KOTELCHUCK, Chairman, presiding.

PRESENT:

DAVID KOTELCHUCK, Chairman
R. WILLIAM FIELD, Member
WANDA I. MUNN, Member
PHILLIP SCHOFIELD, Member

ALSO PRESENT:

TED KATZ, Designated Federal Official
TERRIE BARRIE
JIM BOGARD, ORAU Team
LIZ BRACKETT, ORAU Team
RON BUCHANAN, SC&A
ZAIDA BURGOS, NIOSH
NANCY CHALMERS, ORAU Team
JOE FITZGERALD, SC&A
JOYCE LIPSZTEIN, SC&A
JOHN MAURO, SC&A
JIM NETON, DCAS
JUDY PADILLA
ROBERT ROTHE
LAVON RUTHERFORD, DCAS
CHARLES SAUNDERS
MUTTY SHARFI, ORAU Team
DAN STEMPFLEY, ORAU Team

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

(10:02 a.m.)

MR. KATZ: Welcome, everyone on the line. This is the Advisory Board on Radiation and Worker Health, the Rocky Flats Work Group. There is an agenda posted on the NIOSH website under the meetings page, scheduled meetings, July, today's date. And there you will see the agenda for this meeting and, presently, four different papers. They're all posted there so you could read them as they get discussed. There should be two more papers being added there. Maybe they were on and they fell off. I'm not sure.

But, anyway, let's do roll call now. And for all of Agency-related people, including the Board, please speak to conflict of interest since we're speaking of a specific site. And let's get started with the Chair and the Board Members that are on the line.

(Roll call.)

MR. KATZ: Let me ask everyone on the line. We have quite a few people on this call. Please mute your phones except when you're

addressing the Work Group. If you don't have a mute button on your phone, just press *6. That'll mute your phone for the call. And then you press *6 again to take your phone off of mute. But please keep your phone on mute as it'll improve the audio quality for everyone else and eliminate all the background noises.

And, also, please no one put this call on hold at any point, but hang up and dial back in if you need to leave the call for some time, because putting the call on hold will add noise for everyone else on the line. So, thanks for that.

And, Dr. Kotelchuck, it's your agenda.

CHAIRMAN KOTELCHUCK: Very good. Okay. Welcome, folks. And just to also alert you on my phone, if for any reason you hear me fading out, please alert me and I will change my phone connection such that it will work better.

MR. KATZ: And, folks, identify yourselves for the court reporter when you speak, too, please.

CHAIRMAN KOTELCHUCK: Okay. The first item on the agenda is the data falsification, the

first White Paper from LaVon Rutherford. LaVon, would you like to begin?

MR. RUTHERFORD: Yes, I will. First thing I want to -- I just got indication that, of the documents that are on the website, all of them are listed on there and links to them. I see the Critical Mass Laboratory, that White Paper, revision to the tritium paper and the data falsification paper. So I'm not sure what's being missed but they all appear to be there. So I'll start there.

CHAIRMAN KOTELCHUCK: Good.

MR. RUTHERFORD: Okay. First --

MEMBER MUNN: Oh, Bomber [Mr. Rutherford]?

MR. RUTHERFORD: Yes?

MEMBER MUNN: Perhaps it's only my phone, but you're very faint.

MR. RUTHERFORD: Very faint? Okay. Let me see if I can make --

CHAIRMAN KOTELCHUCK: Yes, you are.

MR. RUTHERFORD: Alright. Is that better?

CHAIRMAN KOTELCHUCK: Yes, it is.

MEMBER MUNN: A little, yes.

CHAIRMAN KOTELCHUCK: And as we do this, let's put on the Live Meeting with the White Paper on data falsification.

MR. RUTHERFORD: Okay. I didn't actually add those White Papers to there.

CHAIRMAN KOTELCHUCK: Okay.

MR. RUTHERFORD: White Papers were sent to all the Work Group members and to the --

CHAIRMAN KOTELCHUCK: Right.

MR. RUTHERFORD: Didn't put it on the Live Meeting.

CHAIRMAN KOTELCHUCK: Okay. I expected it to be here, but that's okay. Do go ahead then.

MR. RUTHERFORD: Okay. First, I'd like to apologize to the petitioners and Work Group and SC&A for the reports coming out late. There's a number of reasons for that. I won't go into that. I realize it makes it very difficult for the petitioners to prepare, especially considering those documents were only released from ADC review late last week, at least one of those documents.

So I know that made it very difficult.

Let's see. Again, for all interested parties, the White Papers, all the White Papers are available on our website now. The first White Paper we will be discussing is a paper titled, "Evaluation of Petitioner Concerns About Data Falsification and Data Validation in Rocky Flats Plant Building 123 Based on Worker Allegations and Issues Relating to the FBI Raid."

This is Revision 3. We'll not go into a lot of detail on information provided in previous revisions.

The first thing I want to address is a statement in the report that was brought up to me, and it's on Page 12. If you look at the report and you look at the third bullet -- or the last bullet at the bottom, there's a statement in the report that says, "Although Rockwell did plead guilty as a company to five felony charges and five misdemeanors and was assessed a fine, it appears that the decision to settle was based on the company's desire to close the long, drawn-out litigation."

That statement, when I had seen that, I thought that was a quote out of one of the papers. And after further review, it doesn't appear that was a quote. I think that that statement -- you know, documents did imply this. However, this statement has no value in the report and is not a factor in our determination that dose reconstructions are feasible.

This statement also follows on Page 29, as well, or a similar statement to that. We do plan to revise this report and remove that statement because the statement adds no value.

CHAIRMAN KOTELCHUCK: Yeah. Agreed.

MR. RUTHERFORD: Okay. Alright. This is a relatively long report. It started out, you know, as a fairly short report. But after numerous data captures, interviews and so on, it grew. So we added a table of contents to this document.

Our initial revision was issued in June of 2013 and it responded to potential data falsification based on a document they provided to NIOSH and the Work Group, which was an interview conducted by the FBI and EPA.

The interviewee identified a number of concerns with respect to sample analysis at Building 123. We reviewed these issues and responded to the issues. The conclusion from our review at that time was that nothing identified by the interviewee would affect our ability to reconstruct dose.

That was Rev 0/Rev 1. It went to Rev 1 because we made a short, quick change after it had gone to Rev 0. And so there was nothing substantial changed between Rev 0 and Rev 1. Rev 2 was issued on October 10th of 2013 after additional data captures and interviews. All the previous revisions of the Rev 2 are covered in Section 1 of the report. Section 2 and 3 were added in this revision with a concluding section in Section 4.

After the 2013 decision to add a Class, we continued our investigation of the post-'83 period, focusing on before the 1989 raid. During subsequent Work Group meetings and through emails from the petitioner, additional questions were

identified which required additional review, not so much with that original interview but more with respect to the FBI raid and whether other information from the raid may support a data falsification/data destruction issue.

So additional data captures and interviews were completed in December of 2013. I want to go over a couple of the key interviews that were conducted. One interview provided information on personal involvement and shredding of documents. And they indicated that direction came from Rocky Flats management.

If you look at Page 13 and 14, that initial interview is discussed at the bottom of that page. Again, the individual interviewed indicated that documents had been destroyed at the direction of Rocky Flats management. They indicated that they felt some of these documents included monitoring data and incident reports.

And then you will look on Page 14 of that. We took a look at the -- after the interview, we did get some sample documents from that interview

and we looked at how those documents may affect our ability to reconstruct dose. And you'll see our response at the bottom of Page 14, the first bullet.

It says, "While the documents being destroyed could have been some kind of field surveys, it does not appear that those surveys have an impact on NIOSH's ability to bound or reconstruct dose for the Class, as long as the personal monitoring data exist. Based on a review of some of the files that were provided as examples of documents, you know, that were shredded, "NIOSH found that records did exist in the associated personnel files in NOCTS."

So some of the records may have been destroyed, but [in] the records that were provided to us, we did find examples in NOCTS and we had no indication of actual personal monitoring records being destroyed.

Another key interview that was conducted, and there were roughly 13 interviews, I believe, that were conducted over a period of time. There were actually a significant number of people that

were contacted. Some of those people chose not to respond. Either they just didn't want to participate or for other reasons.

The second interview that was conducted -- another interview that was conducted that I thought was pretty important to discuss is the classified interview that was conducted out at Idaho Falls with a former employee. This second interview, there were a few items that were identified. Again, you can look at Page 15. That goes through that discussion of that second interview.

The individual relayed information they felt was pertinent to our ability to reconstruct radiation dose, some concerns with penciling in bioassay and personal monitoring data and misplaced or lost bioassay samples, as well as contamination incidents.

We reviewed all of the information. We had no real indication, from our review, that actual personal monitoring data in the form of, you know, external badge readings or internal bioassay

samples had been penciled in. However, we believe that it could have been penciling in of survey information such as direct-reading dosimeters and, you know, pocket ion chambers and items like that. There was no indication that any of the personal monitoring data, dosimetry data had been penciled in.

Another issue was concerns with bioassay issues, that there were possible variations in bioassay results. We looked at this. The concern did not raise any issues that invalidate the use of personal monitoring data. We do make adjustments in personal and bioassay data, you know, based on the techniques that were used, correction factors and so on. So we had no indication that that issue would possibly affect our dose reconstruction process.

And another incident with personal contamination problems and other contamination incidents. Contamination incident and survey data are used to supplement personal monitoring data in the performance of dose reconstruction.

Personal monitoring data are, again, considered our primary source of data. We would only look at contamination incidents and only for the information involved to look at if there's potential exposure scenarios that we may need to address further. So, again, we did not feel that this issue impacts the dose reconstruction process. The interview also touched on other issues, such as tritium bubblers and the Criticality Lab, which are addressed in other reports.

A third interview that I feel is very important because it provides the meat of a lot of the review is the interview that was conducted with the FBI agent-in-charge. The FBI -- again, there was a raid that occurred in 1989. We interviewed this FBI agent who was in charge of this raid.

MR. KATZ: Could I ask, while he's pausing, some people have not muted their phones and I hear truck noises and so on in the background, or traffic noises, and it's making it difficult. It's probably making it difficult for the court

reporter, too. Could you all mute your phones, please? Thanks.

CHAIRMAN KOTELCHUCK: Shall do.

MR. RUTHERFORD: Okay. Again, so we interviewed the FBI agent. And the FBI agent discussed the raid and provided a number of documents associated with the raid. A significant number of documents were stamped indicating they were not for public release.

We were concerned with this, and after our General Counsel reviewed the documents, a determination was made that we should ask for formal release from agencies involved, which was the FBI and EPA. This took a significant amount of time before these documents were released for use. And so that significantly delayed this paper.

The FBI agent also provided additional names of people to interview. We interviewed a number of these people, and attempted to interview all of them. And after our review of the documents provided and our interview notes, we concluded, as

you can see if you look at Page 22 of the report, at the top, again, the information provided by the agent, including the interview information and associated documents, support the idea that the basis of the raid was for environment issues:

"While some information collected and assessed at the time of the raid does cross over into occupational radiological issues, nothing was discovered that supports a data falsification or destruction issue that would impact the ability to reconstruct dose for the Rocky Flats Plant worker Class being assessed."

The review of the flyover, there was an indication from the agent that there was a flyover looking at a potential criticality that may have occurred at Rocky Flats. He indicated that there may have been support for the raid -- okay. I apologize. Again, as I mentioned, there was a flyover and there was a survey that was conducted and indication that a criticality event may have occurred.

We reviewed information as well as

follow-up assessments that were performed and everything concluded that there was no potential criticality that occurred at Rocky Flats for that period.

Okay. So after that, if you look at Section 2.3 of the report, it's "Review of Petitioner-Identified Technical Safety Appraisal Issues." During our review and during our, you know, follow-up on this evaluation, the petitioner brought up a number of additional items that we continued to look at. One of them was this general accounting report.

(Telephonic interference.)

MR. KATZ: I'm sorry. Somebody's not muted. Can you mute your phone? Someone from the public, I think. Press *6 to mute your phone so that it doesn't interrupt this call. Thank you.

MR. RUTHERFORD: Alright. So Section 2.3 of the report is "Review of Petitioner-Identified Technical Safety Appraisal Issues." A GAO report was referenced, which also referenced a Technical Safety Appraisal. That

Technical Safety Appraisal was reviewed for issues identified by the petitioner.

If you look at the three bullets at the bottom of Page 22, one of the issues, "radiation monitoring is adversely affected by poor quality instrumentation, inadequate calibration techniques, and improper use of equipment. The Radiological Health Quality Assurance Program is ineffective as evidenced by some of the preceding concerns."

The second issue is, "During the past few weeks, several SAAMs were turned off without notifying either radiation monitoring or the instrument technician. These instruments were operational when turned back on. There is no electronic method to automatically display their operational status in the monitoring office."

And the third issue being, "The health physics instruments used for personal protection do not all conform to appropriate performance requirements of applicable standards."

These were very, you know, damning

statements that we definitely felt that needed further review. So we went back into the actual Technical Safety Appraisal and looked into the details. And the first issue of the poor quality instrumentation and inadequate calibration issue, we looked at that and all of the focus on that was for field instrumentation. And that field instrumentation has no bearing on our actual dose reconstruction approach, and, therefore, would not affect our ability to reconstruct the dose.

And similar with the SAAMs' instrumentation. Although it is critical and those are bad practices for those to be turned off and is not something that you would want for your radiological field program, for them to be turned off and not turned back on, they do not affect our ability to reconstruct the dose.

