UNITED STATES OF AMERICA

CENTERS FOR DISEASE CONTROL

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NATIONAL INSTITUTE FOR
OCCUPATIONAL SAFETY AND HEALTH

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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

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86th MEETING

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WEDNESDAY
SEPTEMBER 19, 2012

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The meeting convened at 8:30 a.m., Mountain Daylight Time, in the Denver Marriott Tech Center, 4900 South Syracuse, Denver, Colorado, James M. Melius, Chairman, presiding.

PRESENT:

JAMES M. MELIUS, Chairman
HENRY ANDERSON, Member
JOSIE M. BEACH, Member
BRADLEY P. CLAWSON, Member
R. WILLIAM FIELD, Member
DAVID KOTELCHUCK, Member
RICHARD LEMEN, Member
JAMES E. LOCKEY, Member
WANDA I. MUNN, Member
DAVID B. RICHARDSON, Member

PRESENT: (CONT.)

GENEVIEVE S. ROESSLER, Member
PHILLIP SCHOFIELD, Member
PAUL L. ZIEMER, Member
THEODORE M. KATZ, Designated Federal Official

REGISTERED AND/OR PUBLIC COMMENT PARTICIPANTS:

ADAMS, NANCY, NIOSH Contractor
ALEXANDER, TERRY
ALLEN, DAVE, DCAS
BARRIE, TERRIE
BROCK, DENISE, DCAS
BURGOS, ZAIDA, NIOSH
CARROLL, STEPHANIE
DOBROVOLNY, MARK
EATON, CLARISSA*
EVASKOVICH, ANDREW
FITZGERALD, JOE, SC&A
GALLAGHER, DEE
GLOVER, SAM, DCAS
HINNEFELD, STU, DCAS
JERISON, DEB
JESKE, PATRICIA*
KENNEY, CECELIA, DOE
KINMAN, JOSH, DCAS
KOTSCH, JEFF, DOL
LEWIS, GREG, DOE
LIN, JENNY, HHS
MAKHIJANI, ARJUN, SC&A
MAURO, JOHN, SC&A*
MAUSER, TERRIE*
MCCFEE, MATTHEW, ORAU Team
MCKEEL, DAN*
NETON, JIM, DCAS
RAY, SARAH*
RUTHERFORD, LaVON, DCAS
STIVER, JOHN, SC&A
TAULBEE, TIM, DCAS

*Participating via telephone.

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

(8:30 a.m.)

CHAIRMAN MELIUS: If I can have your attention, please, we'll get started. Welcome to the second day of our meeting 86. And let me turn it over to Ted.

MR. KATZ: Thank you, Jim. And welcome, everybody.

It looks like we don't have a lot of people in the audience here this morning, but we may have on the line. To let you know, all of the materials for this meeting are on the NIOSH website for the presentations today under the Board section under meeting section. Just go to today's date or it starts on the 18th, I think. And all of those presentations are there. So you can follow along as they present here in the room.

Public comment session today is from 6:00 to 7:00. It starts at 6:00. So if you are intending to comment, -- again, I'm addressing folks on the phone -- please attend

at 6:00 because if we get through early, we will conclude the public comment session early.

And also for people on the phone, please mute your phones. If you don't have a mute button, press *6 to mute your phone so that there's no interference with this call. And, for the same reason, please do not at any point put the call on hold. Hang up and dial back in if you need to because your hold will disturb the call for everyone else trying to listen in.

So let's go to roll call. And it will be a little simpler today because we don't have dose reconstructions to assign and don't have very many recusals. And I will mention recusals where there are any.

(Roll call.)

MR. KATZ: Very good. Thank you. That's it. Jim, your agenda.

CHAIRMAN MELIUS: We have a fairly busy agenda, a number of items. And I'll

remind you they are all sort of timed because we will have petitioners or others involved on the line. And so we have informed them of the time to expect.

So we will be holding fairly firmly to those scheduled times today. And we have a Board work session later in the afternoon to go over. So we will start.

The first item is the GSI SEC petition update. And we will start. Paul Ziemer, the Chairman of the Work Group, will give us an update. So, Paul?

MEMBER ZIEMER: Good morning, everyone. I am going to report on SEC petition 00105 for General Steel Industries. Then we will also have an opportunity to hear from NIOSH and from the co-petitioners.

I do want to begin by reminding you of what occurred at our last meeting. Well, before I do that, let me remind you first of the timeline at GSI. The operational period began January 1st, 1953. And it ended

June 30th, 1966.

I have inserted here in this slide one other reference point, which the Work Group has used on occasion as we have considered the work at GSI. And that was the original AEC license application, March 7th, 1962, which was kind of a reference point where one might argue that the work practices perhaps changed, then also a reminder of the residual period, which is July 1st, 1966 through December 1992. And then there is an additional year of the DOE cleanup, which was January '93 through December '93.

Now, to remind you of what occurred at the last full meeting of this Board, you may recall that the Work Group recommended that the Board not take action on the SEC petition but, rather, defer action until the next Board meeting; that is, to this Board meeting. And this recommendation resulted from Work Group discussions, which were held on June 14th of this year, relating

initially to the residual period and the desire of the Work Group to confirm the appropriateness of the use of the TBD-6000 model of a uranium slug facility as a surrogate for handling of uranium at General Steel Industries. And that particularly referred to the internal dose issue.

This applies, though, both to the operational period as well as the residual period since there is that one component in the operational period, a component of internal dose as well.

So the Board accepted this recommendation and tasked SC&A to review the surrogate data issue. I'm going to report here this morning first on the SC&A findings. I do want to indicate that, as far as I know, Dr. Anigstein, who is the lead for SC&A on General Steel Industries, I believe is on the line. And he can expand on some of these issues if, in fact, there are questions. And I'm pretty much just going to summarize and

will quote the findings of SC&A on the hierarchy of data or on the surrogate data criteria, of which there are five. And each of these five were addressed by SC&A.

First, the criteria relating to hierarchy of data. The finding was that the use of surrogate data does not strictly conform to the hierarchy of data and they are referring - - and specifically to the GSI surrogate. And also they said the appropriate adjustments were not made to these surrogate data.

The second criteria on exclusivity constraints, SC&A said, we do not agree that the use of the surrogate data was stringently justified. The exclusivity constraint requirement or criteria includes a stringent justification portion.

The third criteria on process similarities, SC&A said that the use of slug stamping as a surrogate for handling of uranium at GSI does not fulfill criteria

three; that is, the process similarity criteria.

Also, they said alternate sources of surrogate data; for example, the 124 work sites for which NIOSH has collected information, were not evaluated, the implication here being that perhaps there were some other potential surrogates that could have been looked at.

And then the criteria on temporal considerations, they said that there is a need to justify the application of this measurement to the entire period of operations at GSI. And I note here that during the Work Group discussions, SC&A concurred with NIOSH's justification in their response. Dave Allen will be talking about NIOSH's responses to the findings. So that is one that there is agreement on, the fourth criteria.

And, finally, the criteria on plausibility. There are two parts to this. One is scientific plausibility, and the other

is workplace plausibility. And SC&A found that the assumption that the deposition abruptly stops at the end of the operation is neither plausible nor claimant-friendly. And that has to do with how the resuspended material behaves during the operational and the residual periods. And we will probably hear a little more about that, although that whole item depends on a particular data point that was observed in 1993, a contamination level, which I will speak about in a moment.

And then workplace plausibility, they said the calculation of uranium concentrations described by Allen and Glover does not meet the criterion of workplace plausibility.

In addition to those findings, SC&A recommended that NIOSH develop a methodology for estimating uranium intakes at GSI that does not rely on surrogate data. And in their report, they suggested a model that uses the exponential source term depletion

rate recommended in OTIB-0070. And for this approach, they suggested the contamination levels on the floor of the old betatron building at the time of the 1993 cleanup, together with the depletion rate and various hours of uranium-handling operations at GSI could be used to calculate average surface uranium concentrations. In other words, they were saying there is an alternate way of doing this that does not require surrogate data.

One other important piece of information, however, came to light during our Work Group meeting. The co-petitioner provided documentation that the GSI facilities were cleaned and pressure-washed during three different time periods. And I have indicated those here.

In the '78 to '81 time period, in '84, and post-'85, all of these predated the 1993 reference date for the proposed surface contamination level. Based on this, the Work Group agreed that back-calculating surface

contaminations from the 1993 contamination data pretty much had to be ruled out since all of this cleaning had occurred.

A couple of other items. Then NIOSH provided its responses as to why it believed the surrogate data, nonetheless, were met reasonably well by the surrogate, which was the handling of uranium slugs, which is set forth in TBD-6000.

Both NIOSH and SC&A, as the discussion developed, felt that it would make sense to review other data sets involving uranium metal handling to ascertain whether or not there was what I will call a better surrogate for the GSI situation.

So the Work Group ended up not giving a specific recommendation, but what we are proposing and what will occur here now is that NIOSH will review their position on the surrogate data matter and indicate how they propose to proceed to address this matter and come to closure on the petition. The

co-petitioners are also on-line, I believe, and will provide their comments on these issues and related matters. And the way we ended our meeting was that we agreed to report this information to the Board without a specific recommendation.

So we are not recommending action today, although the Board could choose to ask NIOSH to examine the alternate surrogate data sets, and that would be followed by SC&A review, or the Board could choose to act on the SEC petition on the basis of the information currently on hand.

The Work Group is not recommending that, but basically since this issue of surrogate data has come before the Board, I believe there was a feeling that a decision should be made by the Board and we would just report what we learned in the Work Group meeting.

I will be pleased to answer questions at this point if you have any. And

then I think we will hear from Dave Allen and then probably from Dr. McKeel. And I don't know if the other co-petitioner will want to speak as well. But are there questions at this point or, Mr. Chairman, do you prefer to wait until the end?

CHAIRMAN MELIUS: Well, if anybody has questions now. We may actually have more questions for you after Dave speaks. I'm not seeing anybody with questions. Why don't we have Dave present and then come back to questions then?

MR. ALLEN: Good morning. I am Dave Allen again, and as Dr. Ziemer said, I will be here to give a very brief presentation on General Steel Industries. It will only be the uranium airborne and use of surrogate data, is what I will be talking about.

A quick reminder. General Steel Industries is an AWE because they X-rayed uranium, various types and shapes of uranium metal, for Mallinckrodt. They only X-rayed

them, then gave the metal and the X-rays back for Mallinckrodt to interpret the X-rays. So GSI did not do any correction of defects or any other type of manipulation. Their job was to get a quality X-ray and give that to Mallinckrodt. Even at that, there is at least a potential for airborne with handling the uranium metal.

No data taken at GSI for airborne contamination, so we relied on surrogate data. And after the last Board meeting, this use of surrogate data was evaluated by SC&A, as Dr. Ziemer mentioned. And NIOSH replied to that review with a White Paper. And the rest of this presentation is just hitting some of the highlights of that White Paper, some of the key points.

Essentially one of the problems with this surrogate data is it's very limited. This work that was done at GSI essentially amounts to handling of cold uranium metal and not grinding it, not machining it, just

picking it, placing it in position, X-raying it, and taking it and shipping it back.

Most work with uranium metal elsewhere involves heating uranium metal, usually well over 1,000 degrees. That's so it's more malleable and you can forge it, roll it, extrude it, et cetera. And any time you heat uranium metal to that degree, you will get a much greater oxidation rate. And oxidation products are what cause the airborne. That is what can flake off and become airborne.

The one exception to that with uranium metal is machining. That doesn't require heating prior to that. And it's usually cooled with some sort of fluid that holds down airborne down as well as this purpose is to cool and lubricate, but, even then, sometimes the coolant isn't enough and you often will see air samples where it says what was taken in the smoke screen coming from the lathe or it's not unusual to get fires or

at least some smoke from the uranium chips that can accumulate if they're not taken care of.

Because of that and because of the airborne from just handling cold uranium metal is just not a high airborne-causing evolution, you will rarely see air samples from that operation, but when you do, they're often in the vicinity of some other high airborne-causing operation. And that causes interference with those.

The rest of this, what we found for the White Paper prior to our Work Group was we went through and tried to find three -- well, we found three that are somewhat representative, three different sites, had some air samples that we felt was somewhat representative. And we put those in the White Paper along with the actual data sheets themselves.

The first one held machining. Essentially they were machining uranium slugs.

They did not do any sampling while they were simply handling the uranium slugs, but they did do some while they were machining.

The theory here would be that if there was a great deal of airborne caused by handling these slugs and putting them in a lathe, that airborne would still be lingering around, at least to some extent, while the lathe was in operation. And we have air samples while the lathe was in operation.

Contradictorily, we did not see any airborne to speak of. It was very low. And the highest of several air samples was 11 dpm per cubic meter, which is a fairly low air sample.

The next one, Chambersburg Engineering, was actually forging uranium slugs into washers. The maximum airborne we saw at this site was 174. And I want to clarify that that was the max we saw with a description that might be cold uranium metal. There were higher ones for the forge itself.

As I mentioned, the work involved, the work that we included in this 174 dpm per cubic meter was actually removing or placing hot slugs into a furnace, but some of the work also included taking these slugs out of that furnace and placing them in an impactor that was 7 feet away. It essentially is the forge, where they use great force to essentially hammer-forge these uranium slugs into washers. And that is and from the air samples was a high airborne-causing evolution seven feet away.

This is essentially what I mentioned earlier. It's very hard to find samples where it says we're loading cold slugs into a furnace, sounds like it's reasonable, but seven feet away, they're forging hot uranium metal, causing a great deal of airborne -- obviously is going to cause some sort of interference there.

The last one seemed to be the most relevant to GSI. And that was at Leblond,

where they were taking uranium billets -- these are large pieces of uranium metal -- and they were boring large holes through the center of them. They actually took three BZ samples, breathing zone samples, while they were hooking a chain hoist to the billets and placing them in the machine, which is similar to the type of work that you would see at GSI, where they were simply trying to rig a heavy piece of uranium into position so that they could X-ray it.

Obviously in the machine, it's in the vicinity of the lathing, or the drilling in this case, boring, but the coolant in this case was enough to where there was really little or no airborne during the boring either. So there was no interference.

The maximum airborne during this hoisting and placing the billet in place was 9 dpm per cubic meter. The other two were not detectable.

In Appendix BB, which we wrote

some time ago, the theory we used was we used TBD-6000, which a lot of you know has multiple operations with uranium metal, the theory being that every operation, even if there's some heating or whatever, at some point during that operation, there is a task that requires you to handle cold uranium metal. Even if there weren't samples taking during that, that was occurring at some point during the operation.

So we started with TBD-6000. We took the lowest airborne-causing operation from that Technical Basis Document. And we use that as our bounding airborne estimate for GSI. The estimate was 198 dpm per cubic meter, we felt was not unreasonably high or not unrealistically high. So that is what we use, basically because it was very difficult to find representative air samples of just handling cold uranium metal.

As pointed out by Dr. Ziemer, the review of the surrogate data indicated that is

not -- the operation we use from TBD-6000 was not very representative of what they did at GSI. Essentially it is very hard to find anything that is representative of that because nobody really sampled the air for just handling the metal. They sampled the air for machining it, for rolling it, for various other operations but not for that one, small task.

After the Work Group meeting, we agreed that we would go back besides the three we found and look through everything we got to see if we can find some additional samples that might be representative of just handling cold uranium metal. And that's essentially I believe where we left the Work Group.

That is all I had for today, short and sweet. I don't know if there are any questions now.

CHAIRMAN MELIUS: Yes. I had one question to start with, just to make sure I am not confused because I may be. So what SC&A

was reviewing for the surrogate data was the TBD-6000?

MR. ALLEN: Yes. It is actually Appendix BB --

CHAIRMAN MELIUS: BB of that?

MR. ALLEN: Right.

CHAIRMAN MELIUS: So these three company -- the information you present on your slides, those were your response to the SC&A?

MR. ALLEN: To that review. That was what we --

CHAIRMAN MELIUS: Okay. Yes, yes.

MR. ALLEN: That was what we were able to quickly come up with. We haven't gone through all of the entire Site Research Database yet or anything.

CHAIRMAN MELIUS: Okay. And then where does the power-washing come into this?

MR. ALLEN: The power-washing comes in because, during SC&A's review, they proposed an alternative model that did not use surrogate data.

CHAIRMAN MELIUS: Okay. Okay. Just to make sure everybody has got this. This is confusing. Yes, Gen and Jim, Dr. Roessler, then Dr. Lockey. Yes?

MEMBER ROESSLER: I think you are going to ask the same question. That's why I want to go first.

On slide 6, the Leblond information, it talks about three breathing zone samples taken. When a sample was taken, how many uranium billets were being loaded at that time? I'm trying to figure out just how much information that gives. Were there a lot of them?

MR. ALLEN: Their job was to do several, but the boring had to happen one billet at a time. So they took a BZ sample for loading one billet in. And later they took one for the next one, et cetera.

MEMBER ROESSLER: Okay. So each sample represents loading one billet?

MR. ALLEN: Exactly.

MEMBER ROESSLER: Which is not a lot of information, then?

MR. ALLEN: Not a lot.

MEMBER ROESSLER: Yes. Okay.

MR. ALLEN: But that is actually very similar to what would be occurring at GSI. They didn't X-ray multiple pieces of uranium at a time. It was one at a time.

CHAIRMAN MELIUS: Dr. Lockey now.

MEMBER LOCKEY: Function of 65 and not hearing as well.

At the -- is it Heald, Heald Machine Company?

MR. ALLEN: Excuse me?

MEMBER LOCKEY: Is it called the Heald Machine Company? Is that the proper pronunciation?

MR. ALLEN: I don't know the proper -- I pronounce it Heald. I don't know.

MEMBER LOCKEY: Heald Machine Company. How many samples there were obtained while slugs were being machined? Do you know

the number?

MR. ALLEN: The air sample sheet was included in the White Paper for the Work Group, but I don't recall off the top of my head. It was one sheet of paper. So for all the different tasks, it totaled maybe 10 or 15 air samples.

MEMBER LOCKEY: I'm sorry? How many?

MR. ALLEN: Ten or 15 maybe for all the tasks.

MEMBER LOCKEY: Paul, do you remember?

MR. ALLEN: I don't recall.

MEMBER LOCKEY: Okay.

MEMBER ZIEMER: I don't recall the number of samples there.

CHAIRMAN MELIUS: Anybody else? Yes, Brad? Save you the trouble.

MEMBER CLAWSON: Okay. I was just wondering. You're talking about doing your radiography for these slugs. What size are

these slugs that we're looking at? Were they quite large or --

MR. ALLEN: Well, the slugs mentioned were what we used in TBD-6000 and a couple of these companies where we got airborne. At GSI, they are actually X-raying larger pieces of metal closer to the billet you saw for Leblond. They had some dingots that they -- you know, it's believed they X-rayed. They also had betatron slices, which were essentially a crop off the top of, a four-inch crop off the top of ingots or possibly dingots, but there were various types of uranium metal. And nobody can say for sure it was all one or the other. In fact, it's pretty certain that it wasn't all one or the other.

MEMBER CLAWSON: Well, the reason why I'm getting to this is I wanted to understand how they were doing this, if they were doing it with chain fall hoists, moving these billets around because under the

requirements for radiography under ANSI, you have to have a certain density. So anything of a difference of a quarter inch in these ingots, you would have to take multiple shots and be able to change these ingots. So there possibly could be more -- I know it makes it sound like they just moved this ingot here, but there could possibly be so much more movement, be able to form the radiography, than just putting it up into a machine and lathing it, too.

So I was trying to get a sense for what kind of ingots, what the size was, and how they were handled. And it sounds like to me from what you said there were all different sizes and that there was no real standard. Is that correct?

MR. ALLEN: That is correct from the best we can tell. Like I said, we know there were betatron slices, but we know there were possibly other forms of uranium, too. Nobody was real clear on that one.

For the most part, at least the impression that we got from operators and everybody else, it was large enough it wasn't handled by hand. It was either a fork truck or a chain ball or something.

MEMBER ZIEMER: Let me add to that. The petitioner probably can comment to it when he makes his presentation, but in general, the items handled at GSI were quite large ingots and dingots. And one of the issues raised by SC&A on the slugs is that they are relatively small.

You could handle uranium slugs by hand. And the ingots and dingots and these large ones are handled with cranes and chains. And so there is the possibility of scraping the surfaces and that sort of thing. So that's one of the issues as to representativeness of the slugs as a surrogate.

Granted, regardless whether it's slugs or ingots or dingots, you are still only

talking about handling. You are not talking about the other processes. So one of the issues in finding the right surrogate is, is it just handling, and are the size and surface somewhat comparable. I think that is one of the issues.

MEMBER CLAWSON: I understand.

MEMBER ZIEMER: SC&A could speak to that also, but I think in general that would be the case.

CHAIRMAN MELIUS: So I have actually a question for Dr. Ziemer. I'm just trying to understand where the Work Group was on this issue because my understanding is that the Work Group was accepting the SC&A conclusions and didn't feel that the NIOSH response was adequate.

I'm trying to understand which parameters you were looking for. Was it that the Appendix BB was not the appropriate operations? Was it some of the issues you just raised? I'm trying to understand what

we're trying to address because it seems to me that this is a -- you know, given that it is handling of cold metal, that this is a relatively low-exposure situation.

I think we need to avoid trying to become too precise in what our assessment is.

MEMBER ZIEMER: You are exactly right. And one of the issues is how you interpret the criteria as applying the surrogate data criteria.

I think the Work Group -- we can vote on this specifically. And we would have to sort of poll the group. But when we became aware that there were a lot of other possible sites that did not get looked at that may have been more like GSI -- for example, the Leblond site would be an example, but we don't really know if that database is sufficient. And what you're going to run into is because in most places, the handling part of cold uranium, the risk and exposure portion of that would in most facilities appear to be so low that you

typically wouldn't air sample for that.

So finding a good surrogate for air sampling of the handling is a little difficult, but when we became aware that there were some other possible ones and if there's a question on whether it's the right surrogate, we felt that perhaps a better surrogate could be found.

But, in all of these, whether it's the slugs or these other ones, all of those numbers -- and some of them differ by two or three orders of magnitude -- it's two or three orders of magnitude of a very, very small air concentration.

CHAIRMAN MELIUS: Yes, yes. And I would just add that I think we need to remember that -- and it was my Work Group but that the Board adopted it. Surrogate data criteria were not absolute criteria. They were issues that we thought should be addressed in reviewing surrogate data. They weren't absolute requirements for that. And I

think we wrote them in that way, and I think that we adopted them in that context.

And so it is not like a checklist. It is a checklist that those issues ought to be at least evaluated, but, I mean, I think it is what it is. The bottom line, is that suitable for allowing dose reconstruction with sufficient accuracy?