The third item is the health physics instruments for personal protection do not all conform to appropriate performance standards. Again, those items are items that would not be used for actual personal monitoring data, and therefore

do not affect our ability to reconstruct the dose for workers.

Section 3 of the report, what we felt was one of the key items for this -- you know, this data falsification, data destruction -- because, you know, some -- a lot of this is subjective in our view. And so we felt the key item is to actually go back and look at what personal monitoring data do we have available? Do we have, you know, internal/external monitoring data? Do we see gaps in that data that would possibly indicate a destruction in records, a destruction of data?

Also, looking at the amount of data over time periods, do we have indications that, you know, data picked up significantly after the -- after the raid, which would possibly indicate that the raid drove -- the raid and concerns from the raid changed the radiological monitoring program approach?

And so that was -- we thought that would be something that was more, not subjective but gave us a real quantitative look from a technical

perspective. Can we look at this and see we've got this information? If we've got this information, we see no real gaps that we can't account for and we can follow this through. And, if we have no clear indication that the monitoring data has been falsified, then we should be good for dose reconstruction.

So Section 3 looked at that and we looked at both the external and internal monitoring data. We provided tables on that data and our conclusion was that that personal monitoring data is available and has not been destroyed. And so we have no -- and we have no indication that it's been falsified.

So, after all the review, the data captures, the interviews that were conducted throughout this process and SC&A was involved in those interviews. The Board was -- some of the Board Members have been involved in the interviews through the process. Our conclusion is that none of the issues associated with data falsification or destruction or issues associated with the raid, the FBI raid, would prevent us from completing dose

reconstructions.

That kind of summarizes the report.

MR. KATZ: Let me -- this is Ted. Let me just break in here just to note that Phil Schofield joined us a little while ago. So he's on the line. So we have all of our Work Group members on the line.

CHAIRMAN KOTELCHUCK: Welcome, Phil.

MEMBER SCHOFIELD: Thanks.

CHAIRMAN KOTELCHUCK: Alright. Questions from Working Group Members? Well, should we -- actually, we should go to the SC&A response, should we not?

MEMBER MUNN: Yes.

CHAIRMAN KOTELCHUCK: Next. Okay. Let us do that. Who will -- who's going to give that report?

DR. BUCHANAN: Okay. This is Ron Buchanan, SC&A, and I'll give that report.

CHAIRMAN KOTELCHUCK: Good.

DR. BUCHANAN: Okay. I won't go over the summary because they did a very good job of summarizing their White Paper, which we received

at the end of June. And our task was to evaluate the White Paper from a technical point of view. And so we sent out a summary report recently and Section 1 essentially just summarizes what they talked about and Section 2, also.

So I'll go right into Section 3 of our report on Page 2. What I did is I broke this down and tried to pull out all -- there's two really separate items here. It was the interviews and the articles on paper, NIOSH's 32-page paper. So I tried -- they were interlaced.

And so what I tried to do is go out and separate those out and do a summary for the reader so they could see. Really, the core of it is shown in Table 1 there. On Page 2 are the interviews. There were about 13 interviews conducted since about December of 2013, about a year -- last year-and-a-half.

And SC&A sat in on most of those interviews and got firsthand knowledge of them. And we went back then and read NIOSH's report and looked at the references. Now they list about 140

references in the Site Research Database and we looked at the pertinent ones that would apply.

And so in that table I list the interview number and the page that NIOSH's report talks about that interviewee and also the main Site Research Database reference number. Now there are some others that go with that but those are the main interviews. So those of you that want to look at that can follow that out in more detail.

Now, we -- like I say, we were on the interview and also we went back and reviewed what NIOSH's evaluation was and what we were looking for was things that would actually, perhaps, impact the recorded external dose or the bioassay data in our evaluation. In other words, like just previously stated, it might be bad practice to turn the air monitors off or to pencil in data or something but we want to look and see if it would affect the ability to do dose reconstruction.

And going through these interviews and the pertinent documents, we found out that, presently, our conclusion is that there was no

indication that there was essential individual personal monitoring data that was altered or destroyed or that bioassay samples that we could find would not be useful for the dose reconstruction process.

And I'd like to clarify that we did, on Interview Number 6 in the table, we did not have the example of the actual documents sent into NIOSH from that interviewee. However we did look at the summary of the documents in the referenced Document 132787 and drew our conclusions from that. And so, essentially, we found nothing that would indicate lack of ability to do dose reconstruction.

Now that was for the interviews. We did the same thing for the related articles. You see Table 2 there on Page 4 lists the main articles as a separate -- as separated out from the reference documents used for the interviews.

We had about eight documents that were brought forward by the petitioner and NIOSH and we looked at those and I list there a brief indication of the contents, the page number in NIOSH's recent

report and then the Site Research Database reference number.

And, again, we went through these documents with the same purpose: to look and see if it would indicate any data falsification, record destruction or bioassay data procedures that would hinder dose reconstruction. And we did not, at this point, identify any.

Now, there is one other issue that has not been brought up and that's in Section 4 of our report on Page 4. And that is the fact that it appears that the FBI raid mainly was centered around environmental issues and not directly connected to personal monitoring. However I would like to point out in TBD-4 for Rocky Flats there are some tables in there that are used for dose reconstruction that perhaps were drawn from data that was collected, say, prior to 1989.

And so I -- our conclusions concerning this, TBD-4, is that it should be looked at to see if there are any environmental-data issues identified in the raid and that we've been talking

about recently that would impact the validity of the data that's contained in TBD-4 that is used directly for dose reconstruction when a person has environmental dose assigned.

And so that summarizes our evaluation.

CHAIRMAN KOTELCHUCK: Okay. Any -- LaVon, did you want to respond particularly to the last item?

MR. RUTHERFORD: Yes, I do. In fact, an issue that SC&A brought up in a previous (Telephonic interference) and we I think at that time even said that that was something that we would go back and look at because --

CHAIRMAN KOTELCHUCK: We're having some interference.

MR. RUTHERFORD: Are you -- are you getting -- still getting interference?

CHAIRMAN KOTELCHUCK: I am but that may be -- that may be a problem, by the way, on my line. Anybody else having problems?

DR. NETON: This is Jim, Bomber, you're breaking up. You're just appearing on and off

periodically.

MR. RUTHERFORD: Okay. Well, let me switch over my -- a section here maybe away from the monitor. Maybe that will help. Is that better?

CHAIRMAN KOTELCHUCK: Yes.

MR. RUTHERFORD: Okay. Again, the environmental issue was -- TBD issue was brought up by SC&A in a previous review and we agreed that the environmental TBD will have to be revised. At that time, we -- it was also indicated by SC&A that this was not an SEC issue. It was more of a dose reconstruction issue and so, at that -- we had anticipated that we would have to revise that environmental report and that we would -- or environmental TBD, recognizing this issue.

CHAIRMAN KOTELCHUCK: Okay. So this would have to be a follow-up. That is, you will follow up on that and is that -- that's something that -- would that have to be sent to the Work Group or come back to the Work Group again or --

MR. RUTHERFORD: Well, you know, in my

opinion this is a -- and as previously stated, I think this is a TBD issue that we'll have to address. But, ultimately, the Work Group will review the TBDs as well, the final TBDs after revisions are made with the SC&A -- or with the SEC and the close-out of all our reports.

TBD revisions -- all the TBDs will be revised and so I'm sure that review will take place.

CHAIRMAN KOTELCHUCK: Okay. Any questions? Comments?

MEMBER SCHOFIELD: Yes. This is a question for LaVon. This is Phil. I -- I've got just one question. That is, I understand -- correct me if I'm wrong -- but my understanding is they do actually have data sheets or logs of some -- a lot of the monitors for the stacks and for the rooms and stuff. Those do exist?

MR. RUTHERFORD: That's correct.

MEMBER SCHOFIELD: Okay. That's what I need clarified. Thanks.

CHAIRMAN KOTELCHUCK: Okay. Further?

MEMBER MUNN: And this is Wanda. My only

question is how far along are you with reviewing that environmental data?

MR. RUTHERFORD: Well, actually, it was kind of put on the back burner because we were trying to work on the SEC issues to close out the SEC issues on this before we move forward with revising the TBD.

MEMBER MUNN: So, essentially, it -- you're ready to go?

MR. RUTHERFORD: Yes. Once we're done with the -- yes. Close out the issues and we'll start moving forward with the TBD revisions.

MEMBER MUNN: What's your assessment of how likely that's to be -- going to be, to take very long?

MR. RUTHERFORD: Wow. Now, you've -- that I cannot answer. You know, one of the difficulties we face is the ever-moving [fee?] list. You know, right now we're doing SEC evaluations on Argonne National Lab, Lawrence Livermore and a new evaluation on Blockson. All of these take significant resources.

We have teams working on Savannah River Site to close out the SEC in Savannah River Site, Hanford, and open issues with the Idaho National Lab. We've got co-worker issues that we're working through the modeling on or finalizing our implementation guide and moving forward with that.

So there is a -- it's -- what I'm basically saying is there's so many things going on and we've got to do dose reconstruction, which is our priority, that it's hard to define exactly or give you a good estimate on a -- when the TBDs could be revised.

I think what we have to do is, once we close this out, close these issues out and move forward. We'll put together a schedule based on our current resources and priorities and, you know -- and we always adjust the priority based on what, you know, the Board's looking for at the time and what seems to be the highest priority at the time. So --

MEMBER MUNN: Well, I certainly understand that and I'm not asking how long is it

going to take to bring this other rock but, in view of the fact that this seems to me -- perhaps I'm looking at it incorrectly but this looks to me to be one of the very few outstanding questions that remain for us at Rocky.

They've had such a rough time and they've had such an excellent record with respect to the care and keeping of the safety of the employees, I just -- it seems a shame, unless it's going to be a really rigorous requirement of large amounts of personnel time, it -- from the outside, it looks as though that shouldn't be too difficult a thing to wrap up. That's the only reason for the question.

MR. RUTHERFORD: I agree. I don't anticipate it being a difficult thing to close out and move forward.

MEMBER MUNN: That's just one of those things which because -- especially because Rocky has received so much publicity and because there's been so much interest focused on it, if this is -- this is something that's keeping us from reaching

an endpoint, it might be wise for us to consider. If we're not going to have a massive commitment of personnel time, it might be worth taking a look at that.

MR. RUTHERFORD: Yes.

CHAIRMAN KOTELCHUCK: Okay. But I think that there's agreement -- well, there is agreement between NIOSH, ORAU and SC&A on the fact that this does not impact the dose reconstruction except for the possibility that some of the environmental problems have fed back into our dose reconstruction. So there's that -- just simply that one item to go.

But the basic conclusion appears -- there appears to be agreement and there does -- there does not appear to be disagreement among our Working Group about that overall conclusion with the exception of that one point. Is that -- is that a correct statement?

MEMBER MUNN: I believe so.

CHAIRMAN KOTELCHUCK: Okay.

MEMBER FIELD: I -- this is Bill Field.

I have one question for LaVon.

CHAIRMAN KOTELCHUCK: Good.

MEMBER FIELD: LaVon, on page -- let me see what page this is here. I guess this is Page 19. There's a statement, there is a contention that a flyover -- that the flyover data indicated the presence of cesium-137 and strontium-90. Could you just provide a bit more detail about what -- what's the contention? Was this reported by several people are, or -- I just -- contention's kind of a big word. I'm just wondering if you have more detail?

MR. RUTHERFORD: Yes. Statement made by the FBI agent and it was -- we were -- we were as surprised as you sound with that statement. And there was -- you know, the concern was brought up. So there was a detailed investigation into the potential of a criticality event occurring. And there was no abnormal -- abnormally high fission product activity in the environment or area that would indicate that a potential criticality occurred.

There was a detailed assessment that was done by the -- and I'm trying to remember who sanctioned the assessment, if it was Department of Energy. Dan Stempfley may be able to correct me or Jim Bogard. But the assessment went in, looked at the data, reviewed data from different areas and ultimately, the conclusion was that there was no criticality event that occurred.

MEMBER FIELD: Okay. And then, in addition to no criticality, there was also no flyover as far as you know, is that correct?

MR. RUTHERFORD: Well, we have an indication of one flyover that did occur. We did not get the second flyover. But the flyover appeared to focus more on a heat sensor -- sensing, basically looking for was there -- and this is what we were told in the interview, that, you know, were they potentially using the -- were they using the furnace when the furnace was not supposed to be used at night. And so it was more of a heat-sensor type of review.

MEMBER FIELD: Okay. So the bulleted

part where it says, there is a contention that the flyover data, that's referring to the 1989 flyover data?

MR. RUTHERFORD: Correct.

MEMBER FIELD: Okay.

MR. BOGARD: This is Jim Bogard. There was a review by the State of Colorado and we interviewed one of the participants in that review who did an assessment of the flyover data that claimed to have found the cesium-137 activity. And he said that there is no indication of a criticality and that was the conclusion of his panel.

MEMBER FIELD: Okay. Is any of this published anywhere or are there documents stating that?

MR. RUTHERFORD: Yes. All of the documents that we've received and including that assessment are in our Site Research Database.

MEMBER FIELD: Okay.

CHAIRMAN KOTELCHUCK: Okay. Alright. Further questions, comments? Shall be go on now

to the report on the Critical Mass Lab?

MR. KATZ: So, Dave, this is Ted. That issue is closed as far as the Work Group's concerned?

CHAIRMAN KOTELCHUCK: It's closed except as I said. It's closed except for that one item about the -- how the environmental -- any environmental problems fed back into the occupational radiation reconstruction.

MR. KATZ: Right. So the Work Group's concurring that that's a TBD issue. So the --

CHAIRMAN KOTELCHUCK: Right. In fact, I thought I just said that, yes, that we do concur --

MR. KATZ: Okay.

CHAIRMAN KOTELCHUCK: -- on the basic agreement that the data falsification has no impact on our dose reconstruction except for that one item which will be taken care of later.

MR. KATZ: Thank you.

CHAIRMAN KOTELCHUCK: Okay. Critical Mass.

MR. RUTHERFORD: Okay. Our second document is the assessment of sealed radioactive sources and fission and activation products as radiological exposure sources in the Rocky Flats plant at the Critical Mass Laboratory. This White Paper looks at the radioactive materials present at CML -- and I will refer to the Critical Mass Laboratory a number of times as the CML -- the exposure potential and how these exposures can be reconstructed if necessary.

The first section goes through the history of the CML. And this -- as Dr. Rothe was on the line and mentioned, a significant amount of the information that was in this report was received from Dr. Rothe, and a document that he authored called A Technical Usable History of the Critical Mass Laboratory at Rocky Flats, which provides significant detail into the analyses -- the different analyses that occurred, the time periods, incidents that occurred as, you know, a number of activities up through pretty much the end of operations at the Critical Mass Laboratory.

CHAIRMAN KOTELCHUCK: LaVon, may I interrupt?

MR. RUTHERFORD: Yes.

CHAIRMAN KOTELCHUCK: One second. I do not see -- I'm on the DCAS website. I do not see that White Paper on the website.

MR. KATZ: I looked, too. It's not there.

CHAIRMAN KOTELCHUCK: Could somebody put it on while we're speaking or can it be put on the --

MR. RUTHERFORD: Live Meeting?

CHAIRMAN KOTELCHUCK: -- on the Live Meeting? Thank you.

MR. RUTHERFORD: Yes. I can get it put on the Live Meeting. I'm trying to -- I'm surprised because I got an email that shows it -- shows it being there. But I will put it on the Live Meeting right now.

CHAIRMAN KOTELCHUCK: Okay. Good. Thank you.

MR. RUTHERFORD: One moment.

CHAIRMAN KOTELCHUCK: Sure.

DR. ROTHE: This is Dr. Rothe. May I unmute my phone now, since I think I may have some things I may want to add?

MR. KATZ: Dr. Rothe, why don't you -- if you would just wait and unmute your phone when it's time for you to make a comment, that would be great.

DR. ROTHE: Okay. You will ask me for that, right?

MR. KATZ: Sure. The Work Group Members or LaVon or Joe Fitzgerald from SC&A or -- yes.

DR. ROTHE: Okay. So I will go back to mute then.

MR. KATZ: Thank you, Dr. Rothe.

MR. RUTHERFORD: One moment. I'm still trying to --

CHAIRMAN KOTELCHUCK: Right. That's okay. It always takes a few more moments doing something live, in real time. No problem.

We also could adjust the agenda and go on to the next item, if you'd like a little extra time.

MR. KATZ: LaVon, it's -- if you just

bring -- if you just bring it up on your screen and bring up your -- and then share your desktop, everybody will see it.

MR. RUTHERFORD: Okay. Hold on. I was actually trying to pull it from another area but, yes, I can do that.

MR. KATZ: Yes. That's the quickest thing to do.

MR. RUTHERFORD: Can you see it now?

CHAIRMAN KOTELCHUCK: Yes, indeed. Thank you.

MR. RUTHERFORD: Okay. Alright. Let me -- I have to do one other thing.

CHAIRMAN KOTELCHUCK: Sure.

MR. RUTHERFORD: I couldn't see my notes that way. Okay. So, again, the Critical Mass Laboratory -- I've got it pulled up. If you look at -- this is the review I just pulled up.

CHAIRMAN KOTELCHUCK: What I see is the SC&A comment.

MR. RUTHERFORD: Hold on. Yes.

CHAIRMAN KOTELCHUCK: Not the original

NIOSH report.

MR. RUTHERFORD: Okay. Maybe you guys were right and I looked at this wrong and it's -- the review's not there. I'll pull it right up and out of my files.

CHAIRMAN KOTELCHUCK: Sure. Our Working Group Members certainly had access to it and looked at it and reviewed it before the meeting.

MR. RUTHERFORD: Sure. I'm really surprised it was not sent to you. I was gone last week, as you know, so I --

CHAIRMAN KOTELCHUCK: Yes.

MR. RUTHERFORD: Yes. I promise you one more minute I'll have it.

CHAIRMAN KOTELCHUCK: Okay.

MR. RUTHERFORD: Oh, I know where to look. I'm in the wrong area. Here's data falsification. Critical Mass Laboratory. Finally. Can we see that?

CHAIRMAN KOTELCHUCK: Yes. Thank you.

MR. RUTHERFORD: Alright.

MEMBER MUNN: Magic.

MR. RUTHERFORD: Yes. Well, you know, you guys put me on the spot. It made it difficult.

MEMBER MUNN: Sorry about that.

MR. RUTHERFORD: So our second paper, as we indicated, is an assessment of sealed radioactive sources and fission and activation products as radiological exposure sources at the Rocky Flats plant Critical Mass laboratory, Building 886. Okay. We issued on June 9, 2015.

We were basically -- our review was to look at the sources at the Critical Mass Laboratory, you know, the different experiments that occurred, fission and activation products that could be generated into fuels and whether there was a potential that those fission and activation products created an exposure -- or had an exposure potential and, if there was, was there monitoring data or was there a way that we could assess the exposure potential from the fission and activation products.

The first section is history of the Critical Mass Laboratory and it goes into some

discussions. As I mentioned, a significant amount of the information that we received in this is from a history report of Critical Mass Laboratory that goes into the experiments that occurred.

They conducted 1600 to 1700 experiments and, if you look on Page 2, you'll see the different types of -- or some of the discussion on those experiments that occurred. If you follow on and you -- one of the key things to note is that experiments did not resume after the FBI raid in 1989. And another key thing to note is -- and I'll get into that a little bit more -- is the types of analyses that occurred after the 1983 up to the 1989 period.

If you look at the following page under radioactive materials used in the CML, you'll see a Table 1. You see high-enriched uranium hemishells and rods, low-enriched uranium oxide, packet briquettes, plutonium ingots, high-enriched uranium, uranyl nitrate solution, plutonium in the form of metal hemishells and machined plutonium cylinders sealed in double

containers.

As you move on into the report, we actually look at the sealed radioactive sources in use at the Critical Mass Laboratory, in addition to not only the experiments that occurred but you'll see that you have californium sources, cobalt-60 sources in Table 2. There was plutonium-beryllium from a -- most of the californium for the neutron activation for providing a neutron source for the analyses.

So our big concern, the concern that was brought up to us about the Critical Mass Laboratory is do we have a concern with fission and activation products and -- that was generated from these low-level criticalities or bringing things to criticality at the CML that would create a potential exposure that we have not actually evaluated.

So, if you go down to Page 5, you'll see a timeline of experiments or actually Table 3. There's a timeline of experiments that happened at the Rocky Flats Critical Mass Laboratory. You can

see a lot of the work that occurred in the early years. We also give you reference numbers and stuff that you can look it up, the number of events that occurred through that period.

But, if you go down to the bottom of that table, you'll notice that after 1983 the only thing that really -- all the experiments were focused around uranyl nitrate and uranium solution at that time period. So this is, in our opinion, the critical time period. Prior to 1982, it's -- or '83, it's already an SEC. And so we were focusing on the time period from the '83 until the end of operations in -- at roughly '89.

Again, Table 4 has a number of experiments for each different material, physical and chemical form that occurred. And so, again, the HEU represents the most likely source of -- in our opinion, the HEU represents the most likely source of internal contamination by the fission and activation products because, one, it was handled in open tanks -- open tanks and because several spills occurred requiring cleanup and recovery.

And that was what was occurring during this specific time period in 1983 to 1989 as well.

If you look at the Page 7, you'll notice that the top four incidents involving facility contamination by solid material reported plutonium metal sealed in a can reacted with water in a can outside and plutonium pushing up from the can, another, a can containing compressed low enriched uranium powder, two almost identical incidents with uranyl nitrate salts.

So, again, we were looking at the exposure, either an acute or chronic personal exposure that could be generated by some of these events that occurred.

So what we looked -- what we tried to do was, taking all these experiments that occurred in Building 886 and, since there was significant detail that was provided in that History of the Critical Mass Laboratory, we looked at coming up with a model that would identify the activity concentrations of the fission and activation products based on the source materials that were

used in Building 886.

We knew we had approximately 1600 criticality experiments that occurred during that period and we estimated the amount of fissions from the high-powered experiments and then, using a code, we simulated a code being ORIGEN-S. We simulated fission and activation product buildup in the uranium solution over time.

And so -- okay. So, if you look at, again, on Figure 1, we have a time distribution of the HEU critical experience over the history of time. We used that to come up with an average solution experimental rate in -- for developing our model. You can see that. And we assume that each experiment took one hour and was conducted at a power level of 10 milliwatts.

If you look at Table 5 from our model that we developed, the total activities -- the activities -- activity dosimetry, important fission and activation products ten days after the end of CML operations.

So, basically, we developed this looking

at buildup over time, including decay. And then we came up with an activity concentration for each of the activation products that would -- fission and activation products that would occur.

And then, from that we assumed that -- came up with the position that these inventories would have been fairly uniformly distributed within the total volume of the solution at the CML and they would be transferred back to the tank farm for storage. So our exposure potentials were both from re-suspension of any spills that occurred and contamination that occurred at the facility as well as during the decommissioning and demolition of the facility.

So we took a couple different approaches on this. For the decontamination and decommissioning of the facility, we actually took in, if I remember correctly here, we captured a number of different surveys that occurred for D&D of the facility. We had a -- we looked at the different dose rates that were emitted from that. This is, again, on Page 11. We looked at the

activity counts or the actual smear surveys that were done as well for this.

Let's see. There it is, Contamination Levels. I'm going to get down to the final. Hold on here. So our final thing was to look at -- do an assessment of the unmonitored radiation dose at the CML. So, if we go to Table 8, you'll see that you'll look at the high enriched uranium solution spills over the history of the CML. So what we did was we looked at all the different spills that occurred over the time period.

Again, these are what we indicated were the most likely source of internal contamination because it was spill material. It was from tanks that were open tanks and plated out into the surface or onto the surface. So, as you can see on Table 8, the recorded amount of high enriched uranium nitrate solution is under 30 kilograms. Almost all the spilled fuel was recovered and surfaces decontaminated.

So what we ultimately ended up doing was we took the contamination area limit of 2,000 dpm

per 100 square centimeters, which is the -- and we -- and we took the total floor area of the room that's approximately 220 meters square and came up with an amount of 1,980 microcuries of HEU.

And, from that we developed bounding intakes from this. The intake would be based on a concentration spill fraction, resuspension factor, breathing rate, intake period and our combined surface area.

And, if you look at Table 6, our intakes from this, you can see the actual intake concentration in becquerels on the right and for each radionuclide in the total inventory. And Table 6 identifies the intakes of dosimetry -- dosimetrically important fission and activation products, and resuspension of contaminants at the CML. And that narrows it down to roughly six or seven items.

And then, from that we took the largest total organ dose and thyroid from the soluble I-131 and you can see that the committed dose in that -- from that in sieverts is 3.7 times ten to the minus

seven and for bone surface and the lungs 4.0 and lungs for insoluble at 6.1, which is, you know, basically a negligible -- a negligible dose from that event or from the prompt resuspension of those materials.

So our summary was that we concluded that the -- we have external monitoring data from the individuals. Each individual had external badge readings. The internal monitoring data, you know, all -- everyone was -- had bioassay monitoring and for uranium, plutonium, americium. And the fission and activation products that were generated during these routine experiments did not generate enough activity to create a potential -- an exposure that would provide a measurable dose to the individuals.

I want to see if our ORAU team members want to add anything on that, too, because I got kind of lost in that process there.

MR. BOGARD: This is Jim Bogard. Now, only clarification back on the Figure 1 that showed the frequency. Yes. Figure 1 on Page 9, that

average HEU solution expendable rate is actually an artifact. We originally did the analysis using that average rate, but we decided to go back and try to use the -- an assessment that considered the experiments in the time period that they occurred. So the average rate actually wasn't used in the final analysis. It was the number of experiments in the particular time period. That's all I wanted to add.

MR. RUTHERFORD: Yes.

MEMBER FIELD: LaVon, this is Bill Field. Do you have like two Table 6s and 7s?

MR. RUTHERFORD: Hold on.

MEMBER FIELD: Because I see them in both. I see where different tables below are labeled 6 and 7.

MR. BOGARD: Yes. You're right. There are two -- at least two Table 6s.

MEMBER FIELD: Yes.

MR. BOGARD: And then come back for Table 8.

MR. RUTHERFORD: I can see we're going to

have to fix that.

MR. BOGARD: So the tables need to be renumbered.

MR. RUTHERFORD: Okay. Yes. Yes. I see the Table 6 after Table 8. Okay. I don't know how I missed that one.