And when you have very low exposures, I think that it's different than a situation when you're dealing with an operation that could have much higher and, therefore, a greater range of exposures and, therefore, make a bigger difference in terms of absolute dose reconstruction.

Jim?

MEMBER LOCKEY: I think I was on that Work Group with you, and I concur with you. It wasn't meant to be an absolute checklist.

CHAIRMAN MELIUS: Right.

MEMBER LOCKEY: And we were

concerned to make sure that if we used surrogate data, that we weren't underestimating in a Work Group-friendly manner the real exposures.

CHAIRMAN MELIUS: In this situation, when I looked at the Heald Machine Company, they were working with slugs. And they were machining slugs, which means it's more than just handling. They were actually doing a metal-on-metal process.

But the exposure levels -- and that's why I was asking how many samples there were -- the highest was 11 dpm per cubic meter, which sort of falls into the same range of the limited samples from Leblond and I would think also reflects a low-exposure situation based on the job task.

CHAIRMAN MELIUS: Any other comments or questions at this point?

(No response.)

CHAIRMAN MELIUS: Okay. Let's hear from the petitioner, see if we have any

questions for them. I'm not sure if it's one or two people speaking. And then we will come back and have further discussion. So don't go too far away, Dave.

DR. McKEEL: Hello, Dr. Melius. This is Dan McKeel. Can you hear me?

CHAIRMAN MELIUS: Yes, we can. Go ahead, Dan.

DR. McKEEL: Thank you. Are my slides ready to go?

CHAIRMAN MELIUS: Hold a second.

DR. McKEEL: Okay.

CHAIRMAN MELIUS: Stu is getting them.

DR. McKEEL: Okay.

CHAIRMAN MELIUS: I will let you know when. Here we go. Okay. Your title slide is up now.

DR. McKEEL: Okay. Well, let me just make a short introduction and to thank the Board for being so generous with letting me submit materials to them on GSI. In the

next ten minutes or so, I will try to cover the highlights. But I do want to comment while it's fresh in mind for everybody on a couple of things that just came up in the preceding presentations by Dr. Ziemer and by Dave Allen.

The first thing is that the ingots and the dingots from Mallinckrodt, the size is very well known. And basically they were 3,300-pound objects. So they definitely needed to be picked up with a crane and a chain.

The other two types of metals we know are billets, uranium billets. We do not know the size of those. I don't think anybody does. And it was commented by Dave Allen, I think, that a betatron slice, which is described in one of the six Site Profile documents for Mallinckrodt, was just the crop. I think that is definitely not true because the Mallinckrodt document describes quite clearly that a person spent long amounts of

time, at first at least, hand-sawing uranium ingots to get a slice. And SC&A has estimated they were maybe 4 inches thick, 18 inches in diameter, 12 to 18 inches in diameter.

Nobody really knows is the answer. And nobody knows the size of the billets. And nobody knows what mixture was sent to Mallinckrodt, although I did introduce a letter from the AEC that said the primary product sent from Mallinckrodt to GSI was dingots. And that would be the 3,300-pound metal.

Anyway, the first thing I wanted to do in the first two slides is to review the real data that is available right now for the AEC operational period at GSI from 1953 to June 1966.

And it really comes down to three data pieces. The first was there were Landauer film badges on 89 radiographers between November 1963 and 1966, June. This represents only 3 percent of the workforce of

3,000 people, represents 1 job out of hundreds. The radiographers did not wear their badges outside the betatron buildings. As a matter of fact, in the 2012 modeling of betatron doses, they were not even assigned the highest external doses. And so that's point one, very limited and nonrepresentative film badge data by radiographers only during the entire period from 1953 to 1966, in June.

In 1962, there was a one-time survey by GSI personnel of photons in the building 6 radiography room from a cobalt-60 source. I'm sorry. The 1962 survey was by not by GSI personnel but by the Nuclear Consulting Corporation.

And then the third piece of real data they had in the operational period is they have a series of purchase orders from Mallinckrodt for uranium that extended from March 1958 through June 1966. There were no purchase orders found for 1953 through February 1958. So there was no real data on

the uranium source term for those years of the covered period. There was only an extrapolation, back extrapolation, from 1958 forward as to what might have been present.

I need to comment that there was a comment made by Dave Allen in Appendix BB and today that GSI did not analyze the reports they made on the uranium. And that really goes against what we know about those operations. They, in fact, did send with every item radiographed with the betatrons a checklist of findings.

Now, that's not the final report. Mallinckrodt may well have analyzed that further, and I'm sure they did. But the point is that all of the Mallinckrodt GSI contract work records, which must be voluminous, every one of those has been lost. We don't have any shipping manifestations -- manifests. We don't have any weights. We don't have any X-ray records. So that's the operational period real data.

Now, on slide 2, I review the real data on residuals contamination period between July 1, '66 and 1993. And, again, that boils down to three items, three first bullets, and the comments by me. They had a one-time 1971 radiologic survey of the new betatron building. That was done by the GSI radiation safety people and they used an 80-curie cobalt-60 source, where the main work done in that building, of course, was with a 24 or -5 MeV betatron. So the source they used to model the building was not the source that was primarily used in that building.

Then they also had additional Landauer film badge data on 19 radiographers during that period from July 1, 1966 to 1973 late or early '74, when GSI ceased operations. And, of course, that was a much smaller percent of the workforce.

And, then finally, the data that they had that Dr. Ziemer mentioned was when Bechtel came in and did a radiologic survey of

the old and new betatron buildings. And ORNL surveilled that. And this was done for DOE under the FUSRAP program. They only surveyed the new and old betatron buildings, did not survey the rest of the plant at all.

The remediation took a week. And they found uranium and cleaned it up in the old betatron building only. No uranium is found in the new betatron building. They found some alpha uranium activity on the floors, which they had to chip out, in the vents and in the small industrial vacuum. And it's that piece of data that the washings relate to. And I'll mention a little bit more of that in a few minutes. But we do know of one additional set of washings, power washings, that was done in both the old and new betatron buildings in 1973, just at the time of plant closure. And this was an eyewitness account by a worker who is very well-known to this Board. So there were multiple power washings of the old and the new

betatron buildings that we have I think well documented.

A point that is really overlooked here for the residual period, I think, is that the residual period applies to everybody in the workforce. And most of the people in the workforce worked in other buildings than the betatron buildings. And workers there were also exposed to uranium along the whole long uranium pathway whereby it was transported from the weighing scales.

We know that everything was weighed that went into and out of the plant. Inspectors had to look under the tarps to make sure what was on those transport vehicles. We have operations at the loading dock. We have a transfer to rail cars. We have transport along the rail tracks through buildings 5, through 10. And then the railroad tracks ran into the old and new betatron buildings so that the actual areas that were surveyed for uranium were a tiny fraction of the whole area

that formed the volume and the space along the uranium transport pathway. And, as David said, there had never been any general air sampling, breathing zone samples, process sampling for uranium ever at GSI or by DOE until that 1993 survey.

Okay. If I could go to the slide 3?

CHAIRMAN MELIUS: And, Dan, I'll ask you to please move it along.

DR. McKEEL: I will.

CHAIRMAN MELIUS: We have something else scheduled at this time.

DR. McKEEL: Okay. Thank you, Jim. I don't think I've used my ten minutes, but I was trying to address questions --

CHAIRMAN MELIUS: Yes, you have.

DR. McKEEL: -- that weren't answered by anybody during the discussion period. So the key events during the residual period I would like to point out were the power washings for the old and new betatron

buildings and that multiple steel companies had done work within buildings 5 and 6 and 7 through 10, but they required an overhead crane with a magnet to clean the dust from the GSI building. So there was lots of it there and that all of these multiple users in intermittent operations during the residual period meant that it would be very difficult to model and bound residual contamination.

Slide 4 and slide 5. I go over my reasons why I believe sufficient information has been presented to vote for the SEC at this point and that I hope very much the Board might consider that done.

And I think I have been over the work that was the real data that was there during the operational and the limited periods. I've been over the fact that most of the workforce, which should have been badged because of their exposure to activated steel had not been badged.

The slide you see after four shows

that the models that GSI --- for the GSI betatron and layout workers that SC&A and NIOSH had generated in 2008-2012 didn't agree with each other at those times, and they flip-flopped.

Whereas in 2012, the layout workers had a low dose assigned by SC&A, by 2012, the SC&A layout dose had gone to 9.2 and the NIOSH layout dose was only 1.02 to 2. So they didn't agree with each other at that time.

And, finally, you can see in slide 5 -- I apologize. I am going to go to slide 6. I am going to go to slide 5, finish this up quickly.

It is often said there was a robust, relatively robust, radiation safety program between 1963 and 1966 and during part of the residual period at GSI. And we have just given you evidence now that I don't think that was true compared to other sites. I sent you the radiation safety program at the

Watertown Arsenal, which also was in compliance with AEC regulations in about the same time period as GSI's operational period. And they were far more extensive than anything that was done at GSI.

I have pointed out that NIOSH has no valid uranium intake model for the whole operation and residual periods. NIOSH didn't want to use SC&A's alternate model. In my opinion, the new surrogate data that NIOSH has proposed really would probably not pass the surrogate data criteria for the same reasons. There were two slug facilities and one billet facility. And there were no dingot facilities similar to GSI and the use of Mallinckrodt uranium.

And the other thing is none of the relevant records that would contribute to the accurate bounding have been recovered from Mallinckrodt on the work done at GSI.

So, in summary, then, I think that NIOSH has made a lot of errors of fact in

Appendix BB that still need to be addressed. I believe that the NIOSH betatron, the steel casting activation, and the uranium intake models are not valid for reasons I have put forward and, therefore, not bounding. There has been extreme underestimation of the exotic mixed activation fission radionuclides that were discussed prominently at Rocky Flats yesterday that were caused by a bombardment of uranium and the steel castings for the betatrons. At those high MeV, both things occur.

And NIOSH used only iron-59 as an activation product, where we sent you literature documenting that there are at least 30 different radionuclides, some with half-lives that were days and weeks and much longer than they assigned for Fe-59.

And, finally, with respect to handling being a relatively low-dose exposure scenario, I will point out that one of the main references cited by NIOSH and SC&A from

TBD-6000 is that by Adley, et al., for the Hanford melt plant in 1952. And that showed that uranium rod handling caused intake doses, I quote, intake doses 2.5-fold higher than the permitted limits. So they may have been relatively low, but they were two and a half times what radiation safety limits at the time would permit.

So I thank you and appreciate your attention.

CHAIRMAN MELIUS: Is the co-petitioner on the line and wish to comment?

MS. JESKE: This is Patricia Jeske. And no, I don't have any comments. I do agree with Dr. McKeel. And I do hope that we can reach a vote and put closure to this for all of our Class Members. I appreciate everybody's help. Thank you so much.

CHAIRMAN MELIUS: Thank you.

Any further questions, comments from Board Members?

(No response.)

CHAIRMAN MELIUS: Well, we do not have a specific recommendation from the Work Group. Maybe you want to explain that, Paul.

MEMBER ZIEMER: Unless I hear otherwise, the Work Group would proceed, I think, in the manner that we have discussed already, and that is to look at some other possible surrogates and see if there is a, quote, better surrogate, keeping in mind the issues that you raised, Dr. Melius, that refining this at this level may not be worth a whole amount of effort, but we think it may be worth looking at and then being ready perhaps at the next meeting to vote.

CHAIRMAN MELIUS: Okay. Anybody has --

MEMBER ZIEMER: -- unless the Board feels they have enough information now. Of course, someone is free to make a motion, I guess.

CHAIRMAN MELIUS: Yes, Brad?

MEMBER CLAWSON: I apologize, but

this has been real confusing throughout the whole process there. I thought at one time that they were also talking about that the plant jets that they had the film in had actually became activated when they shot it with a betatron because of the nickel in it, so forth, thought at one time they were talking about that.

MEMBER ZIEMER: There is activation of the items that are radiographed with the betatrons. The activation products are taken into consideration in the modeling done by NIOSH and SC&A also. So activation products are considered in the modeling.

MEMBER CLAWSON: Paul, and I guess I would just ask this question from my background. Do they have an NDT or an ANSI standard that they were shooting these radiography shots to? The reason I say this is because that would determine, especially if it was bar around or whatever, how many shots does it actually take to be able to shoot

these ingots? I was wondering if they had an ANSI standard that they were --

MEMBER ZIEMER: I don't know the answer to that. I don't know if Dave can answer that, but I don't think we are relying on -- number of shots doesn't really come up in the modeling directly. It is more based on some other parameters. But, Dave, can you answer that?

CHAIRMAN MELIUS: Well, hold on. Let's try to get back on track a little bit. We are already past our time. We have people waiting. So I guess I am trying to get a sense. Does anybody wish to try to bring closure today or is Paul's Work Group's plan acceptable to everyone at this point?

I am seeing a lot of nodding heads and no objections. So I think we go forward with that. I think if you have other questions, please -- yes, Jim? Go ahead.

MEMBER LOCKEY: One comment. The issues raised by the petitioner on the slides

haven't been addressed or will be addressed?

MEMBER ZIEMER: Well, we have had extensive interactions during our Work Group meetings. Dr. McKeel has been very active in our Work Group meetings. And we are trying to address their issues.

As I pointed out, for example, the power-washing issue has --

MEMBER LOCKEY: No. I meant --

MEMBER ZIEMER: -- been an example where we have basically ruled out the use of the FUSRAP data as a means of calculating the exposures during the residual period.

And so yes, we are trying to address the issues raised by the petitioners, not always to their satisfaction, but at least we are aware of their issues and are trying to fairly address them as well.

CHAIRMAN MELIUS: Thank you. Thank you, Dave. I really do need to move on, then.

Next on the agenda is an update on Pantex. And I believe Stu is going to start

with that.

MR. HINNEFELD: Thank you, Dr. Melius. I tried to design things so I would have fewer speaking parts at this meeting than last meeting. And I failed, another failure of management on our part, my part.

I am trying to get my computer to cooperate. There we are.

Okay. I am here to give an update on SEC-68 for the Pantex plant. There was a partial action taken on this a while ago. And in the completion of, finishing up of other periods of time is probably what we are going to be talking about a little bit today.

The status of the petition was this. The petition Class after consult calls with the petitioner was all workers who worked in all facilities at Pantex from January 1st of '51 through 12/31 of '91 -- I think '51 is the first year of the covered period. And then '91 was the last petition year by the petitioner.

NIOSH's initial decision was the petition didn't qualify for evaluation, but that was reversed by administrative review. And so it came to us for evaluation. And the evaluated Class was all employees who worked in any facility location at Pantex from '51 to '91.

The slight wording difference there is to make it clear that the workers didn't have to work in all areas of Pantex. It's a worker who worked in any area of Pantex to be in the Class. So that's the reason for the slight wording change.

You probably recall that at your November 2011 meeting, the Board recommended adding a Class for all workers from January 1st of 1958 through December 31st of 1983 based on the infeasibility of reconstructing internal doses for uranium. And that was in accordance with a recommendation from the Pantex Work Group.

The NIOSH ER had proposed that

internal doses from uranium could be bounded by the doses received during the dismantlement of the W28 weapon system. And I think there is fairly broad agreement from the people who have been involved in the discussion that W28 was probably the dirtiest disassembly, certainly up to that time, due, in fact, to the unalloyed nature of the uranium that was used in the weapon. It's just uranium metal with an alloy and the fact that it had been in service for a long period of time. And so it had more time to be exposed to the elements and the weather. And so you would have more oxidation from that material.

The dismantlement of the W28 began in 1984 and then continued until the activities were suspended in 1989 because of issues with the amount of visible contamination that was being encountered during the disassembly.

When I talk about dismantlement here, this is essentially dismantlement for

the retirement of the weapon system. I want to distinguish that from disassembly because, for quite some time before 1984, W28s had been disassembled for the purposes of inspection or modification, but the dismantlement, which began in '84, involved far greater units per year being taken apart. And then the weapon was being taken out of service. So this was the final dismantlement and the retirement of the weapon.

Now, some months after suspension of the dismantlement activities, uranium bioassays were collected from workers who had worked on the W28 dismantlement. There is a document that I believe -- I have not really been engaged in this directly and only lately have gotten particularly engaged in it. I believe this document was provided to the Work Group some time ago. It dates from January. And it's analysis of Pantex 1990 uranium bioassay results for workers identified as being production technicians on the W28

program.

If I am not mistaken, I put that on the O: drive in advance of this meeting. It would be on the document review, AB document review part under Pantex. I believe there is a folder for this date, this meeting date. And that is the only document there. So it provides the details of the analysis of the bioassay data for that period.

So, anyway, our ER proposed that that data set could be used to bound internal doses for uranium in general.

Now, prior to the November meeting, before the Board's vote, the Pantex Work Group had concluded that the conditions and controls were not sufficiently static at Pantex, meaning things weren't always being handled in the way they were being handled from 1984 through 1989. And so you couldn't make the judgment that exposures from '84 to '89 were representative of what was going on earlier with different handling and control

measures in place.

So the Work Group reached that conclusion and recommended the addition of the Class to the Board. And the Board then followed that recommendation.

The dates for the recommendation from the Work Group were 1958 through 1983. And then they did not take a position on the '84 to '89 because that is the period of time that NIOSH reports the bioassay data collected in '89 can be used to interpret. They didn't take a position on '90 and '91, the remaining two years of the petition period. And they didn't take a position on '51 to '57, the covered period of Pantex that was in the petition, but were early enough so that there was some question about was there radioactive material at Pantex during that time. Pantex's earliest work is generally considered high explosive work only.

Nineteen fifty-eight was chosen as a starting date, I think, because it was

pretty clear that by 1958, they were working with radioactive materials. That may have even been the introduction of the W28. I don't remember for sure. But it was pretty clear by 1958 they were working with radioactive materials. And so that was the selection for the starting date. And there were clearly some components that the Working Group felt would have a potential for some exposures of some significance.

Now, it has come to light that there may have been some radioactive material there prior to 1958. I think some additional investigation would be required to look into that. I'm not 100 percent sure I know. I think I know what the pieces were. And I'm not 100 percent sure what I can say about it. But there was at some point, maybe not in 1951 but at some point between 1958, it does appear that there was radioactive material being used at Pantex in some fashion. I don't know that that necessarily means the dose reconstruction

at that time is not feasible, but it needs to have some additional looking.

Now, the 1984 to '89 period, the reason that the Work Group didn't take an action on that I guess was because the discussion at that meeting, that Work Group meeting, all centered on the ability to interpolate this data set that we purported to represent, '84 through '89, the ability of that data set to be extrapolated back to earlier times. And so that was the focus of the discussion of the Work Group. And so based on the fact that that had been the focus of the discussion, the Work Group didn't include in their recommendation the '84 through '89 period because they hadn't really addressed the feasibility or the acceptability of NIOSH's purported approach for using that bioassay data.

So we have provided an interpretation. Like I said, it's in that January document that is on the O: drive for

ways that the bioassay data set can be interpreted. Let me get the numbers right. Okay. There were 305 urine samples collected from February 10th to April 2nd, 1990. That was the huge data set that was collected after W28 had been suspended for a number of months. It had not been just suspended then. And NIOSH has included an analysis including distributions, log-normal statistical analysis, on that data. And it is in our Site Profile, the Pantex Site Profile. And Chapter 5 is the internal dosimetry chapter.

These results were done for isotopic results. I believe there were four isotopes included: 234, 235, and 238, of course. And I believe there is a 236 result in there as well. But, anyway, they were isotopic analyses. The analysis in the Site Profile, the statistical analysis Site Profile, sums the results. And so you have a dpm per sample for a particular sample, a total dpm per sample. And that is how the

distribution is treated then.

So the ways that you can interpret this bioassay data -- now, this bioassay data -- the bioassay data in the Site Profile represents all 305 samples. And those samples were collected from the people they could find who were still there who worked on the W28 program, the dismantlement. It didn't mean that they were working in 1989. That didn't mean that they were what are called production technicians, who are the real disassembly people, but those people are identified. The people, the real production disassembly people, are identified in a 1989 letter. And the people who were working there in 1989 at suspension are also identified.

So in order to analyze this data, we know the person. We know their data set. We know the sample date. We don't know their start date. We don't know when their exposure to W28 started.

So, not knowing that, there are

several possible options you can use to arrive at an estimate of what the intake might be. And these are described in some detail in the document I described I mentioned earlier. One possible thing to do is decide what would it mean if a person were exposed every day from '84 through '89 to the W28, they worked the whole time, left that bioassay sample when they left it. That's one way.

Another way is that they only, say, maybe worked one year. Now, we did not analyze what would happen if they worked less than a year. What if they only worked one year? And what if it was 1984? What would those bioassays tell you in that case in terms of picocurie-per-day intake? What if they only worked one year and it was 1989? How would you interpret those bioassays then if it was in terms of picocurie-per-day intake? So these are all laid out in the document. There are a few others as well.

You get the idea. There are

possible combinations of how people could have been exposed during that time, how does that change your interpretation of picocuries per day.

Well, the highest scenario that was evaluated -- and I think they probably evaluated all the possible ones. The highest scenario would be if the person worked only one year and it was 1984 and they weren't exposed in the intervening time and they were sampled in 1990. That's the highest picocurie-per-day intake.

The analysis goes on to look at, for all of these scenarios that they ran, what is the maximum intake that would occur for all of these scenarios because the total intake is really what determines the dose. You know, there is a timing issue on when it occurs, but the total intake determines the dose.

Interestingly, that same scenario provides the highest intake number, so in terms of total integrated intake over their

employment because the smaller intakes for the longer period don't add up to as much intake. So the analysis is all on this document.

This is why I didn't want many talking parts.

So NIOSH believes with this data set and no other data, we could develop a bounding dose estimate for the people at Pantex during this period based on this scenario. This would be their intake. They would be assigned that during their period of employment, you know, for the '84 to '89 period. And then the dose would be based on that. And you would choose either type M or type S uranium depending upon which is more favorable to that particular claim.

And the intake numbers are different for type M and type S. So that would be the approach that we would propose.

Now, we believe that if we knew the start dates for these employees, we could do a more precise estimate, rather than this

bounding estimate. And we have been looking for a set of records, a set of access records, for months, asking Pantex for months, for a set of access records that we believe would allow us to decide what were the start dates for these people whose bioassay data we have. So we would have their start date and their sample date. And you can make a more precise evaluation of a coworker in picocurie-per-day intake.

Like a week Wednesday or two weeks ago, I guess it was two weeks ago, we get an email from our contact at Pantex that says, hey, we think we found those. Great, thanks. Right before a Board meeting. Thanks. So we will be heading down there shortly after the new fiscal year starts to see if, in fact, they can produce what they think they found to see if we can have a more precise interpretation of the bioassay data.