MR. BOGARD: What's a misplaced table among friends?

MR. RUTHERFORD: Okay. Any questions -- other questions?

CHAIRMAN KOTELCHUCK: This is -- this is Dave Kotelchuck. I was off the line for a while, got cut off and I'm back. Was that Dr. Rothe speaking just before?

MR. KATZ: No, that was LaVon speaking.

CHAIRMAN KOTELCHUCK: I mean LaVon was giving the report. I thought I heard another person speaking. Do we want to give the SC&A response or -- and I gather that Dr. Rothe is on the line and will be asked to join us at some point. I'm not quite sure what's the right time.

MR. KATZ: Yes. So I think you're asking

for SC&A to give its response?

CHAIRMAN KOTELCHUCK: Yes.

DR. BUCHANAN: Okay. This is Ron Buchanan again of SC&A. And we reviewed NIOSH's very detailed White Paper concerning the CML. And they did a good job of identifying the source terms and everything. And we looked over those and we agreed with most of their basis and we set out a White Paper which outlined it again, summarized it and then really addressed it.

We looked at source terms, which was the sealed sources, the fission activation products and the fuels and looked at, of course, the external dose that was recorded by the dosimeters, internal doses and -- was what we were concentrating on. And, of course, the sealed sources, by definition you wouldn't have any internal. So we were looking at the fission activation and fuel internal exposure potentials.

And so we addressed it in kind of like where the rubber hits the road. Okay. They did a very good job outlining the source terms and

stuff. We looked at it and said, okay, was this data available for the workers that were there. And so I went into the actual database for the workers and the NOCTS and looked at some of the claims.

Now, this was -- what I did was I took the book or article on the history of the CML and looked at some of the people's names in there. And there were about 25 names in that publication that would indicate that they could have some potential uptake: experimenters, technicians, nuclear engineers, those sort of people that were working around the material and would be involved in the daily operation and cleanup.

And so I looked at those 25 people and I looked them all up on the database and four were claimants, fortunately. And so I looked in detail at their data and see what was available. In other words, were we looking at bioassays that would allow for dose reconstruction regardless of the source terms as long as the bioassays were appropriate for the source terms and analyzing what

NOISH puts forth as the source terms and the other articles that I've read and looking at the bioassay data and they -- there was an appropriate match there.

And so what we wanted to look at was the number and the pattern of the bioassays that were recorded and will actually be used in the dose reconstruction. And so I looked at those and, fortunately, there was data for the operational period -- and for the people that fit some of these categories that would be potentially exposed.

And so I looked at the pattern and the number and the types and there were -- there were urinalysis for uranium and plutonium, there's whole-body count for fission products. There were several different types of analysis. And so I looked to see what the pattern was there and I listed in Table 1 kind of the summary of our investigation.

And what I was looking for was, was there at least annual bioassays indicating that they would pick up the doses, the impacts that were

received and, number two, was there more than one or two per year because you could have a whole-body [count] and a urinalysis. That would be two a year. That would be still considered an annual.

And so I looked at those that had three or greater indicating that, if something happened, they were they were bioassayed. And so I have the cases there, A, B, C and D, the four cases, the number of years they worked at the CML, the number of bioassays in that -- in the operating period '64 to '82, average bioassays per year and the range of the number of bioassays per year and the number of years that had more than three bioassays per year.

As you can see there, there was, generally, at least an annual bioassay in most cases. Sometimes if the person started late or left early in the year, there was -- there was no response that would fill the bill. But most of the time there were annual bioassays. And there was -- and about 30 percent of the time there was about three or more bioassays in a year. And so -- and

these were bioassays that would look at the source terms that were just explained by NIOSH.

And so we concluded that they did do regular bioassays. There was probably -- although [we] had no direct proof, there was probably some special bioassays because, unfortunately, Rocky Flats didn't label a lot of their bioassays as to whether they were routine or special or event-driven. So you just have to kind of try to look at the frequency and see if that's what it might be.

Now, in addition, we said, okay, what if a person didn't have a -- had an intake and wasn't -- and didn't have a special bioassay, say, from a liquid fuel spill or something? So, I used the IMBA program to run some generic cases where a person [was] having a plutonium or uranium intake, say, between annual bioassays and say six months into it, halfway in between, would we be able to see it?

And what I found out was depends on the isotope solubility and some, you know, other

variables. We'd still be at around 50 percent of the original concentration. Forty-five to 85 percent of the original concentration would be there to detect then when the next annual bioassay came up.

And so, in summary, we found it most likely that, in fact, reading a lot of articles around CML -- Dr. Rothe's history was very helpful in this -- and some other articles, that CML was fairly well represented as far as bioassays. And so we did not find an issue that would indicate that people that worked there would be missed assigning dose during the dose reconstruction. So that -- that's the summary.

CHAIRMAN KOTELCHUCK: Okay. Questions or was there -- was there something that Dr. Rothe would comment on or wants to comment on?

DR. ROTHE: This is Dr. Rothe. Yes. Do I -- may I have the time now to -- I have seven major points that I would like to discuss concerning the White Paper. And it --

CHAIRMAN KOTELCHUCK: I guess so. I

don't know how long that will take but --

MS. BARRIE: Dr. Kotelchuck, this is Terrie.

CHAIRMAN KOTELCHUCK: Yes.

MS. BARRIE: Charles Saunders and I are willing to give up our petitioner comments at this time in order for Dr. Rothe to speak and we'll take care of our comments at the full Board meeting next week, if that's okay with you.

CHAIRMAN KOTELCHUCK: Well that's very nice of you. Well, good. Good. Then --

DR. ROTHE: I don't think my comments will take that long anyhow.

CHAIRMAN KOTELCHUCK: Thank you. And I don't know. I think we may have time for your comments later anyway, Terrie.

MS. BARRIE: Okay.

CHAIRMAN KOTELCHUCK: But, Dr. Rothe, please do go ahead.

DR. ROTHE: Alright. Thank you very much. I have, as I said, seven major points. Point number one, a very important point, there is

absolutely no way whatsoever that anyone can even guess at a power level for the super -- slightly super-delayed critical experiments at the CML.

It is not even conceivably possible to reconstruct a power level from the data that was collected for every experiment. Therefore, the 10 milliwatts assumed in the White Paper is certainly wrong, simply wrong.

I've given this a lot of thought since reading the White Paper and have come up with one possible alternative that would allow you to at least estimate a possible lower limit on the power level and that methodology -- I have not done the calculation myself but there are physicists around that can do that.

My suggestion is that we take credit for the fact that, at the CML experiments, we never needed to dissipate heat generated. That is, there was no thermal -- no significant thermal expansion due to heat from an experiment.

And, therefore, I would like to suggest that someone calculate the following: consider a

60-inch-square slab of high concentration uranium solution that can -- that attained criticality at 12.64 centimeters. I'm recalling this from a specific experiment that I did early in my career.

Then, once you calculate the wattage that would have increased that height by thermal expansion by a two times ten to the minus three centimeters -- that is a few hundredths of a millimeter -- the nine-hour-long experiment that is referenced in the White Paper proved the sensitivity because, in that particular experiment, a few seconds of the slow pump, which added solution at the rate of one-third of a gallon per hour, gives us a very sensitive measure of the -- of the height increase because you can easily measure two seconds.

And it turns out that two seconds of that slow pump would increase the solution height five times ten to the minus four centimeters. Still at that small change in solution height, a very significant and noticeable, measurable change in the positive reactor period. I'm assuming

everybody knows what a positive reactor period and a negative reactor period is.

About 30 seconds worth of such an addition would produce a short reactor period but still within the allowable limits by technical specifications.

One preliminary thermodynamic calculation, done on the back of an envelope we might say, suggested that the two-second pump change in period corresponded to about 4 watts. But we could pump or -- we could make that small pump addition -- slow pump addition for 30 seconds. So that's 15 times longer than the 4 watts. So, if things are linear, you could assume 15 times 4 -- or 60 watts. That's a little bit larger than 10 milliwatts.

Now, if -- when one is doing this calculation, since you won't have the thermal expansion of uranium solution, I'm suggesting that you use the thermal coefficient of thermal expansion for nitric acid or for water.

CHAIRMAN KOTELCHUCK: Sir, this is hard

to follow. You're giving a lot of numbers that I trust are written down or you can write down?

DR. ROTHE: Yes. I have written them down.

CHAIRMAN KOTELCHUCK: Good.

DR. ROTHE: And I will forward them whenever anybody wants them.

CHAIRMAN KOTELCHUCK: Okay. Okay.

DR. ROTHE: Now, my suggestion is -- in fact, my -- I very strongly encourage that whatever wattage you come up with there, somewhere between 10 and 20 watts, probably, to be used in the ORIGEN-S calculation in order to determine the impact of radiologic exposure from CML's almost 1,000 or so critical experiments. And we did attain delayed criticality on every one of these experiments that I claim went critical.

Now, if it turns out that 10 or 20 watts of power yields the same results as the 10 milliwatts, so be it. If it's the same conclusion in the White Paper, I won't argue any further.

CHAIRMAN KOTELCHUCK: Okay.

DR. ROTHE: Okay. Point number two, no experiment -- no experiment ever lasted only an hour. No critical experiment anyhow lasted over an hour -- only an hour. If we attain criticality, at least 20 to 30 minutes would be spent without making any change in solution height, establishing a positive reactor period. Then, after that, a little bit of solution would be drained away, allowing another 20 to 30 minutes to establish a negative reactor period such that we could linearly interpolate the critical height between the positive period and the negative period.

In addition, both of these were preceded by 45 to 60 minutes approaching criticality where fission fragments were still being created. To be on the safe side, when reconstructing dose exposure, I suggest that you assume at least two-and-a-half hours. Thus, in summary to this point, two-and-a-half hours instead of one hour and 10 to 20 watts instead of 10 milliwatts.

CHAIRMAN KOTELCHUCK: Okay.

DR. ROTHE: Now I'm moving on to point number three.

CHAIRMAN KOTELCHUCK: Yes.

DR. ROTHE: The White Paper totally underestimates the fission fragments built up during our experiments. The radiation monitor working with us often told us to avoid proximity to the fissile fuel, be that solid metal or the solution, after an experiment because of the elevated radiation levels.

Often we were told to stay out of Room 103, the solution storage room, after a solution experiment. Sometimes that would be for two or three days, such as over a weekend. The radiation monitors wanted the fission fragment inventory to decay away.

Now, you guys probably know this better than I do but I recall a rule of thumb someone told me that fission fragment radiation would decay according to t to the minus 1.4 in days.

Okay. Point number four, the age of the plutonium metal cylinders, we got these metal

cylinders for experiments in the 1970s sometime and we returned them to the production stream in 1983. By that time, the plutonium metal was about 25 years old and would -- there is a natural process that inbreeds americium-241 into the plutonium-239. And that -- and that makes the resultant plutonium metal cylinders much more hazardous to handle or deal with.

The fifth point I want to mention briefly is that, of the bullets listed on Page 7 of 24, I think Bullet Number 1 referring to the January 1983 incident minimizes the -- minimizes the impact of that particular incident. That's when the plutonium's solid cylinder got contacted with water and there's not room for the oxide of plutonium or sub-oxide of plutonium and the plutonium metal in the sealed can. So it popped the lid off the can and put plutonium compound on the floor of the experiment.

The second bullet on Page 7, which deals with that can that was accidentally pushed off on the floor and fell, rupturing the can and spilling

the powder, I think that way overstates the significance of the -- of this insignificant incident. The can was even salvaged and used in subsequent experiments and the small contamination was easily cleaned up.

Now, I have four unrecognized incidents of greater significance that I think should have been included as bullet points. One is, when you don't take -- you don't recognize that the plutonium hemishells -- that one plutonium hemishell was found decomposed upon opening its pressure cooker.

When we took the -- took the pressure cooker off its shelf and rested it on the downdraft table, opened up the lid, instead of a fairly large diameter plutonium hemispherical shell, we found just a pile of powder. So that should be bullet number four.

Bullet number five should be the spill in May of 1969 wherein there was 60 gallons of uranyl nitrate solution put on the floor of Room 103. And I confess to you all that that was totally my fault

because of an oversight on my part. That should be bullet number five.

Bullet number six should --

MEMBER MUNN: How was that responded to again?

DR. ROTHE: -- be the spill in the trenches of Room 101 in February of 1968. And bullet number seven should have been the vent overflow into the exhaust duct system which caused problems through the early 2000s.

Even when they were decommissioning the facility, I got frequently asked about the disposition of the uranium contamination inside that buried 10-inch diameter duct. And, of course, that had never ever been cleaned up. So whoever was decommissioning that certainly got some exposure from that.

Then bullet point number six -- not bullet point number six, my sixth comment of the seven is -- talks about close calls on Page 7. Page 7, I think, says something like we never had any close calls towards criticality.

I would like to point out, however, that, in the Christmas Tree Experiment, one of the arms fell when it was half full of solution. When that arm -- what was holding up the arms were two little blocks of wood, one at the outside and one at the inside. Only fortuitously did the -- did the outside block fall allowing the outside of the arm to fall down with all of the solution in that arm going to that end.

Had the inner block fallen such that the solution all sloshed towards the -- towards the other end of that arm with the central column being full of uranium solution, a prompt criticality would almost certainly have occurred. But it did not happen.

Finally, any solution spills, so forth, could have attained prompt criticality if they had not been detected in time.

My final comment concerns the mass of plutonium shells omitted from the -- from Table 1 of the White Paper. I submit to you that 280 kilograms could be entered on Table 1 without being

off more than a few kilograms. And this is derived from my mental record -- recalling that these plutonium hemishells were about 10 to 12 inches in diameter and we had enough of those shells to make -- one-sixth of a centimeter thick, each one -- to make two full hemishells or two full hemispheres such that you put one hemisphere on top of the other and you would have a full sphere.

Obviously, you could never put all of those 280 kilograms together because you'd have way, way more than a prompt criticality. Okay.

I have a number of other small comments but I won't take time to talk about them because they're sort of small criticisms. But I'd be glad to answer any questions. I'd also be glad to be instructed how to get all of this information transmitted to whoever wants it and go from there.

CHAIRMAN KOTELCHUCK: Well, thank you. Thank you very much. I don't know. I suspect LaVon at NIOSH --

DR. ROTHE: Who's -- I -- who's talking right now?

CHAIRMAN KOTELCHUCK: This is Dave Kotelchuck, Chair of the Work Group.

DR. ROTHE: Oh, yes.

CHAIRMAN KOTELCHUCK: I suspect that, when you -- what you have written should go, when it's written up, should go to LaVon Rutherford at NIOSH and then he will both look at it and, obviously, distribute it to SC&A as appropriate.

But, LaVon, I don't know -- I have no idea. I did not know Dr. Rothe would be on the line. So I don't know if there -- you have any comment that he's -- have -- did you -- have you previously interviewed him?

MR. RUTHERFORD: Yes. We interviewed Dr. Rothe and, you know, I could respond to some of these now but I really think what would be appropriate, because he -- I mean these -- I was unaware that we were going to get these comments. And no problem at all because petitioner didn't have any time and I actually, you know, appreciate Dr. Rothe's comments on the document.

What I'd like to do is get his comments,

respond to them. I do -- I do believe a number of these aren't issues because of the time period of concern. But I -- I'm not going to respond -- I'm not going to say that formally until I get the information, go through it, we've had a chance to respond to it and I -- I'm very interested in seeing Dr. Rothe's suggested calculations, too, and how they may affect.

I -- you know, just generally looking at it, I don't think it's going to have much of an effect because of the significant load exposures that were previously identified. But until we've got the numbers, run them, run them through our code, we're -- I really can't say for sure.

CHAIRMAN KOTELCHUCK: That's okay.

DR. ROTHE: Well, I have to question -- it's [an] effect of a thousand from 10 milliwatts from --

CHAIRMAN KOTELCHUCK: Well, let's -- Dr. Rothe, this is -- this is a meeting of the Work Group. We have -- we want public input and your input is, in particular, important since you were

a leader in that area. But I do think we should give Mr. Rutherford time to see and digest what you've said. I trust that after he does that, he will be in contact with you and, of course, with the Committee to see what follow-up is appropriate. And then we will proceed.

DR. ROTHE: I think I know, if I may say, one more thing.

CHAIRMAN KOTELCHUCK: Okay.

DR. ROTHE: I think I know where the 10 milliwatts may have originated.

CHAIRMAN KOTELCHUCK: Alright.

DR. ROTHE: And that was during the interview, telephone interview that was conducted of me several months ago I think it was. Someone said -- somehow, this topic of the power level came up and I tried to explain. I think I did explain that the senior experimenters -- there were only three senior experimenters: Rothe, me, Doug Hunt and Grover Tuck. The last two are deceased. I'm the sole remaining senior experimenter and we were the only ones ever authorized to do experiments at

the Rocky Flats Lab.

But the U.S. Department of Energy told the Critical Mass Lab, we want you to come up with a document. And I think I'm referring to what was later called The Technical Specifications. And they said we need you to refer to a power level for your experiments. And the three of us talked. We're all good scientists, physicists. And we discussed this and said we don't know how to come up with a power level.

And someone said, well, I'm sure we're very low power. After all, we're categorized as a zero-power reactor, which itself is kind of misleading. But -- and someone said, well, I'm sure we're not more than a few milliwatts. And, evidently, the NIOSH people took the few milliwatts and made it 10 milliwatts. So there -- at least that's my guess.

So now that prompted me to think about this alternative approach, by looking at the thermal expansion of the solution. So, anyhow --

CHAIRMAN KOTELCHUCK: Okay.

DR. ROTHE: That's enough from me.

CHAIRMAN KOTELCHUCK: Okay. Well, thank you.

DR. ROTHE: How will I know how to get in touch with Mr. Rutherford or will he call me?

MR. RUTHERFORD: Dr. Rothe, I will call -- contact you and what we'll end up doing is, one, getting your written notes and then I'm sure we'll want to have a follow-on interview with you, if that's possible.

DR. ROTHE: Sure. Of course.

CHAIRMAN KOTELCHUCK: Excellent. Okay.

DR. ROTHE: I'm wondering, Mr. Kotel --

CHAIRMAN KOTELCHUCK: Kotelchuck.

DR. ROTHE: -- Kotelchuck, am I needed for any of the rest of this tritium, neptunium? Can I leave this conference?

CHAIRMAN KOTELCHUCK: Oh, by all means. You are -- you are all -- you and anyone else from the site is our guest to listen in, ordinarily. And there is normally a little bit of time for discussion from the -- from the petitioners toward

the end. But, no, you are -- you are not needed.

DR. ROTHE: That's okay.

CHAIRMAN KOTELCHUCK: You are not needed. If you wish to stay on, you are most welcome.

DR. ROTHE: I don't think I have much to say as far as tritium or neptunium exposures are concerned.

CHAIRMAN KOTELCHUCK: Okay. Well --

DR. ROTHE: Except to say that, of course, we did create neptunium --

CHAIRMAN KOTELCHUCK: Right. Right.

DR. ROTHE: -- in an experiment.

CHAIRMAN KOTELCHUCK: Well, okay. Well, thank you very much.

DR. ROTHE: I just -- I'm going to drop out of the meeting altogether.

CHAIRMAN KOTELCHUCK: Okay. Very good. And Terrie Barrie and Mr. Saunders, if you -- there may well be time for comments when we get toward the end of the meeting. So --

DR. ROTHE: Can you call me back if you

need to?

CHAIRMAN KOTELCHUCK: Oh, I don't believe we will need to call you back. Mr. Rutherford has to -- you have to get him the written -- your written comments and then he will go over them and then get back to you.

DR. ROTHE: Yes. Okay.

CHAIRMAN KOTELCHUCK: Okay. Thanks.

DR. ROTHE: Yes.

CHAIRMAN KOTELCHUCK: Okay.

DR. ROTHE: Okay. I'll say goodbye to all of you.

CHAIRMAN KOTELCHUCK: Goodbye and thank you. Alright. Folks, it is now 11:42. We -- I'm trying to think what might be a short -- normally, we would take a break at around 12:00, east coast time, which would be 9:00 for our colleagues on the west coast. So we have another 15 or 20 minutes.

I wonder if there -- I don't -- the tritium exposures I believe will be a more lengthy conversation. I'm not sure about the discussion on the neptunium, if that is -- we could do

something useful in the remaining 15 minutes or so.

MEMBER MUNN: We could get a cup of coffee.

CHAIRMAN KOTELCHUCK: Well, we'll -- but we're going to -- we're going to -- we're going to break for lunch here. Would people just want to break for lunch now, at 11:45 a.m. and get back together at 1:00 p.m. on the east coast [time]? That would certainly -- we could certainly do that.

MR. RUTHERFORD: I'll go ahead and get the tritium paper put [it] up on the Live Meeting.

CHAIRMAN KOTELCHUCK: Okay. Very good. So, good. So it sounds like we should just take our break, if you will, our mid-day break.

MR. RUTHERFORD: Let me ask our ORAU Team and Dr. Neton, are you going to be able to support that?

DR. NETON: Yes. This is fine. I need to get off and call somewhere around 2:00 today.

MR. KATZ: So how about if we -- how about if we restart then at 12:30 or 12:45 instead, try to move it up a bit?

CHAIRMAN KOTELCHUCK: Yes.

DR. NETON: I think that would be better.

CHAIRMAN KOTELCHUCK: That would work, if somebody has to leave. So that's going to give ourselves 45 minutes --

MR. KATZ: Yes. Yes.

CHAIRMAN KOTELCHUCK: -- for lunch and break.

MR. KATZ: Yes. So let's -- if we could make it convene at 12:30 I think that would be --

CHAIRMAN KOTELCHUCK: That sounds excellent.

MR. KATZ: Okay.

DR. NETON: LaVon, can we find out if the ORAU people are there and I'll bring up the Tritium White Paper to be available then?

CHAIRMAN KOTELCHUCK: Alright.

MR. KATZ: Okay. We can reorder things if they're not available then and they're available a little later, if that works.

DR. NETON: I would like to be on, myself.

MR. RUTHERFORD: Okay. Got it.

MS. BRACKETT: This is Liz Brackett. I can be back then. I prefer earlier than later myself because I have other commitments.

MR. KATZ: So, Liz, is 12:30 okay?

MS. BRACKETT: Yes. I should be able to make that.

MR. KATZ: Okay.

CHAIRMAN KOTELCHUCK: Great.

MR. KATZ: Okay. So why don't we break now so people can grab their lunches and --

CHAIRMAN KOTELCHUCK: Okay. Very good. Or breakfast, as the case may be.

DR. NETON: And we'll reconvene at 12:30. Is that what I'm hearing?

CHAIRMAN KOTELCHUCK: 12:30. Yes, indeed. Alright. Thank you folks very much and now we'll break.

DR. NETON: Alright. Bye.

CHAIRMAN KOTELCHUCK: Bye.

(Whereupon, the above-entitled matter went off the record at 11:45 a.m. and resumed at 12:31 p.m.)

CHAIRMAN KOTELCHUCK: Okay. I think we can begin.

MR. KATZ: Okay.

CHAIRMAN KOTELCHUCK: LaVon, you -- would you like to start?

MR. RUTHERFORD: Sure.

CHAIRMAN KOTELCHUCK: -- the Tritium Paper?

MR. RUTHERFORD: Yes. I did put the Tritium Paper up on Live Meeting. Do you guys have it?

CHAIRMAN KOTELCHUCK: Yes.

MR. RUTHERFORD: Okay.

CHAIRMAN KOTELCHUCK: Thank you.

MR. RUTHERFORD: Alright. After the last Work Group meeting, there was still some disagreement on how exposures from a 1973 tritium incident should be handled as well as there were still questions on the post-1973 and how -- you know, how much information we had about the

monitoring program for tritium.

We had closed out at the -- at the last Work Group meeting -- and come to an agreement that the pre-1973 exposure model that we had proposed could be used, recognizing that we have an SEC currently up until 1983.

So what we did this revision, if you look at Page 2 at the bottom, this revision focused on -- and we revised our best approach for the tritium dose assignments for 1973 and provide additional explanation of the reconstruction of organically bound tritium using uranium bioassay and IMBA. This is all in [the] appendix -- in Appendix I in the back -- I believe that's I or 1.

And the -- another issue was to close out the issue of tritium exposure after 1973 by evaluating the evidence of a robust workplace monitoring program. And that's in Appendix 3. I will briefly go over our changes. I'll let SC&A respond because I think we need to have as much time as possible to get into the technical discussion to make sure that Jim Neton and Liz Brackett are

available.

So our approach for 1973 originally took basically what we thought was the highest exposed individual. back calculated an intake based on his exposure and came up with a dose estimate based on that individual.

After looking at it, we revised our approach for 1973. Basically what we did was we said, okay, the site took the position that we're going to do a -- an initial bioassay on individuals that we believe have the potential to have had tritium exposure.

And they roughly did 200 tritium bioassay samples with a -- basically, a limit or a set point to do further evaluation of 10,000 picocuries per liter. And those 2,000 -- 200 people, you know, they came out with roughly five individuals that had exposure and they moved it -- I can't remember if it was five or not. They moved forward.

Our -- as I said before, our previous approach was to use the high -- basically the highest dosage we came up with of those individuals

that had greater than 10,000 picocuries per liter.

What we did now is we went back and we said really the exposure to the entire workforce, at worst case, would be taking the roughly 200 people that were monitored using that 10,000 picocuries per liter limit and coming up with a dose based on that and we could apply that to everyone over 1973.

And the issue of whether -- what's the right value and when should we choose an intake date for the other workers is really a dose reconstruction issue from those single dose reconstructions. They're not -- it's not an issue for all the workers for the entire workforce or the entire Class.

That's really addressed by those 200 individuals that were monitored with the 10,000 picocuries per liter. So that's what we did and we came up with an intake or a dose to be used for 1973 and I believe that was 49 millirems, if I remember correctly. And so that's how we handled that.

Additionally, we went back at the

monitoring program in Appendix 3 and we looked more at how much actual data do we have during the period of concern. We looked back at that and we found a number of locations that had routine tritium samples taken, which indicated a routine monitoring program did exist.

And we kind of analyzed that data and drew our conclusion that, one, from that data, there are very low concentrations. The highest concentration was around 7,000 picocuries and I can't remember exactly but all of the concentrations were low and there was a routine monitoring program. And, basically, we came to the same conclusion that we did before that any, you know, individual that had personal monitoring data post-1973, we'll use that data to evaluate their tritium exposure. But no other dose would be assigned.