So now for the period 1991, 1990 to 1991, the last 2 years of the petitioned

period, we have access to roughly 1,000 uranium bioassay samples. Now, some 300 and some odd of those were that first cluster, that first bunch. So maybe there were 700 for the remaining period of work.

And, again, these are isotopically analyzed for those isotopes. And we have not really completed the coworker model for that yet, but we believe that there should be sufficient data to have it build a coworker model for those years, for 1990 and 1991 intakes, for the people at Pantex.

So I believe I covered all of the time periods. I covered the early period. Yes, right. I will be glad to answer any questions I can.

CHAIRMAN MELIUS: Yes. I just want to add without going into detail after Brad expressed some frustration to me and, actually, at previous meetings about the long detail in getting this. And Stu and I talked. And Stu followed up and I finally got some

reaction. And I want to thank NIOSH for doing that and Brad for being persistently impatient, but it had gone on a long time. And I think we were facing the situation where they weren't going to be able to produce these records because of security or other issues, we would have to decide, reach closure without that information.

But, anyway, I went on to thank NIOSH, and I believe DOE helped out also. I am not quite sure with this. But, anyway, do that.

Brad, do you have questions?

MEMBER CLAWSON: I do. And, Jim, you are absolutely correct. I would like to personally thank Stu because we were able to go to Pantex and look at some of the documents in a setting where we could actually discuss classified matters. I was able to express some of my concerns.

The one thing that does get me is on your slide that you have right down there

on September 5th. Your emailed records we were seeking might have been located. I have been down this route before. And I know we have got to go down there and look at those, but, you know, we don't even know if these are the records that we really need at this time. Is that kind of correct?

MR. HINNEFELD: It is always an adventure down there. So until we get our eyes on them and see what they say, I don't know that we are going to know if they are going to do what we want them to do or not. You know, I just don't think we will be able to make that judgment until we can look at it.

MEMBER CLAWSON: Right. I would like to make one other clarification, too. And Joe will probably get into this. We chose the W28 for one reason, because it had the depleted uranium in it. During this time period, 1984 to 1989, that was not the only weapons that were being assembled-disassembled. There are numerous

other ones that came in and out of it. But we have to pick one to be able to deal with it.

Also, in the earlier years, the '51 to '57, I want you to understand that Pantex -- we found evidence that they actually disassembled earlier ones. But there is a burning pit. The reason they had burning pits -- and they had these at Medina; they had them at Clarksville -- was to separate the HE from the DU, burn it off. They couldn't go blow it up because it would go everywhere. And this has kind of been my basis of, that's true, but you had depleted uranium there from the earlier years.

And it has been very hard. And Stu has been working with me, DOE has been working with me to be able to prove this point. This has been my stance and also the Work Group stance that, actually, it was earlier. It's just as we are having trouble. But I want you to think common sense-wise. Why did we have the burning pits for the HE?

Because we found stuff everywhere on that. Medina, Clarksville both had them.

And I really would like to tell DOE also, too, though, Greg Lewis has done a wonderful job. I know it has been difficult, and I have been on him pretty bad. But I would like to thank NIOSH and DOE for the work they have done on this, but it might be what we need.

CHAIRMAN MELIUS: Thank you. Bill?

MEMBER FIELD: Yes. I had a question on the workers you are trying to find start dates for. This sounds like a silly question, but do you know who the workers are you are trying to find the start dates on?

MR. HINNEFELD: Yes. With the results, we have the name; the sample results, we have the name of the people who left those samples.

MEMBER FIELD: So when you are trying to find a start date is when they start working at Pantex?

MR. HINNEFELD: Actually, access to the W28 disassembly.

MEMBER FIELD: Okay. But you know when they started working at Pantex?

MR. HINNEFELD: If they are claimants, we would know.

MEMBER FIELD: Okay.

MR. HINNEFELD: But I don't know that we have tried to find work dates otherwise. What we are trying to find out is access to W28 or --

MEMBER FIELD: Okay.

MR. HINNEFELD: -- perhaps that's part of what we have to interpret when we see the access records, is what is it going to tell us.

CHAIRMAN MELIUS: David?

MEMBER RICHARDSON: This is just a follow-up on the same thing. Is it going to be an issue for the Department of Labor or for NIOSH to deal with any of these dose reconstruction strategies or administer any

sort of Class if you are focusing on W28 and you can't place people into that?

MR. HINNEFELD: Well, what we have been proposing to do is to use this data, which we believe is bounding, to bound the doses for everybody. So in the Class that was added, there was no trying to limit the Class.

MEMBER RICHARDSON: Okay.

MR. HINNEFELD: We believe there was opportunity for relatively broad exposure.

MEMBER RICHARDSON: I see.

MR. HINNEFELD: And so we didn't try to limit the early Class. And probably the same thing would be done later on.

MEMBER RICHARDSON: Okay.

CHAIRMAN MELIUS: Yes, Dave?

MEMBER KOTELCHUCK: If you can't get the start dates from Pantex, the IRS and Social Security Administration have them.

MR. HINNEFELD: Well, we can get the start dates for the employee, but we need their access, their start on like the W28

disassembly, not their employment start date. They had to meet certain requirements in order to gain access to certain things. And they were granted access so they could do certain things.

MEMBER KOTELCHUCK: So they may have been working for --

MR. HINNEFELD: They may have been working on something else for a while before.

MEMBER KOTELCHUCK: Okay.

CHAIRMAN MELIUS: Okay. Thank you, Stu. Joe, I think you have an update now?

MR. FITZGERALD: Good morning. Actually, Stu has done a wonderful job of covering these different periods. I am going to try to just fill in places where I think it would provide a little bit more context since it has been about a year since we have discussed this.

Just a refresher on some of the points that I think the Work Group went

through last year in terms of its basis for recommending a Class be considered for Pantex. This has some relevance I think for this consideration for the later years as well, particularly if you notice the second bullet: no approach presented to normalized operational differences. In the Work Group, we had a lot of discussion about trying to take the 1989 bioassay data and back-extrapolate it 30-some years. And I think we went back and forth. I think there was some closure obviously on the difficulty of doing that unless you can normalize over that length of time.

But then the counter-proposal -- I think that came back from NIOSH at the last discussion -- was yes, but the '84 to '89 terminal dismantlement -- let's just call it that. I think the term static was used -- was a much more homogenous period, where you're doing the same thing. And if you're talking about doing a back-extrapolation of that sort,

it would certainly be more within reason to look at that because, again, your operations would be more similar over that period.

Now, the counterpoint to that is we did talk to a senior operator who was managing parts of the W28 disassembly. So he was right there. And it was his interview comments that, you know, were particularly relevant because in his comments, he was saying, yes, the '89 was a big deal. It was a big deal because management started paying attention. And that's why there was all this reaction.

But there were certainly other instances before '89. And he wasn't specific on exact times that in his opinion were worse. And, of course, again being right there in the operational sense and managing operations, that was a pretty strong comeback. So that was part of what -- and this again was more subjective. That was part of why there was some skepticism about whether you could really

bet on 1989 as the bounding event just because there were some questions, even right from the operational people, whether it was, in fact, the worst one.

The other issue -- certainly this goes to something that Dave mentioned. The exposures weren't necessarily confined to the W28 handlers. Certainly contamination control before '89 was pretty abysmal. And I think that was something that we looked at.

And there was actually an audit finding by DOE Albuquerque that just really keelhauled the operation for lack of contamination control and the fact that it was pretty ubiquitous in the operating area, was actually being tracked out to some extent. There was some secondary evidence that it could have been tracked out. It was more of a broad contamination issue, I think, which is what Steve was saying. It was more of a broad issue of potential exposure.

And, of course, again, based on

all of these points, the Board agreed and recommended the Class for '58 to '83. Now, '51 to '57, the early period I think, as Brad pointed out, there was certainly -- and I think this is even in the Site Profile for Pantex -- some evidence of depleted uranium on the site before '58. Fifty-eight was chosen. That was the first operational deployment and surveillance of the W28. So this was the point where it went into the system and they immediately started taking them apart, just for surveillance sake. So that's the genesis of the '58 time period in the beginning.

But before '58, certainly there is some evidence that DU was on site. So the question really was, yes, but DU in what condition because the circumstances of the W28 were very specific, unalloyed, certainly oxidation. Was this DU that would have been an exposure potential to workers or not? And this is something that I will get into in a second. But that is certainly the basis for

that early period.

Eighty-four to '91 -- actually, it's '84 to '89 that we're focusing on relative to the bioassay data. I don't think there is any disagreement with NIOSH that '90 to '91 was the post-event period, where Pantex certainly very vigorously set up a contamination control program, a bioassay program. So there is certainly a lot of data after '89.

So we are going to look at that, but I think certainly '90 and '91 is a different time period substantially than '84 to '89 even because of that singular event that occurred in '89 in terms of that contamination and the subsequent upgrade of the program. It was a big deal.

Now, other driving events, of course, at the same time, there was a Tiger Team review in 1990. There were other reviews by Albuquerque. So if you can imagine a whole bell wave of change happening in the way the

rad program was administered around the disassembly? It all occurred about the same time, in the late '89, early '90 time frame. So that's a very big milestone.

As I was saying, in '51-'57, what I have done over the last year is essentially focus at headquarters. If you can imagine my reluctance, to run down to Pantex again, to go through a cycle of review, I was trying to figure out whether we could based on what we have already in terms of classified Pantex documents and other documents at headquarters, as well as doing classified interviews with workers that go quite a ways back, whether one could glean any information on that pre-'58 period as far as where was the DU used, what was the exposure potential, and is there any evidence that there was a lot of handling that would have involved exposure of workers to depleted uranium in condition where there might have been some exposure?

It proved very difficult,

actually, to nail that down. And it looks like at this point the interviewees don't quite go back to -- and, again, this is pretty ambitious when you think about it -- go back to an operating period of the mid '50s. As far back as I could go was '60-'61, which I thought was doing pretty good. They themselves could not give me any information on that particular question on the '57-'58 time period. So we did interview a couple of people. But, again, the results were negative.

So it looks like to do the necessary confirmation, we will need to go back to Pantex and focus in on that specific question and just nail it down. I'm pretty sure we can. Just, you know, the kind of information we need is just only available probably in the records at Pantex. So we will have to do that.

Eighty-four to '91, I won't go through all of that because I think Stu did a

pretty good job on that. Again, we deferred. I think the Work Group deferred action on that period, primarily because I think NIOSH made the argument and which I think the Work Group accepted that, if it was a homogeneous in '84 through '91, there might be a basis for doing or applying that set of bioassay data, that 300 bioassays in '89, appropriately for that time period because you wouldn't have the difficulty with normalizing the operations and normalizing the controls, same number of units in the bay areas. So you have a lot of the consistency that was lacking in the early time period. So certainly I think the Work Group said, you know, basically, we don't know if it's going to work, but certainly there's more justification for going ahead and making that attempt.

A fly in the ointment, though, again, is still not entirely clear whether '89 again represented, that data that was taken in '89 represented, some of the worst exposures,

but I think if one takes the data you have -- and, again, look at the distribution. There might be some approach that might work.

Again, I think, withholding judgment, we have not gone through and reviewed the paper yet. So, again, we will have to do that and recommend where we stand on that. That is pretty much where that stands.

The other issue I would raise is -- and this is something we have kind of put on the back burner -- there is a thorium exposure pathway that has been confirmed at Pantex associated with the weapons disassembly program. And that was back-burnered, primarily because the time periods of the DU involvement and disassembly subsumed or enveloped the thorium, potential thorium exposure.

So the notion was, even though there is some concern over that, it was felt that if there was a dose reconstruction method

or an SEC that was generated for the depleted uranium, it would make moot having to address the thorium issue.

I think if we are in this '84 to '89 time frame and we are trying to address that question, this again comes to the fore. So I just want to make sure the Board is aware that, you know, as we are trying to solve this DU issue finally, by having to look at dose reconstruction methods for this later period, we will also have to revisit how one is going to address the thorium exposure pathway. For thorium, there is no bioassay data.

So the question is looking at the later periods and seeing whether there might be some data in that last time frame, maybe the '90 to '91 time frame, and seeing whether that can be used, but, again, I don't think the Work Group got very far on that, primarily because we shifted our emphasis to the depleted uranium.

And that's it. Questions?

CHAIRMAN MELIUS: Questions for Joe? Yes, Bill?

MEMBER FIELD: Just have a quick question. Can you remind us when film badge records started, what year?

MR. FITZGERALD: Oh, in the external?

MEMBER FIELD: Yes.

MR. FITZGERALD: External was --

MEMBER FIELD: Well, they had radiography --

MR. FITZGERALD: They went all the way back to the '50s. I don't have the precise day. It is in the Site Profile.

MEMBER FIELD: You can't assume that there was exposures prior to '58 based on film badge usage at that time or was there no film badge prior to '58?

MR. FITZGERALD: Oh, there was film badge prior to '58. They did have radiography.

MR. HINNEFELD: I think the

earliest film badging was for radiography because they radiographed the high explosives. So, as I recall, there are a few early on. And I don't recall as we proceed through time, I don't remember how the usage changed. I don't know if I have seen that.

MR. FITZGERALD: Well, I don't know if that would help address the question of whether depleted uranium was an issue or not. I think, you know, again, it was pretty clear that the site did not become a nuclear site, so to speak, until the mid '50s. And whatever they did before that, as Stu mentioned, was radiography and X-ray machines, that kind of thing. So we're looking for that nexus where that may have, in fact, started.

And I think, as Brad pointed out, there is some circumstantial evidence because of the burn pits that, yes, it was on site. The thing that we can't really establish is what kind of exposure pathway are we talking about and would that have been something one

would have been concerned about or not.

CHAIRMAN MELIUS: Any other questions for Joe?

(No response.)

CHAIRMAN MELIUS: Okay. I don't know if the petitioners are on the line. If you all wish to speak?

MS. RAY: This is Sarah.

CHAIRMAN MELIUS: Hi. How are you?

MS. RAY: I am doing well.

I do have a couple of comments I would like to make. In my research, I have seen back in the '50s -- and I can't give you the date right now -- that the Mark 15 was the earliest record at Pantex. And [identifying information redacted] tells that the Mark series was really radioactive. And so I might offer that, but that was just in a book. And I can't even at this point tell you what the book was.

Obviously, as you can imagine, I

disagree with some of the things that NIOSH is wanting to do. Really, six years is a very long time to wait. And it's quite an adventure. Well, it's probably the future for us.

But I question some of the things that we are talking about, talking about 350 people you have the records for. And basically there were about 300 people on the entire plant through most of the history of Pantex who did direct hands-on work.

I know that [identifying information redacted], was one of the people who was pulled at random. It didn't matter whether they worked on the 28 or not, but he participated, I believe, in the bioassay or whatever was done on the 28th. He's not here right now, but what he told me was that people were just pulled at random and asked if they would be willing to do it.

Also, you're talking about going back and finding the records. And you're

thinking that you're going to have an eye on a pile of papers that is going to say, [identifying information redacted]. Okay. [Identifying information redacted] worked in the board, and she worked on the 28 and the 33 and the 41. Those records don't exist.

Sometime in the '90s -- this is from [identifying information redacted]. He said they were asked to go back and come up with a list of all the weapons and all the processes. And every place that he worked, he started in the '80s. So they wanted him to just go back and write all of that down. That is not possible. I can't tell you what I did yesterday. Oh, I disagree with back-extrapolation.

Another thing, really, the problem is unique. The control, the engineering control, the administrative control, are so much different, even when [identifying information redacted] first started at the plant. They would have multiple weapons in

the facility at one time.

But talking about these 300 workers, workers tended to specialize. You know, there would be people that only worked this program or only did what they would call the mechanical and there were other people that worked in the cells where the items were mated.

You know, I did have many, many problems with so much of the things. But, you know, it's kind of like, well, if we can find something. Well, maybe we've got something. And how long or how much longer can we give these people?

We have workers -- there's another worker today who passed away, a really good designer. Jack Laich, I'll go ahead and say his name. Someone who worked out there forever probably has never gotten any kind of compensation for his illnesses, but always ready to help and answer questions every day.

I appreciate everything that the

Board has done. I know this takes you all away from your families. And you've looked extensivly, everyone has worked very hard, but I just wonder how much more you will be able to find. Sometimes it's looking for a needle in a haystack, and sometimes you can't even find the haystack. And at some point you just have to stop looking.

Anyway, I encourage the Board to not delay, to go ahead and make some decisions and make it worker-friendly, worker-favorable. It's a hideous program. It's very difficult for workers and families to go through. We have been able to help probably about four or five hundred additional families since the passage of the SEC. And I know that mine is continuing to pull new records. I hope we will be able to help some more people, additional people out there.

So thank you for listening.

CHAIRMAN MELIUS: Thank you. And, no. We recognize it's been a long time. And

I think we are approaching a time when we can bring closure to this. And we're certainly not going to tolerate another long wait for records in order to do that.

MS. RAY: Yes. Even talking about the next public meeting, it would be in January. You know, there are so many others. These are people, and they are not the only people. You know, this is affecting workers throughout the United States. I am not asking for special treatment for us. I am asking for fair treatment for all of the workers.

CHAIRMAN MELIUS: Thank you. Any --

MS. RAY: Oh, let me say one other thing, though. There were no major changes at the plant until '92-'93. The RadCon manual went into '93. They trained the Rad Safety Department in '92. I was a training specialist. I developed a degree program. You know, I did many, many things. I set up the safety system. But at some point, within

everything that I did, I reviewed all of the training materials that were used to train the Rad Safety Department.

You cannot agree with 6 or 8 Safety, Safety department -- the whole Safety Department was like 6 to 8, probably no more than 12, during this whole period that we proposed. There was no way that these people could cover 24 hours a day, 24/7 every day of the year. It just wasn't possible. The record is not accurate. It's just not there.

CHAIRMAN MELIUS: Okay. Thank you. Okay.

MS. RAY: I'm really through now.

CHAIRMAN MELIUS: Okay. So we will look forward for an update on this site at our next meeting. I know, Brad, you will keep me posted. I know Stu will also, but Brad.

I think we are ready to move on to the Baker-Perkins. Henry?

MEMBER ANDERSON: This is a

closeout from our AWE Work Group of a TBD, the review of that. So it's not an SEC petition. And this is for the Baker-Perkins Company in Saginaw, Michigan, the Technical Basis Document review.

The interesting thing about this site is it only covered a five-day period when they were testing for the usefulness of a specific industrial mixing machine called a Ko-Kneader for possible use at Fernald for mixing uranium. So they went to the Baker-Perkins facility because a piece of equipment was there, ran some operation tests for a five-day period. And, lo and behold, it becomes a TBD as part of the TBD-6000.

It was an Appendix P for TBD-6001. And when 6001 was broken down, then, and all of the appendices were to become stand-alones, this became a stand-alone TBD, rev. 0, as well.

SC&A in November of last year reviewed the TBD document. On November in

2011, we reviewed that document and the SC&A report. And in December, NIOSH issued a White Paper on the TBD review in response to SC&A's Site Profile review from November 2nd.

In January, we had some other SC&A response to the NIOSH paper. All of these documents I think you have had forwarded to you already if you were interested.

We met in February again to see where we were, and SC&A presented to us. And we agreed that basically all of the findings have been resolved. And then in May of this year, NIOSH issued rev. 1, which provided -- mostly our comments, as you will see, were related to needing greater detail in the TBD so it could be used for dose reconstructions. And largely it was trying to better quantify how much uranium was actually handled and the timeline of the events over the five-day period and anything that may have been before or after. And so the TBD revision obtained more information and provided that to us.

And then in just -- now, what is it? -- almost two weeks ago, we had a conference call again to go over that, be sure that all of the issues have been resolved. And Dave Kotelchuck was a new Member at the time. So he needed to get up to speed.

And we voted at that time to accept SC&A's recommendation that, in fact, all of our issues had been addressed and closed. And so basically the primary issues were the use of breathing zone versus general air samples, use of the 50th percentile in assigning doses versus the 95th percentile of the air sampling data, a few other issues as well in the duration of the external exposure per day.

And those issues were fairly easily addressed by NIOSH and expanded the TBD to include answers to the four points, our primary issues; went through a step-by-step description of what actually went on so you've got to get a sense of where exposures or how

exposure may have occurred.

And the logs of the Ko-Kneader tests were also then referenced, including the start and stop times of each test and the times and locations of each air sample and designation of which air samplers were BZ versus GA, general air, or breathing zone samples that provided better clarification of what exposures may have been.

And all of that now is in the TBD, rev. 1. And so that -- basically, we then closed this out. If there are any questions, this document now is finalized. And I think it has been posted now as of the rev. 1?

CHAIRMAN MELIUS: Any questions?

MEMBER ANDERSON: We are working through our backlog in our group.

CHAIRMAN MELIUS: Yes. Well, we're impressed. You're on your --

MEMBER ANDERSON: We needed to get this. You know, we had a review. We talked about it and wanted to not let it hang. So we

actually were able to push NIOSH to close it out. And it was a fairly simple set of tasks. So that happened quite rapidly.

CHAIRMAN MELIUS: We have the 6000/6001 challenge here.

MEMBER ANDERSON: Yes, exactly. Yes, right.

CHAIRMAN MELIUS: It is always weighed down by --

MEMBER ANDERSON: So, if there are no questions, again, it was an interesting site. It is only a five-day period. But the data there may be useful at other sites as well as we move forward. So it is a useful document to have updated and actually current.

CHAIRMAN MELIUS: Thank you.

Any -- Paul, yes?

MEMBER ZIEMER: I don't know if you can answer this, but do we actually have any claimants from this operation, this site?

MEMBER ANDERSON: That's really what triggered going back over it. There were

some in the dose reconstruction using the 50th percentile versus the 95th. The 95th has traditionally been what has been used. And so we kind of questioned what that was. And NIOSH then agreed that that makes sense to move in that direction.

MEMBER ZIEMER: So there were dose reconstructions done under the original document. Is that correct?

MEMBER ANDERSON: That is correct?

MEMBER ZIEMER: Okay. Thank you.

CHAIRMAN MELIUS: Thank you. And thank you, Henry.

I think we are at a point. And given some of the scheduling issues, we will take a break shortly. I will remind everybody on the Board we have a work session this afternoon and before the public comment, fairly long. So we will have time.

But one of the things that is sort of a homework assignment is we do have the public comments from a prior meeting. I can't

remember which meeting it is. But you have both that and the associated transcript. So if you could go through those, pick out those that you are responsible for, if it's your Work Group or an issue you are involved in or addressing to make sure that the summary and responses are appropriate in terms of follow-up.

But those are fairly -- the first is sort of a spreadsheet that -- it's two documents. One is I believe a spreadsheet that has sort of a summary. And then there is a much longer document that is the associated transcript. So we will go through the spreadsheet, but unless there are questions that people raise which may be contained in the longer transcript sections of that. But, again, just locate it so we can do that and be prepared for it. And we have some other Work Group reports to get caught up on and so forth for this afternoon.

So, with that, why don't we take a

break? We will reconvene promptly by 11:00 o'clock.

(Whereupon, the above-entitled matter went off the record at 10:24 a.m. and resumed at 11:03 a.m.)

CHAIRMAN MELIUS: If we can get started again. And I neglected to ask for a call-out vote, a closeout, the call for a closeout vote, on the Baker-Perkins. We have a recommendation from the Work Group. So we have the motion and the second. I think we're through with questions and all I need is a vote voice. So all in favor, say aye?

(A chorus of aye.)

CHAIRMAN MELIUS: Opposed?

MEMBER MUNN: And what are we voting for?

(Laughter.)

CHAIRMAN MELIUS: What did we vote for?

MEMBER MUNN: We recommended that we do not have an SEC --

CHAIRMAN MELIUS: No, no.

MEMBER MUNN: What was the recommendation?

CHAIRMAN MELIUS: On Baker-Perkins, we are accepting the Work Group's recommendation on that, which was to accept the revised TBD.

MEMBER MUNN: Yes.

CHAIRMAN MELIUS: Thank you. I'm sorry, Wanda.

MEMBER MUNN: That's all right. I just wasn't really clear what we were voting on.

CHAIRMAN MELIUS: So all in favor. Abstaining?

(No response.)

CHAIRMAN MELIUS: And objecting?

(No response.)

CHAIRMAN MELIUS: So unanimous. Okay. Thank you.

The next item on our agenda is the Weldon Spring Plant petition. And the Work

Group Chair, Dr. Lemen, will give us a brief introduction. And then we will have a presentation from Stu Hinnefeld again.

MEMBER LEMEN: Well, I kind of inherited this as Mike Gibson was the Chair originally. And then with his change in status, why, I was asked to take over as Chair. And we have had a meeting recently: Bill Field, Dr. Melius and myself. And we had three issues that were still to be addressed. One was the bounding radon model. The second was an issue dealing with recycled thorium. And the third was the raffinate pit drying out.

There were several pits and they were located on the site. We addressed those three. And Stu Hinnefeld has put together a presentation which will give you what the Working Group found.

I know you haven't heard much from Stu this time. So we will let him speak finally.

MR. HINNEFELD: Thank you, Dr. Lemen. I am thinking you guys are probably as tired of hearing from me as I am of speaking, but we'll see how we go.

Okay. I was asked to provide an update on these three specific Weldon Spring issues: bounding radon model; recycled thorium, the question of recycled thorium; and the question of raffinate pit drying.

I presented the bounding radon model at the last meeting. This is just an abbreviated presentation of that.

This is the scenario we presented to the Weldon Spring Work Group back a while ago. The scenario is that all of the radon released at the plant is either generated in or recirculated into the particular facility where the dissolution of the concentrates occured and as a bounding situation. And based on that input rate, we calculated a maximum concentration of radon based on an annual release estimate for radon for the site

that was done by Argonne. And then an intake would be assigned, then, essentially to all workers because we wouldn't be able to distinguish who would have been exposed to the radon or not.

So the document that provides the annual radon emission estimate is the Weldon Spring historical dose estimate from Argonne. It gives a range of estimates of the annual radon emissions from 12 to 34 curies per year. That is based on the range of estimates of annual throughput through Weldon Spring and an assumption of, relatively small, of the radium and, therefore, the radon being present in the concentrates that are a relatively small-activity fraction of the uranium because it's not ore; it's a concentrate. So most of the radium has already been removed before it got to Weldon Spring.

The radon is assumed to be released into the work area in the refinery. All of it, even the stuff that went out the

stack, we assume came back into the building 103. Radon emission rate and a very low building ventilation rate were used to calculate an equilibrium concentration in building 103. So you've got an input; you've got an output. You can have a steady state of a steady state problem there.

Here are the parameters of the model. I gave those last time. The volume of building 103, we assume a ventilation rate of one air change per hour, which is pretty low for an industrial building.

The production rate, which is 34 curies per year, or 3 billion picocuries per hour, that's also 3 millicuries per hour. A working-level assumption or conversion of picocuries per liter as a working level is 100 picocuries per liter in full equilibrium with the short-term alpha-emitting progeny. The hours in a working-level month are 170. The assumed equilibrium factor we did in our original model was 0.5. And I am using an

occupational work number of hours of 2,000 hours per year.

When I presented this last time, the question was raised about equilibrium factor of .5. Maybe that's not appropriate for such a low ventilation rate. I think that's a fair question. I think that's a Site Profile question, as opposed to an SEC question, though, because it is a matter of arithmetic.

The resulting working-level exposure will be directly proportional to the two equilibrium factors. So if you say you chose .7 as equilibrium factor, that would be a 40 percent increase. So the dose estimate would be 40 percent higher. So I think that is a reasonable point, but that is an issue that can be addressed relatively easily.

This is a slide I showed last time. This shows the arithmetic for the model, how you arrive at the equilibrium concentration based on air changes per hour

and the volume and the input rate. And the numbers come out to 150 picocuries per liter, which at a .5 equilibrium would be 8.8 working-level months per year and at a .7, then it would be about 40 percent higher, which I think would be about 12 working-level months per year, so essentially steady exposure at one working level. So that's the bounding radon model that we were proposing to use for employees at Weldon Spring.

The second issue relates to recycled thorium and the question of, was recycled thorium handled at Weldon Springs. That question arose because there are a number of documents that -- EPA Environmental Impact Statement from 1989 is one of them. There are other references from that period in the '80s that describe thorium-contaminated raffinate solids from processing thorium recycled products and words like that, other phrases indicating recycled thorium or thorium recycled products are used in other

references. They could just be quoting each other because that happens a lot when people write documents for similar purposes around the same time, but it's used a number of times.

Now, in our program, we tend to use the term recycled to describe materials that are irradiated in a reactor and then recovered for reuse, but when you recover them for reuse, you still have some contaminants that come along with it. We use that pretty consistently. As when we say, recycled uranium or recycled thorium, we use that pretty consistently, but that is not the universally accepted term of recycle. There are a lot of possible meanings for recycle that are used in the industry.

If this sounds familiar, by the way, I spoke to this at the last Board meeting. We didn't have a written product. And since the last Board meeting, we have developed a written White Paper and delivered

it to the Work Group that goes through this information. So the White Paper was available to the Work Group at their last meeting.

So our question is, had the thorium previously been irradiated, you know, recycled, in our terms? And, if so, to what extent would radiological impurities in recycled thorium affect the dose reconstruction? Because you bring along a few additional things, in addition to thorium, that would affect the internal dose assessment.

So we do have available to us an accounting of the inventory records for Weldon Spring. And they show that thorium was present in significant quantities only during the period '63 to '66.

The DOE thorium irradiations, which led to what we would call recycled thorium as we use the term "recycled thorium," those occurred at Savannah River. And for the reclaiming, the material that got back into

the thorium stream, they started in the mid-'60s. So they were producing U-233. That's why they irradiated the thorium. And then they would reclaim the thorium and put it back in the system.

We have documentation from Savannah River that indicates that the first shipment of the previously irradiated reclaimed thorium would be sent to Fernald no earlier than November of 1966. And we also have evidence that Fernald was the site that shipped thorium to Weldon Spring, but they didn't receive the recycled thorium until November of 1966, which is about the time Weldon Spring was closing.

I've got some water. It's not really helping. I don't really know what is going on. It doesn't seem like an -- if your allergies don't bother you in Cincinnati, they can't bother you out here.

(Laughter.)

MR. HINNEFELD: I've got a drop.

I've got hard candy. I've got some water. I don't know what's going on. I think I have exceeded my warranty.

(Laughter.)

CHAIRMAN MELIUS: I looked at the schedule. I noticed that --

MR. HINNEFELD: Please do.

CHAIRMAN MELIUS: -- that Jim Neton takes over for this afternoon.

MR. HINNEFELD: Yes, trade me in on a newer model? You sound like my wife.

Okay. From this information, we concluded that the thorium processed in the '63 to '66 period was not recycled, as we used the term in EEOICPA. So we can do the thorium dose reconstructions, just considering it be the thorium and whatever date the K products would be there as well from the thorium to K chain and don't have to worry about the impurities from the irradiation. And there is a White Paper on that. I can make it available to anyone who wants to see it about

that analysis.

CHAIRMAN MELIUS: It is available on the information that was given to us today.

MR. HINNEFELD: Thank you.

That one was kind of nice because the evidence really looked clear. You know, we could find it, and it really seemed clear.

Our third issue is raffinate pit drying. Just a real quick reminder about Weldon Spring and raffinate pits. Raffinate is the waste material from refining uranium. Pits were built at Weldon Spring to store the raffinate. It was slurried out there, pumped out there as a slurry into these pits.

They also threw a few other things. I think they threw what they called slag, which is mag fluoride that had been leached. Normally, the uranium plants, when they made uranium metal, the mag fluoride that was used as the refractory liner became contaminated with uranium. And frequently they would leach that slag to recover that

uranium. And that slag was waste. And they also threw some slag out there, you know, leached slag. Mainly, raffinate was pumped out there to those pits.

And there are references, again mostly from the '80s and '90s period, that state that the raffinate pits were typically covered with water, but pits 1 and 2 were not covered during dry weather periods. So there is a question, do you have to deal with resuspension from these drying pits? And then also, well, if they dried out then, wouldn't they have dried out during the operating period? You know, where you would maybe have to deal with resuspension during the operating period for your dose reconstructions at the plant.

So I will summarize real quickly the covered periods here because it is relevant to the discussion here a little bit. From '55 to '56 as the active period, as the covered period, for Weldon Spring Plant, I

think '55 was largely a construction year. I think their actual operations started a little later and then operated through '66.

From '67 to '85 was, a term that I invented, an inactive period. I just invented it for this slide because there wasn't any remediation work going on. And during this period, the plant was essentially turned back to the Army. The DOE had acquired this property from the Army originally. And when they left in '66 or '67 -- I don't know the exact date, but it's right around there -- they turned it back over to the Army because the Army was interested in making an herbicide there, Agent Orange. So it was under Army control at that time. Peripherally, the Army tried to do some decontamination for a couple of years, decided they couldn't do it at a reasonable cost and just left.

So for most of this period, there's no one there. From that period when the Army was there, since these people were

Army employees or contractors to the Army, they are excluded from our EEOICPA program.

The pits actually remained DOE's responsibility, but DOE didn't have anybody there. You know, they're just right there abutting this plant. And then from '85 to 2002, the actual remediation kind of gets going. A remediation contract was let, and the remediation kind of gets going towards the end of the '80s, when they actually remediated the environment there. So that's kind of relevant to the discussion, is those three periods.,

Now, I mentioned the inactive period because it appears to us that during that inactive period -- that was '67 to '85 -- there don't appear to be any eligible claimants at the site. You know, there are periodic reports from companies -- I think it was National Lab at the time -- who would get a minor contract from DOE to pay attention to Weldon Spring. They did some groundwater

monitoring. And they kind of inspected, made sure the berms on the pits were okay.

There may have been a little groundwater monitoring. And some of their reports say that air sampling was not distinguishable from background, or air sampling did not detect any short or long-lived products that could be attributed to Weldon Spring. But there is nothing about how they sampled, where they sampled, or what the actual measurements were. There were statements like that in at least one, maybe a couple of those things that seemed to recount a visit that a group of people from Fernald made. National Lab was Fernald.

So there don't seem to be any eligible claimants who spent any particular time other than a day or so in one of these environmental visits during that inactive period. The Army controlled that area. And some of these reports say that the security is -- you know, you don't have to worry about

security of these pits because it's maintained by the Army because, you know, they control a large area around here and you have to go through Army-controlled places to get even close to the pit. So statements like that are made in those reports as well.

Now, we do have site perimeter air sampling for a couple of periods. We have site perimeter air sampling in the Meshkov document, 1986. And that covers '59 to '65, which is most of the operational period. They didn't have any for '57, which I think was really the first operational year, '57 to '58. And they didn't have any for '66. But for most of the operational period, they had boundary station data.

That is presented in Meshkov. As far as I know, that is the only place we have seen it. We haven't seen an original document that reported that.

From '87 to 2000, there are environmental monitoring reports prepared by

M. K. Ferguson and Jacobs Engineering, who were the companies who received the contract to do the remediation at that time. So there are environmental reports with air sampling data at the perimeter for those years.

And then, like I said earlier, from 1966 to 1986, you will see one of these reports periodically from National Lab that might make a mention that air sampling results couldn't be told from background, but you don't really know much about where the samples were taken or anything like that or how long they sampled.

The environmental reports from '87 to 2000 actually do give a fair amount of information about how they did their sampling. They included a gross alpha count, I think, on maybe a weekly exchange basis and then a composite for isotopic analysis on a quarterly basis.

So, like I said earlier, it appears from 1967 to 1985, that it's unlikely

there were any covered employees at the plant. If, in the event we find out later on that that's wrong and there is a claimant or some claimants from there, we think that we can deal with that with information we have at the time. And realistically, since that was a period of essentially no activity -- and up to 1987, really, the remediation was not really doing much activity, they were just trying their sampling -- we think the 1987 estimates of air exposure from the air sampling results in '87 could be used for that period if we identify a claimant. But that could be reconsidered if the need ever arises.

For the operational period, 1957 to 1966, resuspension from the pits, if they dried -- if they did dry during that period -- should be reflected in the boundary station air sampling results for that period.

Now, it is not our position right now that the pits dried out during the operating period. The reason for that is that

there were people there. There were people there operating the plant and that would be advisable -- I think it was well-known at that time that it would be advisable to keep the raffinates covered with water.

There are statements, we have found documents that talk about the operation of pits, how the material was slurried to the pits, pumped out. There's a slurry. And the supernatant was discharged to the process sewer of the plant and discharged at about a half a million gallons per a relatively short time -- I knew this a minute ago -- were discharged to the sewer as supernatant. So clearly they're wet. The fact that the supernatant comes off and goes doesn't necessarily imply that there is water standing on top of it, but it could. So certainly they are very wet.

There is also an analysis from 1968, right after the plant closed. A mining company was interested in mining the pits and

reclaiming some of the metals and other materials in there -- maybe the uranium that was in the pits, although it wouldn't be much -- but reclaiming the materials in the pits.

And they did an analysis. Air analysis says that the pits were 75 percent moisture. If they could be reduced to 50 percent moisture by the DOE, then this company might be interested. But they didn't want to have to deal with that extra drying. They would still have to try it if they got to 50 percent. So it was wet, for sure.

The other issue to deal with here is how are we dealing with environmental dose estimates in the Weldon Spring Site Profile? Because this is during the covered period and the Site Profile has to address this issue.

The Weldon Spring Site Profile has actually two components to the environmental airborne dose: one which is generated from the boundary station samplers and one which is generated from a dose estimate for being close

to a dust-generating operation. And it was cleaning hoppers. I think it was a hopper-cleaning operation that occurred during Weldon Spring's operation. The philosophy here being that a person who was not monitored, not in the bioassay program -- there weren't all that many, but there were some that are not in the bioassay program -- could have been in proximity to operations that were dusty and may have been exposed, at least some amount of time.

So there is a dose estimate in the Site Profile that says, given this -- and there are airborne measurements from this operation, airborne activity measurements from the operation -- and someone being in proximity for this number of hours per year -- it's not 100 percent but this number of hours per year -- they would receive an intake of this much. And so there is an intake assessment as part of the Site Profile for the environmental dose.

That environmental dose is far larger, from that dusty operation for a while, than spending the year, as determined by the boundary station sample. So it's far larger. I don't have the numbers with me right now, but we do have documents that we have prepared. And we can get them to the Work Group here as soon as I get done being at this meeting, I guess.

So if the pits did dry out -- and it is not our position that they did -- but if they did dry out, it's our position that that would change the interpretation of the isotopic ratio on the boundary stations. You would have more thorium-230 compared to uranium than the Site Profile presumes, because the Site Profile makes the assumption that the resuspension is more from the plant operations. And so there is a thorium-230 content that they believe is the bounding estimate for if you're dealing just with the concentrate of about five percent. You know,

that thorium-230 activity would be about five percent of the uranium activity. So that's in the Site Profile now.

If you were to -- and I just got this Monday, this analysis Monday. If you were to use a raffinate resuspension as your environmental aspect, you would go from about 5 percent thorium-230 to about 50 percent thorium-230, according to the analysis I got Monday.

So that will change -- you know, that would change the interpretation of the data. I believe the Meshkov data, the one that reports the boundary station data, reports it as uranium. So this is sort of additive.

You wouldn't reconfigure it. It's not a total activity number. So you wouldn't reconfigure that total activity differently. It would be additive to uranium. But it is still a small component of the very minor component of the total environmental dose that

someone would be assigned during this covered period, because of the much larger presumed intake from being in proximity to the airborne-generating activities.

So that's kind of abrupt, but that is the end of the presentation. I will answer whatever questions I can.

CHAIRMAN MELIUS: Questions for Stu? Yes, Brad?

MEMBER CLAWSON: Stu, I am not clear. When this originally started out, my understanding was we were using surrogate data. Now we have actually found Weldon Spring's data. Is that correct?

MR. HINNEFELD: Yes.

MEMBER CLAWSON: How much data do we -- how many data points do we really have?

MR. HINNEFELD: Of which type? Of the boundary station sample?

MEMBER CLAWSON: Boundary station, yes. What boundary --

MR. HINNEFELD: I think there were

seven boundary station results reported in the Meshkov document from '59 through '65. Something like that. It was on the order of seven. And the numbers are reported as -- I think they were reported as annual averages for each boundary station.

In the later monitoring data from the remediation contractor, there was a similar number of monitoring stations starting out. They added more later on. And so in '87, there was a similar number of air sampling stations. And those results were all less than detectable for both the weekly -- for the gross alpha results as well as isotopic results.

MEMBER CLAWSON: Now, on the thorium, because I guess I was the one who brought some of this stuff up, do we have any personnel monitoring data for any of this? Do we have any bioassay or anything?

MR. HINNEFELD: No. We don't have bioassay for thorium. We have, for the period

we're talking about -- which period are you talking about?

MEMBER CLAWSON: Earlier years.

MR. HINNEFELD: Okay. For the thorium exposure earlier on, which is not one of the three issues that I got ready for today, there is a daily weighted exposure air sampling program that was used to estimate the thorium exposures during the thorium activities from '63 to '66.

MEMBER CLAWSON: Okay. Thank you.

CHAIRMAN MELIUS: Other questions from Board Members?

(No response.)

CHAIRMAN MELIUS: Okay. I believe at least one of the petitioners is on the line and wishes to make a comment. Are you on the line?

(No response.)

CHAIRMAN MELIUS: If not, then we do have a written statement from one of the petitioners that Ted will read now, or at

least summarize.

MR. KATZ: I'm not familiar enough with it to summarize it, but I can speed-read it.

CHAIRMAN MELIUS: Okay.

MR. KATZ: This statement is from Tina Triplett. I will just move as quickly as I can, because it is fairly long.

"Intent of the EEOICPA 2000. The congressional intent of the EEOICPA Act was to support timely, uniform, and adequate compensation for covered nuclear defense employees and their survivors. The program stated that the federal government should provide workers and their survivors with all pertinent and available information necessary for evaluating and processing claims. The federal government should also ensure that the program minimizes the administrative burden on workers and their survivors and respects their dignity and privacy.

"Time limits. I am fully aware

that this process is not a simple undertaking. However, there comes a time when a decision has to be made. Enough is enough. The countless stall tactics used by NIOSH to delay resolutions is no longer justifiable.

"Time is something that Mallinckrodt, Weldon Spring Plant workers, and their families do not have. Year after year, there is no closure for petitioners and claimants. Roundtable discussions never end. NIOSH wants to prolong any decision for petitioners, employees, and survivors. It appears evident that NIOSH is never prepared for discussions on the Weldon Spring Plant.

"Claimants and petitioners have heard countless times the words 'I'll have to get back to you with that' or 'I don't have that information at this time' when questions are addressed. The lack of initiation on follow-up is at the petitioners' and claimants' detriment.

"We can generate never-ending

discussions for several more years or we agree to disagree and move forward. There is nothing timely about the Congressional intent of this compensation program.

"Disclosure. Claimants and petitioners are at such a disadvantage in fighting for compensation. We have been treated unfairly as the petitioners from Mallinckrodt Weldon Spring. There appears to be no full disclosure of information.

"The petitioners have made futile attempts to gain access to records being utilized for Weldon Spring. We have submitted numerous FOIA requests and routinely check the CDC website as well as conducted extensive hours of research.

"There is no assurance that we possess all of the information requested. We have submitted countless FOIA requests for all data pertaining to Weldon Spring. However, when we submit a FOIA for a specific item, we get more information and there is no

explanation as to why it was not in a previous request.

"While NIOSH claims to have Weldon Spring information, the petitioners clearly disagree that there is enough data to provide accurate dose reconstructions. NIOSH has not provided any evidence as requested by petitioners, which presumably means the data do not exist. This predicament just creates more distress among administering agencies.

"In regards to the CDC website, SC&A's reviews of NIOSH White Papers are posted. However, NIOSH has not posted all Weldon Spring White Papers to the website. NIOSH fails to keep the petitioners and claimants informed in a consistent manner.

"In addition, when petitioners ask explicit questions about Weldon Spring data being utilized, we get evasive responses. NIOSH circumvents in queries to confuse petitioners and never provides reasonable explanations to our concerns.

"For example, when the petitioners inquired what raw data was being used for daily weighted averages and these so-called blunders, we received three separate answers. As mentioned at the previous Advisory Board meeting, NIOSH stated that they had 1,400 air samples, then changed it to 1,400 operations, and then admitted it was actually 1,400 calculations. The petitioners made several attempts to obtain clarification and we only received vague responses.

"NIOSH finally conceded that the 1,400 operations did not refer to Weldon Spring Plant operations, which were implied in earlier discussions. The fact is there is a lack of original source data for this complex plant. Any attempts by NIOSH to create data are not acceptable.

"NIOSH claims to have information for Weldon Spring, yet never produces any of these documents. NIOSH has yet to answer what raw data is being used for these calculations.

NIOSH alluding to adequate data is just not realistic. Has anyone investigated or validated all of Mr. Rolfes' claims? If the petitioners and claimants can see through the obscure explanations, doesn't anyone else?