And that's pretty much our addition. Jim, do you want to add anything to that? Liz?

DR. NETON: This is Jim. I don't really have anything to add. I think SC&A might comment

and then we can discuss it from there.

MS. BRACKETT: I don't have anything either.

CHAIRMAN KOTELCHUCK: Okay. SC&A?

MR. KATZ: John Mauro?

DR. MAURO: Yes, I'm here. Joe, would you like me to --

MR. FITZGERALD: Yes, just go ahead. We had broken this thing up into the three periods and Joyce, John and I had tackled each period. But I've asked John to sort of just keep it smooth just to choreograph all three periods. And then the rest of us can jump in as needed.

DR. MAURO: Yes. I'd be glad to do that and certainly, Joyce and Joe, help me out a bit. First, let me say that I believe that the changes that were made, the new way of approaching the problems, some of these problems since the March meeting are a real improvement and also a clarification. So I'm optimistic that we're going to be able to receive closure on these matters. And let me -- and I'll explain why.

First, let's begin with the 1973 dose, the one that is associated with that April 1973 incident, a very special circumstance. And I think that the new strategy adopted by NIOSH where -- basically, what's going on now -- so we've got all these people that were -- may or may not have been exposed to this incident in April of '73.

And then we have all this data, 200 -- I remember I saw in the literature it was more like 250 urine samples collected several months later in September/October. And virtually all of them show that the concentrations we're seeing in urine are less than 10,000 picocuries per liter.

And, up until that point, we really ignored that. We were focusing in on these five or so individuals where the values were above. And so the light dawned. I think it dawned on all of us during the meeting in March that, you know, let's not -- and there was a lot of quibbling over what did it really mean, each of those five individuals and when do they have their intake and was the data, you know, reliable and to the point where we said,

hold the presses, maybe they're not -- maybe we shouldn't be looking over there.

Let's go look at those other individuals, the large numbers that have less -- that had less than 10,000 picocuries per liter. And I think that was a great move. And we completely agree with that change of looking at the problem, which brings us to the second half.

Well, there's really three elements to it. Okay. Let's agree that we're going to try to base our reconstruction of the 1973 doses from the April event on these 200/250 people. And then we have to say, oh, well, what dates are we going to use? And I have to agree that NIOSH has picked very claimant-favorable dates: early April to mid-October.

In other words, the acute intakes occur in I guess it's mid or early April and the bioassay samples that were taken, were taken in October, even though some of them were taken in September. So, on those two levels, very favorable.

The last one is the one that takes a little

touch and that has to do with, okay, now you're going to try to back calculate what the intake was in April of two people -- where 200/250 people were -- got urine samples collected sometime in October and they all came in under 10,000 picocuries per liter. Okay. That's just great.

Now, how do we go backwards in time? And herein lies where we've always had some difficulty. And, in this particular -- the new paper, NIOSH has come up with a new way of doing that, something that is creative. But I have to say we're troubled by it.

And we find that it would be more acceptable -- this is -- here's where the -- where we need to talk a little bit. We find that it would be more acceptable to use the classic two-compartment model, 97 percent/three percent, you know, ten day/40 day half-life model. We realize and we all acknowledge that that model was really good for up to 100 days and now we're -- but extending it to 180 days is preferable to going to this new construct really which has, in our

opinion, very little pedigree.

It's a new construct while the original, what I call the 93 -- 97 percent/three percent classic tritium model has a rich pedigree. And now there's another element that goes in the soup now and the other element is that the -- there is -- clearly gives precedent prior to this meeting and during this meeting that you have to balance in the kind of doses we're talking about, the magnitude.

And Dr. Kotelchuck -- I actually quoted him in the write up about these. You know, you have to moderate your judgments when -- depending on the circumstances we're dealing with. And we all know we're dealing with doses in the millirem range, in the tens of millirem range.

So, taken together, our takeaway is, one, we really like the 10,000 picocurie per liter approach with the 200/250 people. We really like the dates you picked for doing the back calculation. The only place we're a little troubled by is the construct for the new model based on OBT and we find it more acceptable. You know,

we don't especially like it but we would find it more acceptable, especially given these context, to go with the classic 97 percent/three percent approach.

And so -- and, by the way, the difference is, when you do it that way, the -- go back to the classic model, we get I think 94 millirem. While you folks, using your construct of the model, you get 49 millirem. I have to say that I think, in terms of defensibility of the four tiers, I think the 94 sits on a more solid ground than the 49 that you would get.

And I also say, at the same time, the two numbers are so close and so small that it should not stop our ability to achieve consensus and agreement and closure on this issue. And I think it's probably a good idea for us to talk about that before we move on to the other two segments -- time periods.

DR. NETON: John, this is Jim. I think we're more in agreement than you might think here. Let me -- let me just speak one second, Joyce. I

think you might --

DR. LIPSZTEIN: Okay. Okay.

DR. NETON: We did not have a new model. I mean we -- Tom LaBone attempted -- I think he applied the --

DR. LIPSZTEIN: Yes.

DR. NETON: -- the two-compartment model. It's the 10 day and the 40 day compartment, so the three percent and 97 percent, 97 percent for ten-day and three percent for the 40 day. The only difference in those two models is the fraction of the organically bound tritium, the soft-tissue component that is excreted in urine.

I don't -- I didn't look at Tom's model in detail but I think what's happened is he has chosen to -- they did excrete 100 percent of that soft-tissue compartment directly in the urine, when really it -- I agree with you. It should be 50 percent. So, if you make that modification, in effect, you have the same two models. There's no difference at that point. With the exception of the bladder component, it really doesn't make any

difference at 180 --

(Simultaneous speaking.)

DR. LIPSZTEIN: Jim?

DR. NETON: Yes.

DR. LIPSZTEIN: Jim, that's exactly what I was going to say. The only difference is because when the modification on the -- on OBT model and IMBA, the difference is on the excretion rate because, if it goes 100 percent from compartment two, the compartment of the organic tritium --

DR. NETON: Yes. And then I --

DR. LIPSZTEIN: -- that's 50 percent. And, because after that the -- it's more claimant-favorable both to use the 60 or 55 percent as MCNP-161, for example, uses 55 percent from both compartments. And then you get a higher dose because you get less excretion. So --

DR. NETON: Yes. It took me a bit to realize that but --

DR. LIPSZTEIN: Yes.

DR. NETON: -- what happens is not all the tritium is excreted in urine. You've got other

modes that you don't normally think about like sweat --

DR. LIPSZTEIN: Oh, yes.

DR. NETON: -- through feet, through the breath, that sort of thing. So, if we modify that second compartment for it to be 50 percent, I think we're on the same page here.

DR. LIPSZTEIN: Yes. Yes, exactly.

DR. NETON: In my mind, that issue is resolved.

DR. LIPSZTEIN: Yes.

DR. NETON: It took me a while, but I think I'm there.

DR. MAURO: I love it. That's where we come out also. I think this is very good news because we've been struggling with this for a long time, as you know.

DR. NETON: Yes. And I really think it's an oversight, that compartment, because you can't be 100 percent. It's not consistent to be a -- for organically-bound tritium to enter the transfer compartment and be 100 percent excreted in urine

while the inorganic component only goes 50 percent.

So I think it's just a tweak and we're there. And, of course, this 90 millirem or whatever it ends up being will have a GSD included on it to account for the uncertainty in the models themselves.

DR. LIPSZTEIN: Yes.

DR. NETON: So the upper bound of that will be somewhere around, I don't know, a factor of six higher at the 95th percentile. So I think that we're good. I think that -- I think that's where we're going to end up here.

DR. LIPSZTEIN: And, actually, I -- even just for opinion as already did the -- what would be the dose if we used the new -- newest model that we don't want to use, you might see the difference is not so big. So the uncertainty factor of three, it's okay.

DR. NETON: Yes, I agree.

DR. MAURO: I think we can put that one to bed.

CHAIRMAN KOTELCHUCK: Very good.

DR. MAURO: I mean we will respond and put that in writing that, you know, the -- I need to talk to Tom LaBone as well. Tom developed the model and I -- at least -- I agree with this and I think -- I don't see any reason why we wouldn't. But we'll put that response in writing and that should close out that issue.

By the way, I believe that that is a Site Profile issue anyway because 1973 where this model is only applied is already an SEC. So it would be a matter of whether the dose was zero, 45, 90, whatever. So it is a Site Profile issue. So I think -- I don't think the Working Group has to wait for this to be dispositioned to move forward with their -- the final analysis of the SEC.

CHAIRMAN KOTELCHUCK: Right. Does anybody in the Working Group have any concerns about this particular item? It seems to me there's agreement and --

MEMBER MUNN: This is Wanda. I don't dare have any disagreement about it. I've already -- I made this -- I've made the statement in the

past that tritium is such a soft-beta emitter, it's hard to imagine in ordinary circumstances that it would create any serious dose reconstruction problem for our part.

CHAIRMAN KOTELCHUCK: Right.

MEMBER MUNN: Dose-effective problem for any of the recipients. And that's gotten me in trouble but I hope to state on the record here.

CHAIRMAN KOTELCHUCK: Okay. Indeed, you have said that before. So unless there are some other comments or concerns, let's continue on with the other parts of the tritium report.

DR. MAURO: Okay. This is John Mauro again. I'll pick it up and the next thing I'll take on is the -- and briefly go through the 1973 period.

As you all know, NIOSH has elected to use less than 1 millirem, or effectively 0 millirem per year of the tritium exposures post-1973. Of course, there are incidents like the 1974 -- April -- the November 1974 incident. They deal those on a case-by-case basis. So it's important to think in terms of, well, what are we going to assign to

everyone else as sort of like the chronic exposure of post-1973. And NIOSH has adopted 0 millirem per year. Less than one is effectively zero.

And the only issues that SC&A raised during the March meeting was, well, you know, that's based on two sources of data. And this is another interesting observation. One is that all the bubbler -- the model I had in my head was that, gee, the bubblers were not necessarily, you know -- this is part -- you basically have two sets of data. You have bubbler data -- well, three: bubbler data, swipe data and bioassay data collected post-1973.

And, if you recall, I had mentioned that, well, I'm a little concerned about the bubbler data. Maybe the people weren't really aware the bubbler data was being collected. Well, it turns out I was wrong. After the response provided very nicely in the June -- the July 1st White Paper that we just received, it was pointed out that, no, there were bubblers located in the hoods. There were bubblers located beneath the downdraft tables or

in association with the downdraft tables.

And, not only that, something I didn't know is that there are several rooms in -- over and above that that had bubblers, rooms where there was a potential for elevated concentrations of tritium. So, in effect, the coverage of the bubblers was a lot better than I thought it was. So now we have a lot better set -- well, an understanding that the bubbler data set was a lot broader than we originally thought -- I originally thought.

And the second thing that I think is important is that -- and, actually, to look at the 75 urine samples that were collected, part of this 1-in-10, we called it, bioassay samples, my concern was that, when you go closer -- you maybe can remember my mentioning this at the last meeting -- when you take a closer look at it, you say, well, you know, you've got 75 -- you basically have 75 samples.

But they really are single samples taken from individuals per -- one sample per year per

person. And we -- knowing tritium and how clearly -- how quickly it clears, that was a little troubling to me because it wasn't very good coverage. And, if you were really building a real tritium program for if they really have tritium problems, you know, you'd sample more often than once a year per person.

But then this came up during the meeting. I think Dr. Kotelchuck suggested they had mentioned this or it emerged during the conversation during the March meetings. Well, take a look. Look at it this way. They grabbed 75 samples, different people's, and none of them showed a spike.

Well, when you look at it that way, collectively, you say to yourself, what are the chances that it could have been a spike and we missed them all? So, now, all of a sudden we're building a weight of evidence that says, you know, between the bubblers, which are a lot -- which our understanding now is they were a lot better -- more coverage. And this came out subsequent to the meeting in March.

And thinking about that -- those 75 urine samples in a different way, we come down saying that, from a weighted evidence perspective, we accept that less than 1 millirem per year as being the chronic exposure post-1973. Good. And, you know, if anyone else wants to weigh in, this --

CHAIRMAN KOTELCHUCK: This is the time.

DR. MAURO: -- on whether I told the story the right way or you're comfortable with that --

CHAIRMAN KOTELCHUCK: Well, I'm certainly comfortable with it and it is much clearer now than it was -- it was appropriate, the less than 1 millirem, which comes out to calling it zero. Any other comments from Working Group Members?

MEMBER SCHOFIELD: Yes. This is Phil. I've just got one question. Do we have identified all those who had samples taken for tritium? Is there a specific group of people that were targeted because maybe they handled site returns or something coming in?

DR. MAURO: The post 19 -- this is John.

For post-1973, the 75 measurements of urine were people -- really it was more like a random sample where what they were doing is everyone that was on the plutonium bioassay program, every time their urine sample was collected for plutonium, one out of ten of those individuals had a urine sample taken. So it was really a random process.

And -- but -- and, as I said before, I was concerned that that ended up being one per -- one sample per year per person. But, when you take it collectively, as far as identifying those 75 people, I haven't checked. I suspect sure. I suspect -- I don't know, Jim, were the folks there, in terms of really identifying who they were and what they were doing, is that kind of information available?

MR. RUTHERFORD: I think what they were looking at, specifically, was they took the people that were monitored for plutonium, as you'd mentioned --

DR. MAURO: Right.