"SEC petition requirements. As petitioners for a Special Exposure Cohort, we are required to submit evidence involving unmonitored, unrecorded, or inadequately recorded exposure incidents. In addition, we are requested to submit proof of lost, falsified, or destroyed radiation records. Submission of affidavits supporting a lack of personnel or area monitoring was also suggested.

"The following describes the extent of evidence submitted on behalf of Mallinckrodt Weldon Spring Plant workers. One, employee affidavits. Weldon Spring employees have submitted numerous affidavits pertaining to accidents and the lack of appropriate monitoring. NIOSH continues to discount any

employee testimony. As a reminder, over 50 percent of workers were not monitored for all radionuclides. And acute exposures were not routinely recorded. NIOSH interpretation of radiation exposure versus routine operations is lacking. What is routine? What is routine about furnace blowouts or explosions?

"Two, thorium. In the SEC Evaluation Report, NIOSH has concurred that the sufficiency of area monitoring data for thorium is uncertain." That's page 11. "NIOSH also determined that records related to potential thorium exposure might not be sufficient for adequate reconstruction of internal exposure," page 11. "The ER also indicated that Weldon Spring Plant records do not indicate specific analyses to define concentrations of thoron daughter activities," page 30.

"It appears NIOSH is only utilizing limited summaries of thorium dust studies and performing calculations to

interpret daily weighted averages. These calculations are not benchmark data and they do not meet the terms of representativeness or sufficient accuracy. In addition, many of the readings in the summaries were not true measurements. Measurements were often extended from other years. The use of DWA was already deemed not claimant-favorable in prior SECs, including the Mallinckrodt Destrehan Plant.

"Number three, thorium-230. Two documents referred to at the Ingle documents cannot be discredited by NIOSH. Both of these documents state that the AEC asked Mallinckrodt in 1955 to extract thorium-230, ionium, from raffinate residues on a production basis. This pilot work continued on a large-scale production basis at Weldon Spring from 1958 to 1966. Any efforts by NIOSH to discredit these documents or any submitted documents are clearly not claimant-favorable. Additionally, NIOSH cited

these same Ingle documents and misrepresented the content for dosing thorium using uranium throughput.

"Confusion and disagreement sets in on the concept of utilizing a thorium ratio intake to a uranium ratio intake. Are there not different uranium compounds in different classes of solubility? Don't uranium and thorium behave chemically in different ways? Don't the compositions change rapidly? Is there a state of equilibrium? What about enriched, depleted, and recycled uranium implications? Doesn't thorium result in larger doses than uranium per unit radioactive contamination in the air?

"It appears that Weldon Spring workers may be dosed on inaccurate or insufficient data. Additionally, stated on page 43 of NIOSH's Site Profile for the Weldon Spring Plant, `Measurement technologies for urinalysis did not provide sufficient information to have a reliable dose assessment

when there was a mixture of uranium compounds and uranium isotopes.' And NIOSH is going to use this unreliable information to attempt to dose thorium intake? There are so many unanswered questions.

"Furthermore, this proposal has never been validated to be accurate, feasible, or claimant-favorable. It appears like a last-ditch effort to deny compensation.

"Thorium is more toxic to the body than uranium. As stated in a Fernald document, solubility changes from outside the body versus inside the body. Insoluble compounds inhaled into the lungs, where they would remain for long periods of time, apparently present the greatest hazard. Thorium compounds are not readily excreted in the urine, which prevents urinalysis from being nearly as good an indicator for thorium inhalation and ingestion as for uranium inhalation and ingestion. Apparently this is because thorium compounds are generally more

insoluble and because soluble thorium compounds are converted into insoluble compounds in the body after ingestion or inhalation.

"How can this attempted approach be feasible or sufficiently accurate, especially since there is a lack of adequate air concentration for the Mallinckrodt Weldon Spring Plant? Prior SEC cohorts have been passed on NIOSH's inability to dose internal thorium and we request the same consideration. NIOSH's proposal is just not acceptable.

"Radon. There was no radon monitoring performed at the Mallinckrodt Weldon Spring Plant. Monitoring ceased in 1955. NIOSH's suggested radon model appears to have uncertainty, too many assumptions, and does not demonstrate sufficient accuracy. First, NIOSH proposed no ventilation rate. And now they are going to incorporate a ventilation rate? How can anyone keep things straight? How many chances does NIOSH get to

make things right? Where is the guarantee that every single Weldon Spring worker would have accurate dose reconstruction? This is basically a model with no benchmark data.

"Six, destruction of records, V2161. As mentioned numerous times before, the V2161 shelf list that contains incomplete sets of medical files for Weldon Spring employees in dust studies has never been located. NIOSH claims these documents were not destroyed. However, we have requested them to be brought forward, and NIOSH fails to do so. The reality is that these records were destroyed because a scheduled destruction date had already lapsed. This was already established during the Mallinckrodt Weldon Spring SEC.

"Weldon Spring site visit. A Weldon Spring site visit during May of 1988 demonstrated that prior attempts to locate records during operations at Weldon Spring were unsuccessful. Many records retained had

been exposed to the elements. Documents were wet, showed signs of decay, and were illegible.

"Hard copy records. In September 1979, Elizabeth Dupree evaluated the comparison of work history records versus hard copy records that were available at CER. Dupree discovered that the computerized work history records did not compare well with the hard copy records that were available.

"Dupree advised that one of the deficiencies found in the computerized work history data is that they do not contain sufficient detail to match jobs that a worker held to the dust exposure studies that exist for jobs in the Uranium Division.

"It was known that types of work history records available changed over the period of operation of the Uranium Division. The computerized work history did not appear to be adequate for linking a worker's job to dust exposure he/she received while doing a

job. No one document contained all of the work history information. In addition, the linkage to dust exposures was less successful for Weldon Spring since dust exposure studies only covered jobs being held in the manufacturing area.

"Building 1415. History documents show building 415 contained an incinerator which was used to burn trash and classified documents.

"Seven, surrogate data. I am still perplexed that Mr. Rolfes continues to deny the use of surrogate data for Weldon Spring. NIOSH has alluded to claims that no surrogate data is being used for the Weldon Spring Plant. However, NIOSH actually states that they are not using surrogate data for the proposed model.

"Previous email correspondence from NIOSH clearly indicates surrogate data from Fernald is being utilized for the Weldon Spring Plant. In fact, emails indicate NIOSH

admitted that if they use any actual data from Weldon Spring, the data would be less claimant-friendly.

"So which is it? Why does NIOSH constantly waver on what is being utilized for this plant? NIOSH's integrity with addressing the Mallinckrodt Weldon Spring Plant case is often questioned and unreliable. Countless discrepancies repeatedly reveal themselves, and it does not go unnoticed.

"SEC petition requirement conclusion. The above-mentioned examples demonstrate the necessity for a Special Exposure Cohort for Mallinckrodt Weldon Spring. The Weldon Spring Plant has an extremely complicated and hazardous history. The lack of data for Weldon Spring is irrefutable. Any attempts for NIOSH to fill these gaps just make dose reconstruction more imprecise.

"Documentation. Reiteration is essential to demonstrate that every piece of

evidence that has been submitted by the petitioners or claimants is ignored or discredited by NIOSH. If the findings are not ignored, the information is twisted. NIOSH always provides its own interpretation of presented documents, which will never be claimant-favorable/friendly.

"Any claimant-favorable documents are tossed aside every time as if they have no merit. Petitioners and claimants have to prove and back up everything. However, NIOSH is not held to the same standards and no one holds them accountable. Who gave NIOSH the authority to decide the intent or the content of any of these documents?

"Furthermore, it has been well-established and acknowledged by NIOSH that Mallinckrodt lacked the integrity of handling and reporting of monitoring data. Those circumstances did not provide NIOSH with a reasonable means to validate dose estimates based on monitoring data. Mallinckrodt

knowingly placed its employees at risk and this last chapter of Mallinckrodt's indiscretions needs to be closed.

"Burden. This entire process has been an emotional roller coaster for claimants and petitioners and their families. This process repeatedly victimizes these individuals. When does discovery end? How long do we have to be patient while NIOSH waits for the evolution of science to dose individuals? How long does NIOSH get to push off closure while attempting to locate reasons to deny compensation?

"The bottom line is Weldon Spring Plant dose reconstructions are flawed and inaccurate due to lack of data that exists for the facility. As discovered in the Work Group discussions, Weldon Spring dose reconstructions were in need of constant corrections. This serious predicament would not have been identified if a petition hadn't been submitted. Any effort to dose these

individuals from operations over 60 years ago are just offensive.

"NIOSH has made too many assumptions due to data deficiencies, which lead to uncertainty and a lack of confidence. How are these assumptions sufficiently accurate or plausible? NIOSH cannot guarantee that they can accurately dose every single worker from the Weldon Spring Plant.

"The benefit of the doubt is supposed to go to the claimants. Yet, anyone requesting compensation has to fight overwhelming odds for adjudication.

"My father filed for compensation in 2002. And this was my seventh year without him. Watching him lose his dignity because of the sacrifices he made for this country will be with our family forever. He was entitled to live a long live. And, yet, he was unknowingly cheated out of valuable time with his friends and loved ones. There is no mistake that his service at Mallinckrodt

Weldon Spring Plant is responsible for our heartache."

We're almost finished.

"There has been nothing fair or timely about this process. We will never get back the blood, sweat, and tears that have been devoted to this campaign to compensate those individuals who sacrificed everything for the nuclear defense program. We will never get back the lost time with our loved ones.

"The petitioners for Weldon Spring have never seen this much science and detail go into any other SEC petitioner. The Congressional intent of the compensation program has been manipulated long enough. Today I am requesting the Advisory Board not allow these Mallinckrodt Weldon Spring workers and their families to be victimized any longer.

"Evidence and discussions prove that NIOSH makes too many assumptions and

lacks the ability to perform accurate dose reconstructions. We request recognition of the numerous deficiencies in NIOSH's proposals. NIOSH's claims are not sufficiently supported and not sufficiently accurate or plausible. Weldon Spring claims necessitate adjudication for the price that these workers paid for this country unknowingly under hazardous conditions.

"Whatever the outcome is today, we will pursue every avenue until Weldon Spring Plant employee is justly compensated. The intent of this program was timeliness. And time ran out long ago. We are respectfully requesting the Advisory Board grant a Special Exposure Cohort for the Mallinckrodt Weldon Spring Plant.

"Thank you, Tina Triplett."

CHAIRMAN MELIUS: Okay. Thank you, Ted.

Any other questions? Sorry, we are not taking public comment at the present

time. Any other Board Member, questions?

(No response.)

CHAIRMAN MELIUS: I will remind you that the -- I think we have gone through this history before, but the Work Group and SC&A have done extensive reviews and had concluded that dose reconstruction was feasible, that the methods that NIOSH had and were in place were appropriate. There were, as I said, three issues left to be determined.

We had a Work Group meeting last week. When I joined the Work Group for this meeting, I spent a significant amount of time going through the old transcripts and old reports, trying to keep a record of all of the issues that had come up and so forth. And there was ample discussion and response to those past issues.

We had the three remaining issues. I think Stu has given us a good review on those. And although I think the Work Group in our meeting last week did not make any

specific recommendation, I think we have taken this, really, as far as we can at this point and need to try to bring closure here today.

I don't know. Dick, do you want to add anything to that?

MEMBER LEMEN: No.

CHAIRMAN MELIUS: Yes, Dave?

MEMBER RICHARDSON: The statement that was just read raised a large number of points. And so I was just hoping you might comment on a couple of them.

From the presentation, I thought, okay, the thorium issue is nailed down. And then one of the points in the statement was that NIOSH had discredited counter evidence regarding thorium-230. I wasn't clear. What was the context for that assertion within the statement?

CHAIRMAN MELIUS: Stu, do you want to --

MR. HINNEFELD: There was a document, or maybe two documents written by

the same people at close to the same time, in the '80s, that made the statement that the individual read in the letter, saying that DOE asked Mallinckrodt to extract thorium-230 from raffinates in 1955. And this work continued at Weldon Spring.

We managed to contact one of the authors. We tried to contact the second author and got no response. The author that we spoke to allowed our contractor to look at records that had been collected. This was the ORAU -- it was the ORAU Epidemiology search study. They were describing thorium exposures, potential thorium exposures. And they kind of grouped thorium-230 and thorium-232 exposures as a thorium exposure.

Certainly there is description of this extraction occurring at Destrehan Street, at the Mallinckrodt Chemical Works on Destrehan Street. And there were discussions about building a plant for the purposes of doing this extraction. And they recognized

that this would be built pretty much like a plutonium plant because the thorium-230-specific activities on the order -- plutonium, you have an alpha emitter with a pretty high specific activity, certainly far higher than uranium.

They seemed to have been done -- the extractions that were done at Destrehan Street seemed to have been done in a glove box type of environment. And we had seen a report of some four bottles of this extract being at Destrehan Street. And I believe they were moved to Weldon Spring for storage, stored in a storage area there when Destrehan Street closed. I don't know their ultimate disposition, but I did see a letter about that.

There was a plant called the Minor Elements Plant, which is kind of a pilot plant sort of thing where they did these extractions, and apparently in a glove box at Destrehan Street.

We have not found anything else other than this epidemiology document that describes the thorium-232 extractions from raffinate in the period for Weldon Spring.

In the mid '50s, there was some DOE interest in thorium-230, which was colloquially known as ionium. So if you search for ionium in our Site Research Database, you will get a number of hits. But these don't seem to extend, you know, really much past '55. There is a document from 1960. It is written by Mound. Mound was involved in this a little bit, but they were just sort of proposing, "Gee, what if?"

There is also another document from about that -- from the late '50s period, that describes -- I forget which site wrote this, but I don't believe it was one of the Mallinckrodt sites -- describes the available amount of the extracted thorium-230, of ionium, that was around. And said, "well, no one wants it, so we think we have got enough

to last for a while," essentially is what it said.

So the interest in ionium kind of came up and went away relatively quickly, probably because people at Destrehan Street recognized that this is bad, nasty stuff to deal with, this is not a trivial thing to try to extract and stuff.

Try as we might, we have not found other definitive information. There could be some more definitive information at the CER records holdings, because that is where the records that our contractor did see were the CER records holdings. There might be some additional definitive information there. We have not found anything else about the thorium-230 extractions.

The material, when it was extracted, by the way, when they extracted the thorium-230, they would inevitably end up with thorium-232 as well because all these raffinates have some. You know, thorium-232

is sort of ubiquitous in soil or anything. And so in terms of a mass basis, the thorium-230 was actually the majority of the thorium, by quite a good margin.

So the follow-on step from the extraction, whether these had to be fed through like a calutron or something in order to do this isotopic separation of the thorium-230 from the thorium-232. And it appears to us that DOE just said, you know, "This is going to be too complicated. There are other alternatives to ionium."

But I can't find anything that says it was done at Weldon Spring. We have looked, the places where we know where to look.

CHAIRMAN MELIUS: You said you had another question.

MEMBER RICHARDSON: Oh. Just one other, another point that was raised was concerning blowouts and the difference between chronic versus acute exposures.

MR. HINNEFELD: That question is similar to what we addressed most places. A repetitive event or episodic event, episodic exposure, like a blowout, is in our mind akin and can be modeled as a chronic, part of the chronic exposure because you would have bioassay data from the exposure event.

And so by interpreting the bioassay data over a person's exposure history as chronic, our analysis would indicate that that actually covers a series of episodic exposures in the dose assessment.

MEMBER RICHARDSON: Okay.

CHAIRMAN MELIUS: Any another questions? Yes, Bill?

MEMBER FIELD: Being on the Work Group, I think there were a good number of issues. But it turned out as we went on, that I think a lot of these were Site Profile issues, drying of raffinate pits, and then bounding of the radon model. You know, I think there was a time when ventilation was

supposed to be no air exchange.

MR. HINNEFELD: It was described that way in a meeting, that there was supposed to be no air exchange, but it's not. The model did not include no exchange.

MEMBER FIELD: Yes, right.

MR. HINNEFELD: There was an implied one change per hour, which wasn't described in the document.

MEMBER FIELD: Right. So certainly I think a higher equilibrium ratio is needed for bounding, but I think most of the issues that we discussed turned out to be Site Profile issues.

CHAIRMAN MELIUS: Okay. So I would entertain, if there are no further questions, a motion on the Weldon --

MEMBER RICHARDSON: Does the Work Group have a recommendation?

CHAIRMAN MELIUS: The Work Group did not make a formal recommendation.

MEMBER LEMEN: This is Dr. Lemen

again. We didn't make a formal recommendation, I don't think. I am still having a little trouble with the model, but we wanted the Board to hear where we were at at this point in time and let them make some decisions. I think Bill summarized what we found, but I think this is a decision that the Work Group wants to pass on to the Board to consider.

CHAIRMAN MELIUS: Yes, I think that it is fair to say that the three of us agreed on the other two issues, that NIOSH had adequately addressed them. And I think -- at least the opinion I have expressed before here and I think Bill has also -- is that the radon model for this situation is appropriate. And I'm comfortable with it, and I think Dick still has some questions on that. And I think that is why we are bringing it -- brought it back to the Board and so forth.

Yes, Wanda?

MEMBER MUNN: I would recommend

that we accept the agency's position that they can, in fact, complete adequately the dose reconstructions that are necessary for the claimants at Weldon Spring.

CHAIRMAN MELIUS: Can I have a second to that?

MEMBER FIELD: I will second it.

CHAIRMAN MELIUS: Thank you, Bill.

Any further discussion?

MEMBER ZIEMER: Just for clarity, SC&A has also indicated that they are in agreement with these approaches.

CHAIRMAN MELIUS: Yes, correct. And at the last Work Group meeting, they indicated that they were satisfied with NIOSH's responses on the other two issues, which were to some extent new information. Certainly the raffinate was more extensively discussed there.

The thorium issue was as Stu described. He presented it before the Board. And we have asked them at the Board meeting to

put out a report on it so that it was clear what the exchange of information was and so forth.

Yes, Dave?

MEMBER KOTELCHUCK: So, as I understand it, formally, this effectively rejects the SEC petition that was filed and that will go back to NIOSH to deal with the dose reconstruction and then dealing with compensation in individual cases depending on the Probability of Causation.

CHAIRMAN MELIUS: Correct. And there are some Site Profile issues we have thought that the Work Group would continue to work with NIOSH on. NIOSH generally tends to address those once the SEC has been settled in terms of efficiency and so forth.

I don't know if there's that much that needs to be adjusted, maybe the radon model, but that might want to be discussed, that parameter.

Okay. I'll let Ted go ahead.

MR. KATZ: Okay, I think I'll go in reverse alphabetical order. Change things up, variety. Dr. Ziemer?

MEMBER ZIEMER: Yes.

MR. KATZ: Okay, and Ms. Valerio is absent. Mr. Schofield?

MEMBER SCHOFIELD: Yes.

MR. KATZ: Dr. Roessler?

MEMBER ROESSLER: Yes.

MR. KATZ: Dr. Richardson?

MEMBER RICHARDSON: Yes.

MR. KATZ: Dr. Poston's absent; I'll collect his vote after this. Ms. Munn?

MEMBER MUNN: Yes.

MR. KATZ: Dr. Melius?

CHAIRMAN MELIUS: Yes.

MR. KATZ: Dr. Lockey?

MEMBER LOCKEY: Yes.

MR. KATZ: Dr. Lemen?

MEMBER LEMEN: I have to say no.

MR. KATZ: Dr. Kotelchuck?

MEMBER KOTELCHUCK: Yes.

MR. KATZ: Mr. Griffon's vote I'll collect after. He's absent. And Mr. Gibson, are you on the line?

(No response.)

MR. KATZ: Absent. Dr. Field?

MEMBER FIELD: Yes.

MR. KATZ: Mr. Clawson?

MEMBER CLAWSON: No.

MR. KATZ: Ms. Beach?

MEMBER BEACH: No.

MR. KATZ: Dr. Anderson?

MEMBER ANDERSON: Yes.

MR. KATZ: Okay. The motion passes. It's ten in favor, three nos, and some absentee votes to collect, too.

CHAIRMAN MELIUS: Okay. Thank you. We will now break for lunch and reconvene at 1:30 promptly. We have Mound petitions to deal with. Thank you.

(Whereupon, the above-entitled matter went off the record at 12:03 p.m. and resumed at 1:36 p.m.)

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

(1:36 p.m.)

CHAIRMAN MELIUS: If everyone will get seated, we will get started, please.

MR. KATZ: So let me just check on the line and see if we have Mike Gibson on the line, by any chance.

(No response.)

MR. KATZ: All right, then. And I'll otherwise just remind everyone on the line, please mute your phones, press star-6 if you don't have a mute button, and please don't put the call on hold at any point. But dial back in if you need to leave the call for a piece. And, oh, yes. I'm sorry. Thank you.

I should also note Loretta Valerio is absent this afternoon. She actually was absent for the morning sessions, too. She's not well. Thank you.

CHAIRMAN MELIUS: Okay. This afternoon we'll start -- we have, actually, two different Mound petitions to consider. So

we'll start with a presentation on the first one, the 83.14. Jim Neton, in from the bullpen to relieve Stu Hinnefeld, whose voice was going. No, no. We have LaVon as the closer.

(Laughter.)

MR. KATZ: Also, just to note for the record, Dr. Lockey is recused from this session and the next one, which also deals with Mound.

DR. NETON: Okay. I am not Stu Hinnefeld, for the record. This is Jim Neton. I am here to present the Mound Special Exposure Cohort Petition Evaluation Report for, I think it's petition number 207, which is an 83.14 petition that was submitted, as 83.14s go, by someone whose dose reconstruction could not be completed. We notified them of that. And they submitted the claim form.

And it was our determination we were unable to complete the dose

reconstruction. So, therefore, it qualified on that basis.

The claimant was employed at the Mound laboratory during the period when the tritium logbook data are unavailable. And that will become a very key part of this 83.14 process. The petition was received not too long ago, August of 2010. That can't be right. That has got to be August 2012. We proofread these things, and you think we would not have that. Yes, August 15th, 2012.

So, to understand the basis of this petition, we have to go back and look at the SEC petition that was established under 171, which was that we couldn't reconstruct radon exposures in a certain portion of a building or two buildings in the Mound plant. That's the R and SW buildings, also known as the Mound Tritium Complex.

And we had established in that SEC Class that from March 1st, 1959 through March 5th, 1980, we could not reconstruct exposures

to radon. And it's not just radon-222 but radon-220 and radon-219 that was emanating through a crack in a floor in the R building -- or the SW building.

The Class Definition was kind of unique as Class Definitions go. And the way the Class is administered is all workers in the Mound Tritium Complex who were monitored for tritium. That was a way to establish who actually frequented the R and SW buildings. And since all workers who worked in the Mound Tritium Complex were required to leave a bioassay sample, then the thought process for the SEC was that would capture all people who had the potential for exposure to radon. So it was kind of unique. If you are monitored for tritium, then you are potentially exposed for radon, is the way that Class worked if you remember.

The way the Department of Labor administers the Classes, we provided them Mound tritium urinalysis logbooks. We had the

logbooks for the entire -- we thought so -- for the entire duration of the Class period, but after the Class was being administered for a while, it became known to us that there are gaps in the collection of the logbooks. Notably, that we do not have the logbooks from September 1st, 1972 through December 31st, 1972 and from January 1st, 1975 through December 31st, 1976. So for those two discrete time periods, we have no way of establishing which workers actually could have frequented the R and SW buildings, or the Tritium Complex, as it's called.

This is basically what I just said. So the default assumption, then, would have to be, since we have no way of determining who actually entered those buildings during those years, that all workers could have been in those buildings on the Site. So the Class would have to become all workers who worked on the Mound Site during those years.

So, based on that information, we don't have any way to establish an upper bound of radon exposures for any worker on the site during those periods. So there is insufficient information to estimate the upper bound.

As far as health endangerment goes, this is very much parallel to what was decided in SEC Class 171, that we couldn't reconstruct dose, so health was endangered. And the exposure, though, was via chronic exposure to the radon gas and progeny that existed throughout, or potentially existed, throughout the R and SW complex.

So here is the definition: all employees of the Department of Energy, its predecessor agencies, and contractors who worked at Mound in Miamisburg from September 1st, 1972 through December 31st, 1972, or from January 1st, '75 through December 31st, '76 for a number of work-days aggregating 250 days. And that can be combined with other

Classes that are in existence.

And this is just a brief synopsis of that recommendation. So it's a pretty simple, straightforward Class I hope. And I'll be happy to answer any questions.

CHAIRMAN MELIUS: Anyone have questions? For those of you who are new to the Board, this was sort of a difficult Class Definition to come up with. I think the SEC part of it was relatively straightforward, but it was trying to figure a way that was -- the appropriate way of putting it down. We worked with Department of Labor and so forth on that, but did find this gap and so forth with it.

Josie, do you want to comment?

MEMBER BEACH: Yes. We've discussed radon many times over the years in reviewing Mound - - we were presented with the 83.14, knew it was coming at the last meeting. And the Work Group unanimously agreed to support NIOSH's decision with this 83.14 to recommend this new Class.

DR. NETON: And I would add that we had to work hard to find a claimant that was affected by this. I mean, it was delayed for that reason, until we found someone who was affected by --

MEMBER BEACH: Right.

DR. NETON: -- who wasn't already in the Class and didn't happen to work during the years where we didn't have the logbooks in the R/SW buildings. So I don't know if there are any other ones out there at this point, but certainly if the Class is added as they come available, they will be eligible.

CHAIRMAN MELIUS: Okay. My understanding is that the petitioner does not wish to speak to that. So I believe we then have a motion from the Work Group and a second to that. So we can go ahead. Any further discussion/comment?

(No response.)

CHAIRMAN MELIUS: If not, then, Ted, do the roll call.

MR. KATZ: Sure. Dr. Ziemer?

MEMBER ZIEMER: Yes.

MR. KATZ: I'll collect Ms. Valerio's vote. Mr. Schofield?

MEMBER SCHOFIELD: Yes.

MR. KATZ: Dr. Roessler?

MEMBER ROESSLER: Yes.

MR. KATZ: Dr. Richardson?

MEMBER RICHARDSON: Yes.

MR. KATZ: I'll collect Dr. Poston's vote.

MEMBER MUNN: Yes.

MR. KATZ: That was Ms. Munn, saying yes ahead of me. Thank you. Dr. Melius?

CHAIRMAN MELIUS: Yes.

MR. KATZ: Dr. Lockey's recused. Dr. Lemen?

MEMBER LEMEN: Yes.

MR. KATZ: Dr. Kotelchuck?

MEMBER KOTELCHUCK: Yes.

MR. KATZ: I'll collect Mr.

Griffon's vote. And Mr. Gibson is recused. Dr. Field?

MEMBER FIELD: Yes.

MR. KATZ: Mr. Clawson?

MEMBER CLAWSON: Yes.

MR. KATZ: Ms. Beach?

MEMBER BEACH: Yes.

MR. KATZ: And Dr. Anderson?

MEMBER ANDERSON: Yes.

MR. KATZ: So it is 12 in favor, no against, some votes to collect, and the motion passes.

CHAIRMAN MELIUS: That has to be the quickest SEC approval I can recall. I will therefore add for the record that there is an extensive record and discussion of the original SEC and full documentation on that that I am sure will be forwarded up to the Secretary at the time to go back a little bit. So we have done our due diligence in the past on this.

Okay. We will now move on to the

-- I guess, a remaining issue from the older SECs. And Jim Neton again?

MEMBER BEACH: While Jim is looking for that, I will just say the Work Group had one item left and it was the tritides, if you remember, from the last Work Group meeting. My report stated that we still had some work to do. And there were four questions that we asked NIOSH to answer. And this is what you are going to hear at this point.

DR. NETON: Thanks to Josie for setting me up, because I was really just prepared to talk about the last issue that remained on the SEC at Mound that has been under discussion, the 83.13 SEC that has been under discussion for quite some time. And the final issue had to do with how one might put an upper limit or upper bound on exposure to stable metal tritides at the Mound complex.

These stable metal tritides are, of course, metallically -- an element, a

metallic element, that is compounded somehow to a tritium atom to create a molecule that is fairly stable. Most forms of tritium, as we know, are fairly readily soluble in the body and clear with a biological half-life of about ten days early on, but there is also organically bound tritium that behaves a little differently, but it is still also pretty soluble. So there's not much challenge in an internal dosimetry program for monitoring for exposure of that type of a radionuclide because it readily shows up in the urine and not much dose per unit intake as it goes.

But stable metal tritides or metal tritides or metal tritides in general are a different beast. It's a metal bound to a tritium atom. And they have various degrees of chemical reactivity and solubility. There are various forms out there.

This term "stable metal tritide" refers specifically, tough, to a vary tightly

bound complex. And there are some elements, particularly at least one chemical form that was handled at Mound, that does not dissolve very readily in body tissues. So, again, the most unreactive forms, for example, a hafnium tritide molecule, have very long biological clearance times in the body. Once they're inhaled, they deposit in the lung. They actually behave like they are type S compounds, "S" meaning very slowly clearing compounds.

So a urinary excretion monitoring program is of little value in establishing exposure of those nuclides. And because they don't dissolve very readily in the lung, they can indeed deliver fairly large doses to the lungs relative to the unbound types.

So that's a problem at Mound. It happened in the SWR tritium research complex, which is exactly the area of the plant that we just discussed and added the 83.14. Most of the tritium work at Mound went on in this SW

building/R building tritium complex.

Operation started in the 1960s and continued beyond the '90s. So it had a fairly long period of time, although most active operations, you know, physically working with the compounds, stopped in the '70s sometimes, but there were some scrap recovery operations in later periods.

The thing about Mound, though, is that workers -- well, workers at Mound could have handled both the soluble and insoluble forms. So, again, you have a fairly robust urinary excretion monitoring program, but you don't know how much of the tritium coming out of the urine could be soluble or insoluble.

As we discussed on the 83.14 just a few minutes ago, all workers who worked in this tritium complex were on a routine bioassay program. They were required to leave routine samples.

And the other thing that is important to know is workers who directly

handled these special or stable metal tritides, the hafnium-type tritides, were relatively few. It was a special program. And, in fact, NIOSH has established identity of those workers. We know who were in the areas physically working with these compounds. And we also know in the later period who was involved in the scrap recovery operations of these programs. We have spent some effort, and Brant Ulsh, who was leading this early on, spent some effort tracking down those workers, interviewing workers to establish their identity. And we are pretty confident that we know of these workers.

In fact, that was one of the issues that SC&A had raised in their review is are you really sure you know all of these workers? In particular, have you nailed down the scrap recovery workers? And just last week, we had a teleconference with the person who was in charge of the scrap recovery operation. And he confirmed that we actually

did know the people that were working in that operation. He is retired now, but he is still very active and was very helpful.

So we need a method, then, though, to establish exposures for support workers. If we know that workers were handling the stable metal tritides directly, then we can make some assumptions that they were exposed to very insoluble tritides and used a urinalysis bioassay to bound their exposures because they indeed have potentially direct contact with the stable metal tritides. So we will rely on their bioassay program to estimate doses.

But then you have a problem with the support workers, people who are in and about the area. This stuff was done under very enclosed circumstances with glove box operations, that type of thing. But nothing is perfect. And there is evidence of some, albeit fairly limited, amount of material of the stable metal tritides could have come and contaminated the environment outside of the

controlled areas.

So then what do you do? You have a urinary excretion model that is good for soluble. But how do you estimate what the potential intake would be for workers to these stable metal tritides? And this would be for what we call ancillary support staff.

I mentioned that there -- a good thing is at Mound, there were routine tritium contamination surveys taken in the tritium complex. We collected -- and I use that word loosely -- our contractor and a lot of folks behind the scenes collected and reviewed survey data from about 10,000 documents and eventually resulted in a collection of 69,000 smears that were taken in 4 rooms between 1968 and 1989. So there is a lot of data out there as to how much tritium contamination was present on the surfaces in the rooms adjacent to where the materials were being handled.

One issue that SC&A had raised in their reviews was the data that we had had

some gaps. And specifically there were a couple year gaps in the '80s, almost a 3-year gap in the data collection. And that kind of raised a red flag. So we went back and interviewed some people that were knowledgeable about tritium operations, trying to establish why those data weren't there. And no one could tell us why they weren't there. They were certain that the samples were taken, but they just weren't available.

But we did quiz them about the type of ongoing operations. Were there any unique increases or decreases in the operations during that time period? And based on those interviews, it appeared to us that not much different was going on. So there weren't any huge increases in activity. So we felt pretty comfortable that we should be able to bound or extrapolate in those interim years of the data that we have to bound exposures in those time periods.

On top of that, we did an analysis

looking at the bioassay data that were collected in those years compared to the other years. And there's very little difference between the bioassay excretion values in those years versus the adjacent years.

Now, having said that, you are going to say, "Well, but if there were stable metal tritides, it wouldn't come with the urine," but you are rarely exposed to just one or the other. There would be some combination. So fluctuation and rapid increase in the bioassay excretion during those years might give you some indication that something different was going on. And we didn't see that. So we're pretty comfortable about extrapolating in those gap years.

I would also remind the Board that prior to 1980, there was already a Class established at Mound for all workers who were monitored for tritium. So it is sort of an artifact of how that definition was created.

The Class was added because of

radium, but if you have a tritium bioassay, it's the same workers, then, that we're talking about here. So, effectively, everyone that could have been exposed to stable metal tritides prior to 1980 is already in the Class by default from the previous Class. So, really, this only affects people that were employed after 1980.

So we took these 69,000 smears and developed a probability distribution, which, as usual, is a log-normal probability distribution of the contamination levels in the rooms, and used that to figure out what the levels of exposures could have been.

We took the 95th percentile value of that distribution of contamination values that were measured and used a claimant-favorable -- and SC&A agreed with this -- resuspension factor of 5 times 10-5 per meter. And we would use that to calculate the intake for a support worker.

So you have the 95th percentile

contamination. You resuspend it with a 5 times 10-5 resuspension factor. And you can generate air concentration data from that. And we'll assume that the worker was breathing that air concentration that entire year that they were exposed, or all the years that they were exposed.

We are also assuming fairly conservatively that all the intake was to stable metal tritides. Now, we know that that is probably not the case, but there is no other way to triage that any better or partition that.

So what we will use for the dose calculations, we would use the urine data that we have to estimate systemic organ doses because if it's systemic and it gets into these systemic organs, then we can estimate what the doses are. But if a person has a lung cancer, for example, we would use that 95th percentile value to calculate the lung dose because it's obviously not coming out in

the urine. It's irradiating the lung. So sort of a two-prong test there for doing the dose calculation.

Interestingly enough, applying this bounding approach to support workers results in fairly small doses. They're not very large at all because 5 times 10-5 resuspension factor is pretty small. It's pretty generous, but it's also a pretty small value. And if you combine that with the values that we're measuring in the workplace, you really don't get a lot of airborne intake.

The scenario, of course, would depend on what year a person worked and how many years you have to reconstruct their doses, but in general, the doses that are calculated in this manner end up being in the millirem ranges, you know, several millirems, five millirem, up to ten millirem per year maybe, but not much more than that. So they're pretty small doses that are estimated for these ancillary support workers.

So I will say that one of the other issues that SC&A had raised was how NIOSH would address uncertainty in the model. And this was before we had proposed to use the 95th percentile. Once you go up to the 95th percentile, you take away a lot of the uncertainty. You're bounding it at that level.

There was one other thing I was going to say about that. So we're using the 95th percentile. So that addressed that issue.

So we believe that using this methodology -- and it's only applicable to Mound because of the unique collection of survey measurements we had -- it can demonstrate the potential doses to support workers are low and they could be bounded using this method. And that's what we intend to do for that first exposure to stable metal tritides. That answered, I think that is all I had to say in that.

I did not cover one other issue that SC&A had raised. And that was how we were going to handle exposures in the D&D era. Remember, the exposures went on for a while. And we produced I think some pretty convincing documentation that the D&D era, which didn't happen until the mid to late '80s -- they were pretty well-aware of the problem by then and addressed it using breathing zone air samples that actually had scanning electron microscopy done and then look at the particulate that was collected and the particle size. And the breathing zone air samples were measured using liquid scintillation counters. So they had a pretty good handle on what the exposures were to stable metal tritides by that time frame.

And I believe that's all I have to say now.

CHAIRMAN MELIUS: Okay. Thank you, Jim.

Board Members, questions? Don't go away yet. Josie, do you want to make some

comments?

MEMBER BEACH: Yes. I didn't create a slide program because there were just the four questions. So I am going to go over each one of them and the Work Group recommendations. So the first one addressed the treatment of uncertainties in the tritide model, the 50th versus the 95th.

The Work Group agreed with NIOSH's approach to bound the internal dose to individuals who might have been exposed to the special metal tritides using the site-specific data. SC&A questioned why the approach is to compare the two values, rather than adding the 95th percentile tritide complement to the bioassay-based tritium results and the higher with the two of these doses used in dose reconstruction.

I apologize for reading this, but a lot of this, if I don't get it down on paper, it won't all come out.

Okay. So we did question that.

While we agree that this was an important implementation detail and becomes a Site Profile issue, the remaining question is not trivial. NIOSH did agree to give it review and report back to the Work Group. So we will be continuing to look at that in the Site Profile aspect.

The second one was to ascertain the identity of the small number of operators and the scrap metal recovery workers post-1980, and under what conditions the special metal tritides of interest were used after the '80s.

Like Jim said, we had a Work Group meeting on the 31st. We did have an interview with one of the individuals. SC&A and the Work Group questioned NIOSH's ability to identify the operators who ran the scrap recovery. This was an important point throughout our discussions of Mound. And it was the topic of many, many discussions.

So we held the interview on the

12th. It was a success, and it helped to confirm the identity of the operators, two of whom were misidentified in the previous interviews as being technicians for the scrap recovery operation. So we were pleased to update that list, and we agreed with the conclusion on that.

The third one was identifying the gaps in the available swipe data. NIOSH's analysis using the air sample data and the bioassay data on either side of the gap year showed that they can estimate doses using the swipe results. We agreed with that after much discussion.

The fourth discussed dose reconstruction during decommissioning and decontamination periods. The Work Group acknowledged there is no hard evidence of exposure during D&D but decided to have SC&A continue reviewing that as a Site Profile issue.

These four recommendations were

all agreed upon unanimously again with the Work Group. So we don't have a recommendation that I can say, other than we agree with NIOSH. And pretty much, that does -- it doesn't pretty much, it closes out our SEC discussions for Mound at this time.

So ongoing review, I will just go through those. We still have Site Profile issues remaining. We have met on those, discussed them. We have a matrix for those that has been updated by SC&A.

And there is also one other period. It is the front time period, gap years between the Monsanto and the Mound. And I reported on that at the last Work Group meeting. That is from February 1st, 1949 through September 30th, 1949. That's the extension of the existing SEC. It remains to be addressed. I know that that is another one of the difficult time periods. It is very early. But SC&A -- we will track that as well. And I don't think I have heard from

NIOSH on that one.

DR. NETON: Yes. We have looked, and there are no claimants that are affected by that issue or that gap at this point. But we continue to look in the claims that come in on a periodic basis. And once we find one, we can use that as our so-called litmus case to establish an 83.14. But right now there is no one that it has affected.

MEMBER BEACH: Yes. And the reason I bring it up, it just closes up what we were doing with Mound. So that concludes our work other than continuing with Site Profiles.

CHAIRMAN MELIUS: Okay. Thank you.

Any other Board Member questions? I have one. Sorry you sat down, Jim. I waited until you sat down. What were the years for the gaps?

DR. NETON: The one that is most prominent that I can think of -- remember,

before '80, it kind of doesn't matter because that's --

CHAIRMAN MELIUS: That's why I was -- yes.

DR. NETON: But the gap, I think it was '84 or '85 time frame -- '86, through early '86.

CHAIRMAN MELIUS: Okay.

DR. NETON: So it's mid '80s.

MEMBER BEACH: It was a two-year period, wasn't it?

CHAIRMAN MELIUS: It is a two-year.

DR. NETON: I think it's a little -- two plus, you know, maybe a couple of months on either side, but yeah, in that.

MEMBER BEACH: Yes.

DR. NETON: And we interviewed several people that were knowledgeable about the spike program and everything. And most of them couldn't believe that we wouldn't have the data. For some reason, it's just

disappeared. But, again, we spent some time trying to determine if there was anything unusual that happened in those years. And there doesn't appear to be.

CHAIRMAN MELIUS: Okay.

DR. NETON: One other thing I forgot to mention -- it had to do with uncertainty analysis -- is there was some initial confusion -- and correctly so -- on SC&A's part on how we intend to apply this model. At first it appeared -- and I could see how they could read it. It looked like we were just saying that the doses were so low that we weren't even going to include them in dose reconstructions.

CHAIRMAN MELIUS: Yes.

DR. NETON: And we went back and made very clear, as I presented today, that this is a model that we applied to all workers in that R and SW tritium complex.

CHAIRMAN MELIUS: Thank you.

Bill Fitzgerald, do you have

anything to add? I know you had presented to us, had presented to the Board on this issue. I didn't --

MR. FITZGERALD: Actually, no. You know, I think at this point I think the approach is pretty comprehensive. And we have been, the Work Group certainly has been pushing this for two or three years. This is really the place where we want it to be, in terms of identifying the workers, identifying the method, and dealing with uncertainties in that method. So I think we are pretty confident this is appropriate.

CHAIRMAN MELIUS: Okay. Great. Thanks.

Yes, Wanda?

MEMBER MUNN: So if the Work Group has finished its work on the SEC -- I think I heard that, right? -- and SC&A is confident of this method, is the issue before us whether to approve a recommendation that the SEC not be granted because it is possible to calculate

doses for the individuals covered?

CHAIRMAN MELIUS: Yes. I believe that is in order, though my question, I can't recall the --

MEMBER BEACH: Last date?

CHAIRMAN MELIUS: No. The SEC. And is this a separate SEC or is this an SEC that we have already approved parts of?

MEMBER BEACH: This goes back to 71, and we have approved parts of it. In fact, through 1980 -- oh, it's '90. Sorry.

CHAIRMAN MELIUS: Yes.

MEMBER BEACH: Sorry. '90.

CHAIRMAN MELIUS: Yes.

DR. NETON: There were several actions taken under SEC '90. The first one was to add the years 1949 through '59. And that had to do with the caves and the residual material in the caves. And then in the ensuing discussion over SEC '90, the radon issue emerged. And then that was added on top of that.

So then the Class went through 1980 for radon in the R and SW buildings. So there were two classes that were established there. And now what is left is the remainder of the Class that would be essentially denied if the Board so voted.

CHAIRMAN MELIUS: And essentially the correction that you have made to the earlier actions was the 83.14 --

DR. NETON: Correct.

CHAIRMAN MELIUS: -- that we just approved. And there may be another 83.14, but that would be a new --

DR. NETON: Correct.

CHAIRMAN MELIUS: I just don't want to have us close out something where there is something still pending.

DR. NETON: Yes.

CHAIRMAN MELIUS: We would want to take it.

DR. NETON: This would close out SEC 90, which petitioned for all employees who

worked from February 1949 to the present.

CHAIRMAN MELIUS: Yes.

DR. NETON: And right now there are Classes up through 1980. And so it would effectively close out any additional Classes to be added after 1980.

CHAIRMAN MELIUS: So, Josie, essentially that's the Work Group's conclusion?

MEMBER BEACH: Yes.

CHAIRMAN MELIUS: So we essentially have a -- I hate to take away a motion from you, Wanda, but -- well, we will give you another chance later, but I think it would be a motion from the Work Group for our action on SEC CC-0090 from '80 to 2007 --

MEMBER BEACH: Correct.

CHAIRMAN MELIUS: -- and to accept NIOSH's recommendation.

MEMBER RICHARDSON: Can I ask if we're moving ahead before we do that --

CHAIRMAN MELIUS: Sure. You sure

can, yes.

MEMBER RICHARDSON: I'm not sure. I don't want to cut you off.

CHAIRMAN MELIUS: Oh, no, no. I just wanted to make sure we all knew -- got on the record what the motion was and what it referred to and so forth.

MEMBER BEACH: Yes.

CHAIRMAN MELIUS: So now we have a motion, second on the floor. And any further questions? Dave, go ahead.

MEMBER RICHARDSON: I'm sorry because I know you sat down again, Jim. And I waited for that, too.

(Laughter.)

MEMBER RICHARDSON: So, I mean, I think my question's turn around. You pointed out as being the reason that the doses which will be reconstructed for workers are as low as they are is because this 5 times 10-5 resuspension factor, which is described as claimant-favorable?

I mean, I guess I am trying to wrap my head around that a little bit. So could I start by asking -- because I think part of this is my thinking about tritium is often about tritium vapor. And this is not tritium vapor. Are these stable metal tritides -- they're in particle form?

DR. NETON: Yes.

MEMBER RICHARDSON: And the particles would be characterized as what size? Are they nanoparticles? Are they particles of larger size?

DR. NETON: No. They would be in the micron range. I think Mound characterized them as about one micron particles. They did some scanning electron microscopy work on them.