MR. RUTHERFORD: -- and they did the

random sampling of those.

DR. MAURO: Yes.

MR. RUTHERFORD: But I think on top of that is, as you had mentioned, the weight of the evidence of the additional bubblers that were used that -- and specific locations where they had the high probability of potential tritium release. And so it's not so much the bioassay samples. I mean it is in the fact that they were all alone and really didn't see anything. But it's also the program was looking at the actual concentration in the areas where you would suspect it.

DR. MAURO: Right. Right. That's sort of my -- how I walk away from it. It's a weight of evidence. You pile all of that together and you've got a pretty good story.

MEMBER MUNN: I'm pleased to hear additional information about the bubblers. That's helpful and thanks for whoever tracked that down.

DR. MAURO: With regard to the bubblers, there's always a fly in the ointment. One of the

questions we raised at that time during the meeting that I do not believe was addressed in the -- not necessarily a critical issue but something that would be nice to achieve closure on is bubbler efficiency.

You may recall that I asked that question during the March meeting and, in the July 1st report that came out recently, there really wasn't any discussion of that matter. And if there is some -- if there is some material in the record on that subject, I think that would be helpful but I don't see that as a show stopper.

MR. RUTHERFORD: Yes. I'm not sure if we found anything or not. Jim Bogard, did you see anything on that?

DR. MAURO: Well there was -- well, just -- you know, this type of sampler is widely used for a long time. My guess is there's literature on it and, you know, where there's a collection of information on how efficient these bubblers are of this particular make or model or how they used it to bubble the amount of water and the airflow

frequency. So it may not -- there may not be data I would say specific to these bubblers at that time but there may be information about these bubblers in general.

MR. BOGARD: This is Jim Bogard. There probably is. I know at least that there was a study comparing use of water to ethylene glycol in these bubblers and there may be some efficiency information from that study at least and there may be others as well.

MEMBER MUNN: Do we feel that's necessary for us to proceed?

MR. RUTHERFORD: This is LaVon. I don't think it's necessary. I think John had mentioned that he doesn't feel it's a show stopper but I believe that we can -- we can work on providing that information.

DR. MAURO: That's basically how I see it, also. Yes. I agree.

MR. KATZ: Dave, this is Ted. Dave, are you still on the line?

CHAIRMAN KOTELCHUCK: I am. I have to --

I like being on the line most of the time but there are so many trucks in the background that I was on mute.

MR. KATZ: Okay.

CHAIRMAN KOTELCHUCK: And, actually, I spoke a few times forgetting that I was on mute. So I've already -- I've already called. I don't say that we have agreement and the Working Group has agreement unless I hear concerns. And I don't.

DR. MAURO: This is John Mauro.

CHAIRMAN KOTELCHUCK: Yes.

DR. MAURO: There's one other minor item that I think is worth mentioning.

CHAIRMAN KOTELCHUCK: Okay.

DR. MAURO: When you look at the post-1973 data, you do notice that there are some numbers where there are acute values, where they have some large values. I see a 1978 value here, for example. And this was discussed during the meeting in March.

But it would be worthwhile, I think. There could be a little bit of confusion here and

I want to try to avoid confusion. And maybe it would be good to get this on the record. Under those circumstances where you do have observed elevated levels, such as the -- I think Bob Barton brought it up at the last meeting -- a 1978 situation that arose where there was an elevated level, those are dealt with on a case-by-case basis.

And, if you -- and for those individuals, you would assign a dose that's appropriate because they caught it.

CHAIRMAN KOTELCHUCK: Right.

DR. MAURO: But all the others that -- where you don't have the data, you've got to go with that zero. And they swabbed -- I think that it may not be immediately apparent that those occasional spikes really are special circumstances and they are dealt with on a case-by-case basis, like the August '74 one or the other one, of course.

CHAIRMAN KOTELCHUCK: Right.

DR. MAURO: Yes.

CHAIRMAN KOTELCHUCK: And there is

sufficient data. There's an -- even though data was not collected on tritium before '73, we know enough about those incidents to make some reasonable estimates of exposure.

MR. RUTHERFORD: I think what John's referring to is post-'73 --

DR. MAURO: Yes, this is post-'73 incident.

CHAIRMAN KOTELCHUCK: Oh, right. Okay. Okay.

MR. RUTHERFORD: And I think -- I think, as you mentioned, John, I think that those are samples that were taken on individuals clearly that they had suspected had a potential tritium exposure because, as you know, after 1975, there was no routine monitoring program other than for special circumstances --

CHAIRMAN KOTELCHUCK: Right.

MR. RUTHERFORD: -- pre and post-job and when incidents occurred. So, yes, I agree with you. I think those were samples for individuals that -- where they --

(Telephonic interference.)

DR. MAURO: Is everyone there? It went --

MR. KATZ: So I think David said this issue is closed.

MEMBER MUNN: Well, we lost our speaker.

CHAIRMAN KOTELCHUCK: I did.

MR. KATZ: Yes. So moving on I guess.

CHAIRMAN KOTELCHUCK: I would like to move on, yes, to the neptunium.

DR. MAURO: We still have -- but, see, we have a pre-'73, right? Did we do that?

CHAIRMAN KOTELCHUCK: Yes. I thought we did that before.

DR. MAURO: Okay. I mean I'm getting old. Okay. We've got it all covered. Okay.

CHAIRMAN KOTELCHUCK: Yes. Yes, pre and post now. And we discussed neptunium at our last meeting. Am I on, folks?

MR. KATZ: Yes.

CHAIRMAN KOTELCHUCK: Okay. We discussed neptunium at our last meeting. I'm not

sure, LaVon, whether we need to go over the White Paper from before or whether we should just respond to the Rocky Flats -- excuse me -- to the SC&A.

MR. RUTHERFORD: I would think we would just respond to the SC&A.

CHAIRMAN KOTELCHUCK: Yes.

MR. RUTHERFORD: There were some clarifications I (telephonic interference) at the Work Group meeting. But I think with the --

MEMBER MUNN: LaVon's phone is cutting out on my phone. Am I the only one?

MR. RUTHERFORD: Oh, my phone's cutting out again?

Is that any better?

MEMBER MUNN: Yes, it's fine but you were just being dropped -- large portions of what you were saying.

MR. RUTHERFORD: I'll try it again.

MEMBER MUNN: Yes.

MR. RUTHERFORD: Hopefully, this will work. What I said was that I would think that we could go straight to SC&A's response. There was

some additional items brought up by the petitioner during the Work Group meeting in a response. We can follow-up on those as well. So --

MR. FITZGERALD: Yes. That's fine. This is Joe Fitzgerald and I did brief out orally at the last Work Group meeting. The paper that you now have was in draft at that point but we held it pending I think NIOSH's addressing the comments that LaVon was just referring to that we received from the petitioner.

So we didn't want to really submit the final paper until we at least had, you know, those answers and were able to review what they were -- what the responses were to the petitioner. So that's the reason this went out May 29th. Actually, it had been prepared a few months before that.

At any rate, I won't give too much more background. This addresses the post-'83 time period of neptunium at Rocky Flats. Of course, the SEC covers neptunium up to '83. And we looked at the White Paper from the standpoint of the

assumption and the research showing that it was essentially one operation post-'83 that handled and processed neptunium. In this case, a separations process to separate plutonium from neptunium.

And look at some of the basic premises behind the conclusion by NIOSH that you didn't have the same conditions post-'83 that you had before '83, which was the exposure pathway to pure neptunium, that potential. Even though you did have neptunium at Rocky, it wasn't in the form where you would have that exposure to the pure form.

So I'm going to go to -- and you have the paper in front of you but -- since we did cover the summary on that pretty well. We pretty much came down to five basic questions that we felt needed to be addressed by NIOSH and we assessed what we saw as their analysis or response to those questions.

And the first key question was, was there only one single neptunium operation after December 31 of '83? And we pretty much attended the

interviews held in Denver as well as collected documents for the SRDB. So we were involved in that process for about two years, from about 2012 to 2014. So we were doing this in conjunction with NIOSH.

And there were a number of interviews and a fair amount of documentation that was retrieved that described the various operations. And we were unable to establish another operation beyond the separations one. We did have a lot of interviews where individuals would point to D&D where neptunium was present. But this was neptunium present in conjunction with plutonium.

Obviously, there were pure forms on site that were inventory and there was actually some documentation in NMSS that the neptunium was on site in pure form. But, again, this was in metallic form, held in inventory, not being processed or fabricated. So -- and, again, no evidence of an exposure pathway there.

And, also, of course, in waste management activities where D&D proceeded and wastes were

accumulating and these wastes were packaged and shipped out. But, again, no evidence that this was neptunium in pure form.

The one operation where you did have a fair amount of neptunium present was in this one separations operation. But therein, again, you did have plutonium present, which was the defining difference because, as we'll cover a little later, the presence of Pu in conjunction with neptunium enabled one to actually, through the monitoring of plutonium, bound exposures to neptunium. And that's another key to the premise behind the NIOSH analysis.

So, on the first one, after interviewing a number of former workers, after looking through the SRDB documentation, we agree that the one operation that involved the separations process was the one operation of any note after '83.

In one of the petitioner comments, there were some legitimate questions raised about the time frame of that particular operation, whether it was 12 months, 18 months, even longer and some

concern over the ambiguity of that.

We looked into that issue in some detail and found that it is a little ambiguous as far as the official termination of the operation because apparently the management wanted to write a final assessment report and the dates seem to differ depending on if you, you know, were using the dates for the actual processing itself or the official end of the program, which was the management report at the termination of the project, which was almost two years after the actual initiation.

So there were a number of dates and we covered that in a footnote that you'll see on the first page. So, certainly, there were a number of dates that were flying around but I guess there was an explanation of why you saw those dates.

The second question that we wanted to pose was what kind of -- you know, is there routine exposure potential that would be associated with this one operation or any other operations? And we interviewed a number of workers and it was noted that the operation -- the separations operation --

was essentially a closed operation, meaning that it was a glove-boxed operation with entry ports that were sealed entry ports.

Liquids were piped in that, in terms of withdrawing items, they were backed out of the glove box and you had full radiological controls including out air monitors and rad tech coverage. So this, unlike the earlier operations and unlike the production operations that we're familiar with at Rocky, this operation was a -- was a fairly closed operation. There was no evidence of routine exposures.

We did identify one instant that involved a tank where there was a leak. But, then again, it was identified early on and there was no evidence of anyone being exposed by that leak. And we didn't find any other evidence of non-routine exposures or even routine exposures from this operation. So that was one thing that we wanted to establish.

The third item which I mentioned a little earlier is this whole question of was neptunium

always in combination with plutonium after '83 such that you would have a means to bound neptunium by plutonium bioassay?

That's the central question because the premise behind I think the NIOSH assessment was, after '83, you did have neptunium in quantities at the site, but it was always present with the plutonium, which enabled, you know, monitoring and ultimately dose reconstruction.

Again, we looked at D&D operations. We looked at waste management operations and this one single operation. In all cases, you did have a fraction. And this makes some sense because you're handling -- particularly in D&D and waste management, you're handling a lot of piping, glove boxes that may have handled neptunium but also handled Pu. So the monitoring would have been tagged with Pu in all those cases.

The only pure forms, again, of neptunium post-'83 that we were able to establish by virtue of inventory were the metals that were held on site as inventory from previous production through the

'80s, actually into the early '90s. But, again, they were held in inventory and were shipped out as needed to other sites that were using neptunium source.

So the fourth item that we've looked at, or question, as you can read down on Page 5, were all the workers having exposure potential from this one operation, again, the separations operation bioassays and would those results have encompassed any intake of the neptunium?

And this operation took place in Building 771 and was '85 to '87. And all the workers that were involved in the operation were bioassayed for Pu. And, again, given the specific activity differences, that would have definitely covered neptunium and would have bound neptunium when we're tagging for plutonium.

The only, I guess, only asterisk or parenthetical question is whether the office workers in 771 were also bioassayed as well. I couldn't get a clean answer on that, even though they were in the building but they weren't a part

of the operations. But that was a relatively minor question. But that -- again, we've looked at the scope of coverage and the coverage was there.

Number five, that question we wanted to look at whether there were any post-'83 incidents where you might have had the exposure potential to neptunium. And the only one that we could find outside of what might have been some potential exposure on D&D and waste management was this plutonium nitrate tank leak out of the separations operation. And, again, there was no reported worker exposures associated with that. So nothing from the incident standpoint.

Finally, we wanted to just validate the fact that if, one, we're going to rely on bioassays to account for neptunium intakes, were there any technical issues or concerns associated with that assumption or conclusion. And we reviewed the relevant document from the SRDB and went back to an old document, the Rad Health Handbook, and a number of other things.

And really, even though the resulting

neptunium dose is about equal to plutonium on the basis of B per M per intake, it would be almost a hundred times -- a hundred times less on a per mass basis. So you're -- you're really counting all the alpha in terms of plutonium. And that's going to be very much bounding of any neptunium that would be involved. So the premise behind using Pu to bound any neptunium intakes is sound.

So, again, our conclusion, and this sort of echoes what we said back in March, we went ahead and, frankly, scrubbed down the notion of the single operation, the presence of Pu with neptunium, and any incidents that might have been at the site just to verify or validate that -- post-'83 that we were comfortable that there was a means to dose reconstruct any potential neptunium exposures and whether there was any neptunium exposures that would have been prominent. And, in both cases, we did not see any issues with that approach.

And, finally, we held up the paper wanting to see NIOSH's most recent responses to the

petitioner questions that were mentioned at the last Work Group meeting. We reviewed the piece that NIOSH put together. It was an email response to those questions. These questions and answers are attached to the report. You have already seen these probably but, just to be complete, we wanted to go ahead and attach those. And we did review all the responses and concur with NIOSH's position on those questions.

And that's -- that's pretty much it. Any questions?

CHAIRMAN KOTELCHUCK: Any questions, anybody? That was a very nice report, really clear and, basically, put into writing what you more or less indicated at the last Working Group meeting.

MR. FITZGERALD: Yes. I think I was reading from my earlier draft.

CHAIRMAN KOTELCHUCK: Yes. Right. Okay. Very good. Any comments, folks?

MEMBER MUNN: Good report, Joe. Thank you.

CHAIRMAN KOTELCHUCK: Yes. Okay.

Hearing none, I think we can say that the Working Group is in agreement that this is now resolved. And we finished our basic reports. We have basically the issues remaining on the table -- for data falsification, the folks are going to look at the TBD-4 revisions, which should not be a serious problem. It's just a matter of doing it and checking out the impact of the environmental -- any environmental faults on the dose reconstruction.

And then, on the Critical Mass Lab, Mr. Rutherford is going to take a look at Dr. Rothe's comments. He will submit them and then will go over them and I think that is it in terms of where we stand now, for the Working Group. So we have two, probably one small and one probably small item to continue on. Not clear whether we will need another meeting but let's leave that for a while.

I think that's where we are. We're moving along but not quite finished. And, of course, we do want to hear the petitioner's comments if they want to make some now. But, first, in terms of the summary of where we're at,

is that correct, folks?

MR. KATZ: Well, Dave, can I just -- this is Ted. I just need clarification I guess for my understanding. The first issue is a TBD issue, so it's really not in the way of your closing out and coming up with recommendation on the SEC, right? The TBD issue, the environmental dose, that's not a question of whether dose can be reconstructed. It's just a question of what your actual measurements are going to be, right?

CHAIRMAN KOTELCHUCK: Right. In that sense, there's no -- there's no basic issue there.

MR. KATZ: Right. Right.

CHAIRMAN KOTELCHUCK: Okay. So, in a way, one could say that this will not need to come back to the Work Group.

MR. KATZ: Yes. So my question that I'm not clear about but the Work Group needs to be clear about is the critical mass. Is that -- is that an SEC issue still until it's resolved this new information, or is that a TBD issue? I don't know.

CHAIRMAN KOTELCHUCK: I don't know

either because we really -- there was so much that was gone over and was very hard to -- for me at least, to put my -- to wrap my mind around it all. I think that may be -- let's wait until LaVon gets the material, reviews it and emails the members of the Work Group as to what he thinks needs to be done on that. I think it may not require -- we may end up just closing it without having to have another meeting.

MR. KATZ: Well, okay. So that -- I mean that makes sense. I think it makes sense that it's a little bit murky as to what the import of that is. But then I'm just trying to help you out here with respect to the Board meeting coming up. I'm not sure that that'll get resolved before -- in time for the Work Group to consider it and close that out. So --

CHAIRMAN KOTELCHUCK: I doubt it.

MR. KATZ: Alright. So I'm just trying to understand. So it sounds like the Work Group will be ready -- I mean it will be ready to give a -- an update on everything but, with that matter

outstanding, I'm not sure whether the Work Group will be ready to give a recommendation. Is that -- is that your feeling, the rest of you, the Work Group?

CHAIRMAN KOTELCHUCK: Well, with respect to --

MR. KATZ: The SEC Petition.

CHAIRMAN KOTELCHUCK: Yes. I guess not, if there's still an issue outstanding.

MR. KATZ: Don't know the importance of that for -- unless you can get clarity about that in this meeting. And I don't think the Work Group -- I mean the Work Group can correct me on this. I don't think the Work Group will be ready to give a recommendation because you won't know what consequence that might have.

CHAIRMAN KOTELCHUCK: That is correct. I think we've read it but I think that, because in terms of the agenda that we laid out, everything has been done except for now new input --

MR. KATZ: Right.

CHAIRMAN KOTELCHUCK: -- from another

person but one who has some authoritative information. But I think it's not impossible that we'll be able to make a recommendation.

MR. KATZ: Well, I mean we don't have another Work Group meeting. I mean that --

CHAIRMAN KOTELCHUCK: No. We won't have another Work Group meeting before the end of July.

MR. KATZ: Right. So, unless -- I mean staff or other Work Group Members, unless you have thoughts about this, I'm just -- I need to know this to be able to prepare for the Board meeting --

CHAIRMAN KOTELCHUCK: Right.

MR. KATZ: -- for you all. So --

CHAIRMAN KOTELCHUCK: Right. What do others think? I mean I don't -- I don't see that we'll be able to make a recommendation -- a final recommendation on the SEC.

MEMBER FIELD: This is -- this is Bill. I agree. I think, with the information presented, I don't even know how much is applicable to the period of the consideration. So I think we have to wait for LaVon to get the information and then

get a response. But it would be nice to go next week but I don't think it's possible.

CHAIRMAN KOTELCHUCK: Okay. Yes.

MEMBER SCHOFIELD: I agree with that. This is Phil.

CHAIRMAN KOTELCHUCK: Yes. Okay.

MR. RUTHERFORD: Thank you.

CHAIRMAN KOTELCHUCK: Alright. So there's agreement on that. But we're pretty close. We're pretty close to closure and certainly the meeting after this next one I'm certain that we'll be able to make a final recommendation. I'm confident, not certain. Nobody's certain. I'm confident that we'll be able to make a permanent -- a final recommendation.

MR. KATZ: Okay. Thanks.

CHAIRMAN KOTELCHUCK: We do have a little -- we have some more time. Particularly, we really talked about Item 6 now. We've just finished concluding Item 6. Is there any -- and 7. Is there any petitioner comment, Ms. Barrie or Mr. Saunders, that you wish to make now? It's not

necessary and you will certainly have time at the July Board meeting to do that but, if there is something you would like to say now, we certainly have time for that.

MS. BARRIE: Okay. This is Terrie Barrie. I really appreciate it. I won't keep you long because I'm quite thankful that you took the time to listen to Dr. Rothe. But I do have a few things that I want to mention.

Number one is I am so thankful that you did not make a decision today or a recommendation because there is a lot of issues from the interviewees for the various papers. At least I thought there would be, who have issues with the interpretation done by NIOSH, especially on the data falsification paper.

The other thing I want to mention is, in one of the papers -- and I am so confused about what papers I have read. I'm not organized at all. I just jotted down notes. NIOSH, in one of its papers, noted that they finally located Building 123 procedure manuals. And, fortunately, one of

the advocates that I work with also obtained a manual for Building 123.

And, on Page 10 of that, it says that 123 monitored environmental water samples for beryllium-7, which is the radioactive isotope of beryllium. And I don't think that workers were monitored for that kind of exposure.

The other thing is we recently -- another advocate recently --

CHAIRMAN KOTELCHUCK: And you're talking about the post-'83 period -- the post-'82 period?

MS. BARRIE: I believe so. Yes.

CHAIRMAN KOTELCHUCK: Okay.

MS. BARRIE: Yes. Like I said, you know, all of this information came in to me. I will be more organized next week when I make public comments.

CHAIRMAN KOTELCHUCK: Okay.

MS. BARRIE: Yes. So that's one issue. Another advocate recently found a soil sample. It's a government assured soil sample, that shows some kind of really -- strontium and cesium

reading and he is still working on comparing that to background to see if that's an issue. So I'm, again, thankful that this is not being closed out.

And, for neptunium, I'm confused and I don't expect an answer right now. But the ten-year review identified the need for the Board to be consistent with SEC decisions and I still don't grasp the -- why plutonium is used for post-1983 when it couldn't be used for pre-1983. And I don't think -- and I don't have the time right now to do -- research this thoroughly yet. But I don't -- there's a discussion for Savannah River on neptunium exposure and I don't understand why they're not using plutonium exposure for that.

And, because you've been so patient with me, I'm going to end it with that. But I'll have a lot more detailed discussion for next week.

CHAIRMAN KOTELCHUCK: Okay. And the data falsification paper, the NIOSH draft paper, when was it released to you? We were able to see earlier drafts before it was -- so we have had a chance, the Working Group, to look it over and

evaluate it well, I think, by this meeting. But I don't when it was released for public consumption.

MS. BARRIE: I don't know exactly but I want to say it was about a week ago.

CHAIRMAN KOTELCHUCK: Yes.

MS. BARRIE: Yes. And then -- because I did get some feedback from people.

CHAIRMAN KOTELCHUCK: Yes. Well, if that's the case, certainly, if you're happy that we did not make a decision because you believe there are issues about data falsification paper that should be considered by the Board, I do trust that you will present those at the Idaho meeting.

MS. BARRIE: I most definitely will.

CHAIRMAN KOTELCHUCK: Yes, because that's important and we are really moving towards a final decision on that.

MS. BARRIE: Yes.

CHAIRMAN KOTELCHUCK: Just not so much for your sake but for other -- everybody's sake, Board Members and others, I regret that I will not

be able to be present at the Idaho Falls meeting but I will be on the phone and participating and reporting.

MS. BARRIE: And I'll have a written summary also and I'll make sure everybody gets it.

CHAIRMAN KOTELCHUCK: Okay. Very good. Mr. Saunders, anything?

MS. BARRIE: He was having trouble with his cable today --

CHAIRMAN KOTELCHUCK: Okay.

MS. BARRIE: -- so I'm not sure if he's still on.

CHAIRMAN KOTELCHUCK: Well, then, I think, folks, we have completed our task for today. Is there -- are there any things left undone that could be done right now?

MR. RUTHERFORD: I've got one quick question.

CHAIRMAN KOTELCHUCK: Sure.

MR. RUTHERFORD: I know we discussed we're not moving forward. There's no recommendation. So, under that agenda item, what

do you expect for that portion of the meeting, Ted and Dr. Kotelchuck?

CHAIRMAN KOTELCHUCK: Well, that -- I mean I -- certainly, we have made progress closing the items and are in agreement on all the items now with one exception and that will be resolved soon. Obviously, if people are going to raise issues about the data falsification paper, that -- those issues will be brought up and will be responded to.

MR. RUTHERFORD: Yes. I agree. I agree with that. I was just trying to figure out whether we were putting together a presentation, what we were going to do for that portion of the --

MR. KATZ: This is Ted. Right. We thought we would -- we might be ready and we're not quite ready. So I mean there are two ways to go. I think what I would -- and I'm open to everyone's input on this but I think what makes sense is to hold on and make a full presentation when all the issues have been resolved or the Work Group has come to conclusion on all the issues I'd say --

CHAIRMAN KOTELCHUCK: Right.

MR. KATZ: -- rather than making a 90 percent presentation at this meeting and then holding off on a piece for November. Does that make sense?

MR. RUTHERFORD: It makes sense to me.

CHAIRMAN KOTELCHUCK: It does to me -- to me as well.

MR. KATZ: So I think what we would do then is just, Dave --

CHAIRMAN KOTELCHUCK: Yes.

MR. KATZ: -- would give an update to the Board, a more -- a very summary update to the Board during the Work Group presentations but we wouldn't have a Rocky Flats session at this meeting --

CHAIRMAN KOTELCHUCK: Right.

MR. KATZ: -- given that we're not quite ready.

CHAIRMAN KOTELCHUCK: Right.

MR. KATZ: So there would be no -- there would be no proper session with a presentation by NIOSH and SC&A and the petitioner's session. And, Terrie and others from Rocky Flats who have

comments would certainly be welcome to comment during the public comment session. We would expect that for sure. But we wouldn't have a separate Rocky Flats session for that.

CHAIRMAN KOTELCHUCK: Right.

MR. KATZ: And is that -- is that clear for you, Terrie?

MS. BARRIE: Yes and that's what I was planning on.

MR. KATZ: Okay. Very good.

MS. BARRIE: Thank you.

CHAIRMAN KOTELCHUCK: Good. Good. Remind me, Ted, of course I have it written down somewhere but what is the date of the November meeting?

MR. KATZ: Oh, it's Thursday and Friday the 23rd and 4th, I believe, if my dates -- hold on a second. I need to look at a calendar to --

CHAIRMAN KOTELCHUCK: Okay.

MR. KATZ: Yes. It's the 23rd and the 24th.

CHAIRMAN KOTELCHUCK: Good.

MR. KATZ: And, typically, the -- since you're with me on the phone, we try to get a lot of the Work Group work done the first day. So we'll probably get a lot of that done on the 23rd, the Work Group updates, in other words.

CHAIRMAN KOTELCHUCK: Right. Right. Okay. Very good. Alright, folks. We've had a productive session and we've accomplished a lot and we're well on our way. And it's 1:30 east coast time, so folks have plenty of time to do other important things this afternoon. Okay.

MR. KATZ: Thank you, everybody.

CHAIRMAN KOTELCHUCK: Thank you. Bye bye, folks.

MS. BARRIE: Thank you.

MR. RUTHERFORD: Thank you.

MR. KATZ: Bye.

CHAIRMAN KOTELCHUCK: Bye.

MEMBER MUNN: Bye bye.

(Whereupon, the above-entitled matter went off the record at 1:30 p.m.)