MEMBER RICHARDSON: And so when you swipe a surface --

DR. NETON: Yes, but, remember, though, that the surface smears are a combination of probably tritium vapor, water,

HTO, and some potential stable metal tritides.

MEMBER RICHARDSON: Right.

DR. NETON: Probably the overwhelming majority of the swipe is going to be tritium, you know, HTO.

MEMBER RICHARDSON: And that would be -- because I am imagining usually tritium doesn't settle out. It comes into equilibrium with --

DR. NETON: Well --

MEMBER RICHARDSON: -- the water vapor around.

DR. NETON: Yes. You would have some sort of equilibrium between the humidity in the room and the water vapor.

MEMBER RICHARDSON: So if you were swiping it and counting it, that would mean that the majority of the tritium in the air was also -- see, I was picturing these as --

DR. NETON: But, see --

MEMBER RICHARDSON: -- non-soluble things, which may settle out as particles and

the other tritium as being --

DR. NETON: Well, we assumed that they were all particulate. When we took the smear, whatever value was measured on the smear, we assumed that it was all stable metal tritide particulate.

It could have very well been a large percentage of that being HTO, tritium water vapor.

MEMBER RICHARDSON: Okay. So that is one issue. I mean, I am having a hard time picturing why there would be most of what you would swipe off of the surface of a desk would be that. But leaving that aside, these are very small particles, and you are saying that for one, given one unit of that material, 5 times 10^{-5} percent of those particles are resuspended in the complement of that. The remainder all remains there.

DR. NETON: Yes.

MEMBER RICHARDSON: Why is that?

DR. NETON: That's sort of your

standard resuspension factors that are applied for surface contamination values. You remember there has been a lot of discussion at the Board level about what is a good resuspension factor to use. And we have adopted in many cases 1 times 10^{-6}, which we have been criticized some by SC&A for it being a little too low. One times 10^{-6} is sort of for a quiescent situation where the material has been sort of already cleaned up and fixed in place, is sort of the way SC&A presents that.

So maybe that's a little too low, but 5 times 10^{-5} -- and there is a lot of literature on this -- is sort of routine activities ongoing in a room but not doing anything mechanical to the room, like grinding, shoveling, doing things to the surfaces to disrupt the surface. So it is just sort of a situation where routine activities in a room, people walking around, emptying trash cans, doing stuff like that, is

about that ratio, the material on the ground that gets suspended in the air. And it is a fairly reasonable, I think, claimant-favorable value.

You know, stuff that is deposited on surfaces doesn't tend to just pop into the air without some reason. They usually require some sort of mechanical agitation to get it airborne. And we have allowed for some mechanical agitation, short of somebody grinding or cutting or doing something on the surfaces, because this is only applied to support workers who are in the areas outside of the rooms where the tritium was contained, the tritides were contained.

So there could have been some out-leakage of material into the room, deposited on the surfaces. Someone goes in there to empty the trash, do something, clean, you know, clean the sinks, whatever it requires them to do, that's what we would use. It's a fairly standard --

MEMBER RICHARDSON: Well, maybe it is. Yes. I mean, I am not talking about that as being standard. I am still talking about my imagination of stable metal tritides, which I have not encountered before --

DR. NETON: Yes.

MEMBER RICHARDSON: -- and trying to understand.

DR. NETON: Yes. Think of it as a metal particle that happens to have a tritium atom bound to it. So if you have a hafnium particle or a palladium particle or a uranium particle, it happens to have a tritium physically bound to it.

I'm not exactly sure what the chemical reaction is there, but, for some reason, when you get something like a hafnium, it's a pretty tightly bound particulate. And so if you inhale a one-micron hafnium particle, it's pretty insoluble. And that is why it is insoluble. The tritium is just bound to it. It doesn't leech off the

surface.

MEMBER RICHARDSON: Yes.

DR. NETON: So it's really sort of a metal contamination issue, stable metal contamination issue, that happens to have tritium, a radioactive particle attached to it. That might be a little too simplistic. I don't think so.

I think there is some discussion in the response that we provided, too. SC&A's review, actually, went through the different resuspension factors that could be applied. And, again, they felt fairly comfortable with the 5 times 10-5 value, as we do.

MEMBER RICHARDSON: Thank you.

CHAIRMAN MELIUS: Thank you, Dave. Any other -- we'll wait until Jim sits down before I ask for any more questions.

(Laughter.)

CHAIRMAN MELIUS: Okay. Any more questions from Board Members?

(No response.)

CHAIRMAN MELIUS: If not, I will ask Ted to do the vote. Jenny, are we okay on this? You were asking Jim something there or going over something.

MS. LIN: That's between me and Jim.

(Laughter.)

CHAIRMAN MELIUS: Oh, okay.

MEMBER FIELD: Ted, could you restate what we are voting on?

MR. KATZ: Yes, I think I can. So you are voting to concur with the agency, with NIOSH, that doses can be reconstructed for the period from 1980 to 2007 for Mound. Okay?

MEMBER KOTELCHUCK: And, therefore, reject the SEC --

MR. KATZ: Right, this element. I mean, there have been many Classes added under this SEC petition.

MEMBER BEACH: I just need to make sure I understand this. So right now we have a Class for radon, but the Class Definition

covered radon, actinium, thorium. So you don't really -- so I just wanted to make sure we didn't go back to the earlier days. So it's all covered regardless?

MR. KATZ: Right.

MEMBER BEACH: Okay.

MR. KATZ: So this would close out --

MEMBER BEACH: I think I answered my own question as I was asking it. Thank you.

MR. KATZ: Yes. This would close out consideration of petition 90, I think.

DR. NETON: Not really. Well, this is a little confusing because --

MEMBER BEACH: It is.

DR. NETON: -- you have pieces and parts of Classes. You have the radon Class goes from March 1st, 1959 through March 5th, 1980, but it does not cover all workers on site.

MEMBER BEACH: Right.

DR. NETON: It only covers people in the tritium complex. So, really, what you are saying is, except for those Classes that have already been added, NIOSH can reconstruct all doses at the Mound site. I think is what you are saying. And I think the one from '49 was all workers, the --

MEMBER BEACH: Yes, that's true.

DR. NETON: Right. So except for those in the radon Class that was established between '59 and '80, NIOSH can reconstruct all doses up through 2007. I think that is kind of what we are saying here.

CHAIRMAN MELIUS: Okay?

MEMBER BEACH: Yes. Thanks, Jim.

MR. KATZ: Okay. Dr. Anderson?

MEMBER ANDERSON: Yes, but confused. Yes.

MR. KATZ: Ms. Beach?

MEMBER BEACH: Yes.

MR. KATZ: Mr. Clawson?

MEMBER CLAWSON: Yes.

MR. KATZ: Dr. Field?

MEMBER FIELD: Yes.

MR. KATZ: And Gibson is recused. And Griffon is absent, we'll collect his vote. Dr. Kotelchuck?

MEMBER KOTELCHUCK: Yes.

MR. KATZ: Dr. Lemen?

MEMBER LEMEN: Yes.

MR. KATZ: And Lockey is recused. Dr. Melius?

CHAIRMAN MELIUS: Yes.

MR. KATZ: Munn?

MEMBER MUNN: Yes.

MR. KATZ: And Poston's vote will be collected afterwards. Dr. Richardson?

MEMBER RICHARDSON: Yes.

MR. KATZ: And Dr. Roessler?

MEMBER ROESSLER: Yes.

MR. KATZ: And Mr. Schofield?

MEMBER SCHOFIELD: Yes.

MR. KATZ: And I'll collect Ms. Valerio's vote afterwards. And Dr. Ziemer?

MEMBER ZIEMER: Yes.

MR. KATZ: And that is 12 in favor, none opposed, some absentee votes. The motion passes.

CHAIRMAN MELIUS: Okay. We will get this in writing, certainly. Okay. We have a few minutes. At 3:00 o'clock, we will deal with United Nuclear. The petitioner will be on the line. And so I don't want to start until 3:00 o'clock on that. So I thought we would do some Board work for about, oh, 20 minutes or so and then give you a break, if you are willing. I guess if you are not, you can just sit here. BOARD WORK SESSION

CHAIRMAN MELIUS: So if everyone can go try now to find your Board -- the comments, the public comments from the earlier thing? And meanwhile I am going to also go over a couple of these letters here. But the next item on the agenda will be to look at those Board public comments.

So we have two letters that I believe have been distributed to everybody. And I will start with the first one, the Oak Ridge. "Advisory Board on Radiation Worker Health. The Board has evaluated Special Exposure Cohort 0019 concerning workers of the Oak Ridge National Laboratory, X-10, in Oak Ridge, Tennessee under the statutory requirements established by the Energy Employees Occupational" --

MEMBER ZIEMER: You have already acted on this.

CHAIRMAN MELIUS: Already acted on, yes. This is just reviewing the letter. Yes. You're right, yes. That's okay.

"Energy Employees Occupational Illness Compensation Program Act of 2000, EEOICPA, and incorporated into 42 CFR 83.13.

"The Board respectfully recommends that SEC status be accorded to 'All employees of the Department of Energy, its predecessor agencies, and their contractors and

subcontractors who worked in any area at the Oak Ridge National Laboratory, X-10, in Oak Ridge, Tennessee from June 17th, 1943 through July 31st, 1955, number of work-days aggregating at least 250 work-days occurring either solely under this employment or in combination with work-days within the parameters established for one or more other Classes of employees included in the Special Exposure Cohort.'

"The recommendation is based on the following factors. Individuals employed at the Oak Ridge National Laboratory facility during the time period in question worked on the development and production of nuclear weapons.

"Two, the National Institute for Occupational Safety and Health, NIOSH, review of available monitoring data as well as available process and source term information for this facility found that NIOSH lacked the sufficient information necessary to complete

individual dose reconstructions with sufficient accuracy for internal radiological exposures for all principal sources of internal radiation dose during the time period in question. The Board concurs with this determination.

"Three, NIOSH determined that health may have been endangered for these Oak Ridge National Laboratory employees during the time period in question. The Board also concurs with this determination.

"Based on these considerations and the discussion at the September 18th to 20th, 2012 Board meeting held in Denver, Colorado, the Board recommends that this Class be added to the SEC.

"Enclosed is the documentation from the Board meeting where this SEC Class was discussed. Documentation includes copies of the petition, the NIOSH review thereof, and related materials. If any of these materials are unavailable at this time, they will follow

shortly."

MEMBER RICHARDSON: I have one question.

CHAIRMAN MELIUS: Yes?

MEMBER RICHARDSON: The basis for the recommendation is saying there is not an ability to reconstruct internal exposures for all sources of radiation, which would mean that for somebody who wasn't covered by the SEC, would NIOSH then not reconstruct any internal dose?

CHAIRMAN MELIUS: Yes, it is sort of a question. Remember, that was the one where they can do some during some periods --

MEMBER RICHARDSON: Right.

CHAIRMAN MELIUS: Right? But not all exposures during the period of the Class. So it is a question, yes, how to exactly word that to capture that particular situation without repeating it all.

MEMBER ZIEMER: I think we always have the possibility that individual cases

might be partially constructed.

CHAIRMAN MELIUS: And so when I sent this to NIOSH -- another attorney for review. I actually sort of asked that question.

MS. LIN: And this one letter is not the only recommendation going up to the Secretary. So we do have a more thorough discussion about what can be reconstructed during what period and for whom. So we can take care of that --

CHAIRMAN MELIUS: Yes.

MS. LIN: -- somewhere else.

CHAIRMAN MELIUS: Okay. Any other comments, questions?

(No response.)

CHAIRMAN MELIUS: Okay. The other letter is LANL.

"Advisory Board on Radiation Worker Health. The Board has evaluated Special Exposure Cohort SEC petition 00109 concerning workers at the Los Alamos National

Laboratory, LANL, in Los Alamos, New Mexico, under the statutory requirements established by the Energy Employees Occupational Illness Compensation Program Act of 2000, EEOICPA, and incorporated into 42 CFR section 83.13.

"The Board respectfully recommends that SEC status be accorded to 'All employees of the Department of Energy, its predecessor agencies, and their contractors and subcontractors who worked at the Los Alamos National Laboratory, LANL, in Los Alamos, New Mexico from January 1st, 1976 through December 31st, 1995 for a number of work-days aggregating at least 250 work-days occurring either solely under this employment or in combination with work-days within the parameters established for one or more other Classes of employees included in the Special Exposure Cohort.'

"The recommendation is based on the following factors. Individuals working at the Los Alamos National Laboratory, LANL, in

Los Alamos, New Mexico during the time period in question, worked on the development and production of nuclear weapons.

"The National Institute for Occupational Safety and Health, NIOSH, review of available monitoring data as well as available process and source term information for this facility found that NIOSH lacked the sufficient information necessary to complete individual dose reconstructions with sufficient accuracy for internal radiological exposures to fission and activation products and various other radionuclides of concern to which these workers may have been subjected during the time period in question. The Board concurs with this determination.

"NIOSH determined that health may have been endangered for these Los Alamos National Laboratory, LANL, employees during the time period in question. The Board also concurs with this determination.

"Based on these considerations and

discussion at the September 18th to 20th, 2012 Board meeting held in Denver, Colorado, the Board recommends that this Class be added to the SEC.

"Enclosed is the documentation from the Board meeting where this SEC Class was discussed. Documentation includes copies of the petition, the NIOSH review thereof, and related materials. If any of these materials are unavailable at this time, they will follow shortly."

And, again, that wording, the second bullet, is taken from the Evaluation Report. And it will sort of be elaborated on in terms of what goes up. It's a little complicated.

Any comments on that?

(No response.)

CHAIRMAN MELIUS: Okay. Two down. We will have a few more to do tomorrow morning.

Okay. If you can then turn -- I'm

going to work off the spreadsheet for the -- from the June meeting and transcript from -- we'll start with June 19th. And, again, you will see that they are set up with the speaker, the site, significant issue, and how they have been -- sort of a description of the response, and so forth. The first one was a public comment relating to the Weldon Spring and pointing out that material could have gotten dried in the raffinate pits. I think we actually discussed and responded to that --

MEMBER BEACH: Yes.

CHAIRMAN MELIUS: -- today and in Work Group meetings and so forth.

Another petitioner comment related to Weldon Spring, complaining that it was delayed and there was no vote. I think we responded to that today also. There was a problem with attendance at the meeting. And I think that has been addressed.

The next comment down is a petitioner related to the Los Alamos site.

There is a series of comments there. Again, I think those have all been appropriately addressed or forwarded.

MR. KATZ: Yes. So what's done for that is the Work Group discussed briefly those. Most of those have been addressed. And if there is anything outstanding on those comments, they will be addressed at the next Work Group meeting.

CHAIRMAN MELIUS: The next comment was the public comments from the Congressman, who was, again, here yesterday and had a number of comments related to the Los Alamos petition and questions for NIOSH and the Board.

We actually decided NIOSH should respond to both his comments and his letter, since by the time we got around to responding NIOSH was ready to prepare a new SEC Evaluation Report, which we've acted on today. And so that was followed up on. And I just actually sent a separate letter to the

Congressman, just thanking him for his attention and saying that NIOSH had responded to the questions there.

Again, comments related to the LANL petition. There is a whole series of these. Going down, a lot of it was just providing information to the Work Group for consideration. I think these are all pretty straightforward.

Moving to June 20th, a series of comments from petitioner related to the General Steel Industries and were really just informational. At least I don't think any response beyond taking them into consideration was necessary.

We had another comment related to the Los Alamos person that had submitted information to us, remember, brought in a number of CDs of various information monitoring, environmental monitoring that had gone out there.

We have comments related to Linde.

Again, I think these have been addressed in the actions of the Board and so forth.

And, then, finally, another comment related to the Weldon Spring petition, related to delays and so forth. And, again, I believe those have been addressed.

So I think we have at least documented everything related to these, unless as you look through them you have questions or comments.

I actually recently reviewed the transcript. So all of this is fairly fresh in my mind, maybe fresher than it is in yours.

MEMBER MUNN: It's a lot of work, but it is very helpful to have those concentrated pieces of information together.

CHAIRMAN MELIUS: Yes. And I think it is very important that we document that this is going on so that people making public comment understand that there is a follow-up process and so forth. It's inhibited a little bit about privacy concerns

and so forth, but we're doing that.

Okay. I want to maybe do one or two Work Group updates. And I'll start with Paul and TBD-6000.

MEMBER ZIEMER: Well, TBD-6000 is focused on General Steel. And you heard the report earlier today. We will meet again as soon as we have the follow-up information from NIOSH and the review by SC&A on the surrogate data issue. And our TBD-6000 Group still has the Appendix BB Matrix for General Steel, which is separate from the petition and which we will be dealing with. And then we need to -- I think we are basically closed on all of the TBD-6000, the main issues.

So it will be important to close the Appendix B Matrix because there are some revisions that will affect existing dose reconstruction, such as the increased time in the working day, as an example of one. And those don't get implemented until the revision is in place. And then we have a couple of

other facilities now that we will be looking at.

CHAIRMAN MELIUS: Okay. Thank you. Questions for Paul?

(No response.)

CHAIRMAN MELIUS: Henry, the uranium refining AWEs you're giving us? You have one more report to go and --

MEMBER ANDERSON: I've got one to go. Are you ready?

CHAIRMAN MELIUS: No, no. We're going to -- any other Work Group updates?

MEMBER ANDERSON: No. We have one item with Dupont, is it? Deepwater, that I think the Procedures Committee is going to be dealing with on November 1. It has to do with the amount of dirt that people eat.

And there was a note we noticed in our Committee that the amount used in the ingestion model in the document was considerably lower than what the EPA Factors Handbook and other sources are. So our

question was, is that the appropriate basis in this particular site? So it's part of the DVD.

CHAIRMAN MELIUS: Thank you. Any questions for Henry?

(No response.)

CHAIRMAN MELIUS: No? Thank you for all of your hard work.

And Worker Outreach?

MEMBER BEACH: Okay. I want to point out that Worker Outreach doesn't make DCAS' work coordination schedule, but that's just a minor point.

The last meeting was held on August 29th. Our focus was --

CHAIRMAN MELIUS: LaVon, do you have that?

MR. RUTHERFORD: What's that?

MEMBER BEACH: Did you miss that?

CHAIRMAN MELIUS: I think you need to repeat that.

MEMBER BEACH: I said Worker

Outreach doesn't make DCAS' work coordination list.

Okay. So we had our last meeting on August 29th. Our focus was on the OCAS PR-12 procedure, Rocky Flats review, and the 10-year review items that were assigned to our Work Group. I am just going to go briefly over each one of those.

Rocky Flats review of the 101 randomly selected worker comments has been completed. SC&A's report outlined findings and made recommendations for both the Work Group and NIOSH to consider. The next Work Group meeting we scheduled for November 8th. In addition to reviewing NIOSH's responses to the findings and recommendations, the Work Group will consider doing a follow-up review of a more recent site-specific worker outreach experience to gauge in communications and responsiveness over the past four or five years since the Rocky Flats experience and review.

Remember, Rocky Flats was a site that we did, a fairly old site. And we know that there have been a lot of improvements over the years. So we would like to gauge that with one of the newer sites.

The latest draft of OCAS PR-12 was sent to the Work Group for review on August 30th, the day after our meeting. Essentially, comments have been sent back to NIOSH. Work Group Members, I will remind you if you haven't got your comments in, do that quickly. I believe they have got everything they need to issue that procedure now. And I would like an update on that if anybody knows if that is going to be issued or not, or how soon.

DCAS also outlined issues and action items for the ten-year review report. Regarding quality of service, that was assigned to us. The next steps will be for the Work Group to review all of the changes, starting with the samples of changes that were sent out at the end of last month. We

actually got those the morning of our meeting, a couple of the different samples. So we haven't had a chance to really discuss those.

It's clear that a number of initiatives have been taken by NIOSH in response to the ten-year review to streamline and expand worker outreach and to facilitate worker involvement. The Work Group will focus on whether these actions are fully responsive and how they are being implemented. Of course, ongoing.

And then SC&A outlined a process improvement on how interviews are documented and reviewed by the interviewees. The proposed change to the Board's PROC-10 policy has been circulated to NIOSH and the Board for comment.

This was something SC&A brought up during our last Work Group meeting, gave the changes to us after the Work Group meeting. So it will be a focus of our attention the next Work Group meeting.

CHAIRMAN MELIUS: Okay. Questions for Josie? Yes, Dave?

MEMBER KOTELCHUCK: You mentioned a ten-year report.

MEMBER BEACH: Ten-year review, yes.

MEMBER KOTELCHUCK: Which one was that?

MEMBER BEACH: We were given quality of service. There were four action items within that ten-year report.

MEMBER KOTELCHUCK: And that's online?

MEMBER BEACH: That's online, yes.

CHAIRMAN MELIUS: Okay. So Ted said he has provided those to you, Dave. Okay. Yes. I think it was before your time, then we had distributed the follow-up to those in conjunction with NIOSH to various Work Groups, for the most part. And so we will be following up and reporting on them from the various Work Groups. So they are in various

stages of follow-up.

MEMBER BEACH: Pretty early stages for us. We just asked DCAS to give us a list of kind of where they are at. And we discussed that. We haven't gotten into any real details.

CHAIRMAN MELIUS: Good. Okay. Thank you. Why don't we take a break? We will reconvene at 3:00 o'clock here.

(Whereupon, the above-entitled matter went off the record at 2:44 p.m. and resumed at 3:08 p.m.)

CHAIRMAN MELIUS: If everyone gets seated, we'll get started. The item of business on the agenda is the United Nuclear Corporation petition and SEC petition and Henry Anderson.

MEMBER ANDERSON: Is John Mauro on the phone?

CHAIRMAN MELIUS: John, John Mauro, are you on the phone?

DR. MAURO: Yes, I am.

CHAIRMAN MELIUS: Okay. Thank you.

MEMBER ANDERSON: Okay. Here we go. This is the United Nuclear. And to start out while I've got everybody's attention, our Work Group is recommending that Petition 116 be denied. And what I am going to go through is the basis for our recommendation and the actions that our Group has taken.

And, as part of this, there are both Site Profile issues but many of them overlapped with an SEC Petition Evaluation Report. And some of the issues are closely intertwined. So while there are still some open issues as it relates to the Site Profile, we have really closed out all of those that are relevant to the SEC petition and dose reconstruction.

Just to give you some background, United Nuclear is located in Hematite, Missouri. They manufactured -- this again is the UAR, Uranium Work Group. So this is one

of the facilities that manufactured uranium metal and uranium compounds from natural and enriched uranium. And it was almost exclusively manufacturing fuel for use by the U.S. Navy as well as a few commercial customers.

They manufactured thorium oxide pellets in 1964 for a short period of time. And the operation, full operation, period is 1958 to '73. And there is a residual period of '74 to 2009.

The chronology, most of these dates are quite accurate. It was pointed out to us that one of our meetings, the dates are off a little, but this is just to show you, kind of get a sense of what happened since the process began in March of 2008. Again, this was --

PUBLIC PARTICIPANT: It is hard to hear.

MEMBER ANDERSON: I don't know what more I can do for the phone.

PUBLIC PARTICIPANT: Maybe somebody needs to mute their phone.

MR. KATZ: Hello? Yes. Thank you for whoever said that. Folks on the phone, part of the problem hearing is probably because it's -- actually, I think he's speaking quite clearly, is problems with interference on the phone. So if you would mute your phones? If you don't have a MUTE button on your phone, press *6. That will mute your phone. If everybody does that, that will improve the audio quality for people listening. Thank you.

MEMBER ANDERSON: Can you hear better now?

PUBLIC PARTICIPANT: Yes.

MEMBER ANDERSON: Okay. In March of 2008, this was part of the TBD-6000 group of sites. And this particular facility was in Appendix D. And then in June 2008, after the first Site Profile was released, they received this SEC petition.

So this process began for the site in June 2008 as it relates to the SEC. The petition was qualified in November 2008. And in August 2009, they, NIOSH issued their SEC Petition Evaluation Report. And that's when our Work Group began with this site. And SC&A provided a review of the Site Profile only and had six review findings. And I will go over those since many of them also relate to the SEC.

In February 2010, there was a revision of the Petition Evaluation Report. In April 2010, there was Rev. 1 to Appendix D, the Site Profile. And it was revised to include considerable more additional site-specific data. June 2010, SC&A delivered to us their review of Rev. 1 to Appendix D. And all of these documents are now in our file. September 2010, they focused a review on a Petition Evaluation Report specifically for our Committee and had eight specific findings related to the SC&A Petition

Evaluation, the PER.

In March 2011, that is when NIOSH shifted from having the appendices to TBD-6001 to a stand-alone Profile and issued their Site Profile, their stand-alone Site Profile. In November, in response to SC&A's review of the PER, they issued several White Papers that were explaining their -- responding to our issues.

September -- and I think that's just recently -- the Work Group proposed after considerable review and discussion and going through everything that it was feasible to do dose reconstructions. And, therefore, the Work Group unanimously voted to deny the SEC petition.

Here are our Work Group activities. These are the dates that there may be -- I think the February 1 may be off, but this just gives you a sense that we were quite active meeting multiple times from July 7th, 2010 through this September, keeping

after the issues that were raised.

And just to give you a quick update on the monitoring data, there was quite extensive bioassay data available for the facility. And NIOSH proposed and developed a coworker model for the operators and supervisors for two specific periods, the period prior to June '63, then after June '63, when it was at that point in time when significant process improvements were made at the site.

And we spent considerable time because there's a gap in bioassay data. As I said earlier, there was extensive data available, but for a period of '61 to '62, just before this switchover in the process improvements that were made, the only thing that was available was air sampling data. And there then need to be a means and a process to utilize existing data to assign exposures during those years. And it was then quite a bit of work was done to look at during the

period when both bioassay and air data, air sampling data, were available to look at, could the air sampling data be used to predict what the bioassay data is so that we could use that during this two-year period to assign doses. And NIOSH did that and worked with SC&A. And we believe that that can now be done.

And coworker model intakes it was felt are more claimant-favorable than intakes based on air sampling for that particular period. So that is now the NIOSH proposal. Changes in 2011 were made.

NIOSH modified the coworker model to use to fix 95th percentile for the gap period and the full distribution in the traditional way that the coworker model has been used elsewhere for the other years. But for this period, we wanted to be sure. And so, rather than use 50th percentile or the distribution for the other years, we felt that the 95th percentile would be unlikely to miss

significant exposure in some of the individuals.

This just here is the urinalysis biomonitoring data. So it gives you a sense. You'll see 1961 there. There are no samples. And then you can see after '63, the testing really ramped up. And there is considerable bioassay data available for dose reconstruction. And after '71 to '73, there is data, but NIOSH felt that that data was not reliable.

So here are the Site Profile findings, the six findings. Some, as I say, are interrelated. But I am going to go through since there are not that many of them, both the six findings here for the Site Profile and the eight findings specific to the SEC. And all of the Site Profile findings have been resolved in principle, but there are still some minor issues. At least we felt that they were solvable. And cleanups remain. So that the actual document itself has not

been revised yet but is underway. And what remains really does not impact the dose reconstruction for the SEC.

The number one finding was assigning occupational medical dose was not sufficiently prescriptive. And we closed that. There really were no occupational exposures specifically at the site. And the medical monitoring exposures were utilized in a standard manner that has been done before. That really was not terribly critical to the SEC but did need to be addressed in the Site Profile.

Finding number two was that both doses from Appendix D for external whole body and skin doses are based exclusively on summary statements of a 1960 AEC inspection report. We felt that may not be appropriate. And, lo and behold, new dosimetry data was uncovered that covered the period '58 to '73. And those were subsequently incorporated into the TBD Appendix D now in the stand-alone.

And, therefore, our concern that there would seem to be not that much data or reliance on a very limited inspection report and time period. This really opened that up considerably. And so we felt that that issue was closed.

The third issue was potential exposures to neutrons were not being addressed in the original TBD. That again NIOSH introduced modeled neutron doses for three job categories that employed assumptions that SC&A and we felt were favorable assumptions and model parameters that could address our concerns about neutron exposures. And therefore, that we felt was also largely resolved.

Finding number four. And you heard a little bit about the 95th and 50th percentile issues in the previous report I gave. We really felt that in specific instances, the 95th percentile was a better value and more claimant-favorable under

certain circumstances. So the geometric mean of the coworker intakes is recommended by NIOSH for all workers.

We felt initially, SC&A, that they may not correlate with empirical urinalysis data for specific years. And SC&A did some analyses that looked at that. And in response to that, NIOSH restricted the use of table D-1 to workers for whom bioassay data was inadequate. And in our recent discussion, NIOSH has agreed to use the, for those specific individuals, 95th percentiles of the coworker intakes from that table for the '61 to '62 period, when no bioassay data are available.

So there's a little modification in the modeling, as you can see and as doses are constructed to take into account this period of time when bioassay data were not available and an alternative model was needed.

Finding number five. Again, the methods used to derive inhalation intakes from

residual contamination was a bit vague in the first report. And we have had some conditional resolution to that in our last or early on in one of our meetings. NIOSH agreed that there was a mathematical error in their calculation that SC&A had pointed out and that they will address this error when the independent Site Profile was issued. And subsequently that still needs to be done. So some of the errors in this finding now have been addressed and will be corrected. And the TKBS-008 has been corrected. So we consider this to be resolved.

The last issue for the Site Profile again was -- we felt that there was a paucity of information in the original report that would allow validation of default external dose estimates again to the residual contamination period. And in an attempt to validate NIOSH's default external dose estimates from residual, SC&A had difficulty. It failed to include the dose contributions of

short-lived daughters with U-234 and 5. When that error was accounted for, then everything fell into line. And the calculations of NIOSH and SC&A were comparable and identical.

So we withdrew finding number six because it was an error on our behalf. But the good news is we took a careful look at the calculations, and it has all now been resolved.

So, as far as the PER findings, some of the findings, as I say, were interrelated. And I will quickly go through these. Finding A -- rather than number them 1 to 6, we're now using the alphabet so you don't confuse one of one with one of the other.

The first finding was there was a need for better documentation of the beta-gamma ratios used to reconstruct the external doses. And then finding B was how were these ratios derived and how will they be used in a claimant-favorable way for

reconstructing external doses for '61 through '65?

And in response to that, additional data were included in the Site Profile, as I mentioned earlier. And that helped resolve these concerns about the adequacy of the documentation in the PER.

Finding C was the model used to reconstruct the neutron doses. It was felt to likely overestimate the doses significantly and needed to be based on assumptions that can be related to the actual operations at UNC. And here worker interviews came in. And it was determined that the assumption of 2,000 hours per year was bounding. And NIOSH convinced SC&A and us that it was a plausible bounding. And, therefore, we closed this issue as well, that it did now seem to be not a gross overestimate.

Finding D, if the dose estimates are based in some cases on air sample data alone, it was necessary to consider the

possibility of inhalation of type F material to avoid underestimates of doses to systemic tissues. The coworker model now is based on the bioassay results, and air sampling is used secondarily in -- to validate the bioassay model but is not used now in the coworker model, as it was previously proposed to do.

E might have been again the exposure to type F uranium. Frequency of air sampling, bioassay sampling, and/or chest counting does not appear sufficient to provide adequate data for dose reconstruction. This issue is discussed several times. It is NIOSH's position that chronic exposures currently calculated as type M or type S, are bounding for reasonable scenarios. After much discussion and back and forth, SC&A agreed that the scenario, bounding scenarios, were reasonable. And our Group when we looked at it really did not find any firm arguments against that, so found that was acceptable. Frequency of the air samples really is not

relevant since the air sampling now is not being used for the dose reconstruction. So the concerns about using the air sampling data fell out when we went with the coworker bioassay dose reconstruction modeling.

And there are, as you saw, significant bioassay samples available except for that short period of time. And we did feel that a method that is appropriate is now being applied for that period and that doses can be reconstructed for those two periods of time.

Again, air sampling data is not reliable. And, again, now that it is no longer being used in the model, the reliability issue, while it has to be addressed in the Site Profile, really is not part of the SEC dose reconstruction set of issues.

G, discussion of why the internal exposures can be reliably constructed, a written description given the limited bioassay

data available from '61 through '62 in what appears to be the unreliability of the air sampling data really was the major sticking point in our review of that period when sampling and biomonitoring was not available.

And the resolution of that was that the air sampling results were only used to validate the assumptions that exposures in '61 and '62 were similar to the years before and after the data gap period.

So we really didn't see anything that suggested at that period of time,'61-'62, that there was something unusual going on where exposures would not have been compared. The process was pretty much similar. It was more the administrative program changed at that time.

And then in '63, everything was revamped again and greater emphasis placed on the biomonitoring. And, again, NIOSH is going to use the 95th percentile of the bioassay coworker model for that period of time where

the other period of time, the coworker model, we'll use the full distribution of the values.

H is needing more information on the feasibility of reconstructing doses for the period where there was thorium workers. Even upper bound doses could be made.

NIOSH put together a very nice White Paper that -- you have a copy of that provided evidence to the Work Group that the upper bound doses could be plausibly estimated. And we agreed, and SC&A agreed with that. And, therefore, we closed that issue as well.

So the naval fuel operations, initially we had concerns about classified activities might not have been adequately reflected in the NIOSH assessments. And, to that end, a number of or a item plant worker, which is the specific facility component that we were most interested in, there was a plant worker, very experienced, knowledgeable that needed to be interviewed.

And much of our delay in finalizing this SEC review was waiting for the interview of that worker because it was a classified interview, it had to go through the redacting process, and provision of that to be released publicly. So that added time, but ultimately it was released. And we were able to review that.

And it just underscored to us on the Work Group the importance of getting the worker interviews to be included, even if it is a challenge and frustrating to get it done in a timely fashion, but he really provided very good information on what went on in the facility. And so we got new detail that confirmed NIOSH's documented understanding of what really went on at the operations.

So, in conclusion, if you have questions, you can ask questions, but here is our recommendation, that the petition covered all site employees that worked in any area of the United Nuclear Corporation Hematite,

Missouri site from January 1, '58 through December 31, '73 and the residual radiation period, January 1, '74 through July 31, 2006.

And our conclusion was that that should be denied, that analysis of the available resources, that there is no part of the Class under evaluation for which doses could not be bounded under plausible circumstances. And for most of the individuals, those could be quite reasonably done. And it was really that short period of time where we had some concerns, but we do believe now the modeling and the work has been put together. So it is plausible and bounding for exposures throughout the full time period.

Last, here are just a series of references for those of you who may want to do more reading, which I doubt. If you are, this just lists all of the documentation so we have it here in the file.

So, with that, John, did I miss anything?

DR. MAURO: No. I think you covered it very well. And Bill Thurber is on the line, too, I am hoping. Perhaps he is not. Bill was very much a contributor to this also. No. You covered everything that I am aware of.

CHAIRMAN MELIUS: Okay. Board Members with questions for Henry? I thought it was a very thorough review. I feel like I was there. Either of the other two Work Group Members: Bill or Dave?

MEMBER ANDERSON: Dave did a great job getting up to speed in a fast order, lot of minutes of meetings to read through. And we really appreciate the assistance and the participation of the petitioners as well. They really contributed, and they really helped identify the individual to be interviewed. And that really, as they say, has provided some confidence in what had been gleaned from the various records to actually talk to somebody who was there through the whole period.

CHAIRMAN MELIUS: David Richardson, you had a question?

MEMBER RICHARDSON: One question was on slide 9.

MEMBER ANDERSON: This one?

MEMBER RICHARDSON: Yes.

MEMBER ANDERSON: Yes.

MEMBER RICHARDSON: The footnote. Can you explain why the more recent data are not reliable?

MEMBER ANDERSON: Yes. We didn't --

MR. RUTHERFORD: This is LaVon Rutherford. Actually, the '71 to '73 period bioassay was done by CEP. CEP we had already determined at another site that their activities with urinalysis was possibly fraudulent. And so we had decided a long time ago that we would not accept CEP data. However, we do have whole body counting during that period as well as we continued with the air sampling as well during that period to

reconstruct the internal dose from uranium.

MEMBER RICHARDSON: So during that period, you proposed to use the whole body counting?

MR. RUTHERFORD: We have whole body counting during that period. We do have other bioassay data from another vendor, but the majority of the bioassay data from '71 to '73 was done by CEP. And we do have a significant amount of whole body counting.

Whole body counting picked up, actually, in the late '60s at UNC. And there is a significant amount of whole body counting. If you had the Evaluation Report available, you can actually see the numbers. There is a table inside there. It identifies the numbers of whole body counts that were done during that period.

MEMBER RICHARDSON: Could I ask one other question?

MR. RUTHERFORD: Sure.

MEMBER RICHARDSON: Why in 1970

did the number of samples drop off? Does that appear at a contract change, where this is the number of available samples or --

MR. RUTHERFORD: There was a contract change in 1970. Actually, a new contractor took over, not a new contractor doing the bioassay. There was actually a change in ownership of who was running the site at that time in 1970. I can't remember the name. I am not sure if it's indicative of production activities, why they dropped off the change in ownership that reduced production activities.

There was some change in the actual types of work that were conducted at that period. So I can't be definitive on that.

MEMBER RICHARDSON: Can I ask you now about the column headings?

MR. RUTHERFORD: Okay.

MEMBER RICHARDSON: The number of employees --

MR. RUTHERFORD: Yes.

MEMBER RICHARDSON: -- I am taking to be the number of people for whom there was a bioassay and the second column to be the number of samples taken. That is not the number of employees on site.

MR. RUTHERFORD: That's correct. That's correct. Actually, and, you know, I knew this was going to come up again. And I can't remember, but when I originally presented the petition, I knew how many people were on site.

I know that the site, the number of employees at the site increased over time from 1958, from the initial operations. And from my recollection, it's around a couple of hundred. It got up to around a couple of hundred people.

And I am sure that if I am incorrect, that the petitioner will correct me.

MEMBER RICHARDSON: So when you

want to look at -- I mean, there was a good deal of discussion about what was called 1961 to '62 --

MR. RUTHERFORD: Yes.

MEMBER RICHARDSON: -- and I am guessing is referring to the row of 1961, where there is no information from bioassay. But for lots of the neighboring years, the number of people who have any bioassay information is relatively low.

MR. RUTHERFORD: Well, that is because there is a relatively low amount of workforce. I mean, if you look at the workforce size, the operators, the operators that were there, it is actually a fairly small workforce.

MEMBER RICHARDSON: So when you said that the, let's say, 1963 was going to be a comparable year that you wanted to extrapolate to, I was taking the 110 number to be some representative number of the number of workers who are potentially exposed. And if

we look at 1960, there are 37 people who have been monitored. So are you saying the workforce is one-third?

MR. RUTHERFORD: No. I am actually saying what -- we had the number of employees. The number of employees we have samples for, they may have four samples. They may have six samples. They may have ten samples.

MEMBER RICHARDSON: Right.

MR. RUTHERFORD: Okay. So what we did in the actual 1960 -- I can't remember the month. They stopped doing bioassay. All right? We had a period of roughly 18 months, I believe, 18-19 months up to the end of 1962 where sampling commenced, where it kicked back in.

What we did, actually, to validate that our coworker model was correct was we actually took air sample data from 1960 where we were looking to see. We wanted to see if there was a change, as Dr. Anderson mentioned.

Was there a change in operations? Was there any indication in operations that we had an increased airborne activity where we had an increase in intakes that would have adjusted our distribution.

MEMBER RICHARDSON: Right. Yes. I understood that part of the extrapolation. I was wondering about the -- maybe I am not completely understanding. The coworker model I can see as being applied in 1961, when there is not monitoring data. But for a claimant who was employed in 1960 --

MR. RUTHERFORD: Okay.

MEMBER RICHARDSON: -- who is not one of the 37 workers for whom there is bioassay data --

MR. RUTHERFORD: Okay.

MEMBER RICHARDSON: -- is the coworker model also applied --

MR. RUTHERFORD: Yes, it is.

MEMBER RICHARDSON: -- to that worker?

MR. RUTHERFORD: Yes, it is.

MEMBER RICHARDSON: So the issue is not simply the comparability of the coworker model --

MR. RUTHERFORD: Right, right.

MEMBER RICHARDSON: -- spanning the period 1960 through '62? It's the comparability of the coworker model for any given year for which there is a claimant who is potentially exposed but who doesn't have bioassay data. So we have to believe the plausibility of the coworker model, not just for the comparability of --

MR. RUTHERFORD: Right.

MEMBER RICHARDSON: -- looking at the air monitoring data, spanning that short period, but any place in which a coworker model is going to be applied?

MR. RUTHERFORD: That is true. Yes.

MEMBER RICHARDSON: Okay.

DR. MAURO: Bomber, this is John

Mauro. A point of clarification to make sure. When you develop the coworker model, let's say you were going to use it from, let's say, 1960. Then you do have data. There is a difference between the coworker model and how you apply it for the workers in 1960, then '61. And this was a subject of some discussion that I know that Jim was very much involved in.

When you have real data for a given year, we have a bunch of workers. The premise that we are operating under is those 37 employees in the 106 samples, these were the employees that were bioassayed because the sense was they had the greater potential for exposure.

Now, given that premise, when you say, "Okay. Well, along comes a worker in 1960 that could have been exposed but was not part of the bioassay program, in that case, the coworker model you would use, the full distribution, rather than a 95th percentile,

in order to reconstruct his intake" for 1960. However, in '61, you are using the upper 95th percentile of the year by data from the other years. So there is a fundamental difference in the strategy that is used for a coworker model when you actually have data for people in that year, as opposed to this 1961 special year.

Is that a fair characterization? SC&A is comfortable with that. I think it is important that the Board understand that distinction.

MR. RUTHERFORD: That's correct. That's absolutely correct.

CHAIRMAN MELIUS: Yes, Dave?

MEMBER KOTELCHUCK: Just a small matter. Is there a typo on the first line, 19 employees and 7 samples, or is it that some samples were lost but you know the people got sampled?

MR. RUTHERFORD: You know, that is a good question. Honestly, I think that is a

typo, but I would have to go look.

MEMBER KOTELCHUCK: Yes. I didn't notice it before.

MR. RUTHERFORD: I never noticed it either.

MEMBER KOTELCHUCK: Yes.

CHAIRMAN MELIUS: So it's a typo from the Evaluation Report because it is in the Evaluation Report also.

MR. RUTHERFORD: Yes. I will have to look at that. Right. I can find that out, though.

MEMBER ANDERSON: Other comments?

MEMBER BEACH: So, Jim, you're not going to call on me?

(Laughter.)

CHAIRMAN MELIUS: I'm sorry.

MEMBER BEACH: I'll just go ahead.

CHAIRMAN MELIUS: Please?

MEMBER BEACH: I know you are probably reviewing.

CHAIRMAN MELIUS: I was trying to

find some of the information back in the Evaluation Report that David was asking about.

MEMBER BEACH: Yes.

CHAIRMAN MELIUS: So I was distracted. I found the table, but it didn't help.

MEMBER BEACH: I was reviewing the table, too. Some of the questions I had were on the air sampling data. The table is very helpful. It is very explanatory. But for number 3 under the 1961 data to 1962, it talked about that management agreed and decided when to do the air sampling. Some of the sampling was breathing zone, and some of it was general area. And I was wondering if you had a sense of how much, what percentage was the breathing zone versus the general area, LaVon.

And then the other one while you are at it is the -- there are a couple of hears that you said you have data under X, but you didn't list like you listed out all of the

rest of them.

MR. RUTHERFORD: I know the X you're talking about, where the film badge data is listed?

MEMBER BEACH: No. It is under breathing air, too. How about if you do -- the X's under number 2 indicates that data exists, but the specific number of samples -- I was wondering why it wasn't spelled out like all the rest of the --

MR. RUTHERFORD: Right. A lot of those were summary reports. You know, it would summarize what the data was. And so we would not get the specific numbers associated with that.

Now, your first question --

MEMBER BEACH: The breathing zone, yes.

MR. RUTHERFORD: Okay. Now, I can't remember the exact percentage, but, I mean, a good portion of the actual air sample data is breathing zone data. I mean, if you

want to take a comparison, here is a good example, actually. The thorium air monitoring that took place took place. And it was an operation that was consistent with uranium pelletizing operation.

There were 210 air samples taken in that 1964 period. Of that 210 samples, I think 167 of those were breathing zone samples, if I remember correctly. I have to go back and look at the report. A large portion of those were breathing zone samples. And I don't think that the operations for uranium would have been any different.

CHAIRMAN MELIUS: Okay, Josie?

MEMBER BEACH: Yes. Thanks.

CHAIRMAN MELIUS: Any other questions right now? I believe the petitioner is on the line and wishes to make comments.

MS. EATON: Yes, sir. I am on the line.

CHAIRMAN MELIUS: Okay. Do you wish to make comments now?

MS. EATON: Well, it seems to me -- this is Clarissa Eaton, United Nuclear representative. We have learned a lot upon the sampling, what little sampling done early on, with only air samples. And, you know, it was the management's decision -- and I believe it was a monetary decision -- to stop the sampling program.

And it wasn't, in fact, until Oak Ridge noticed excessively high levels on some employees I guess that it has taken a trip up there. So, you know, so we have got partial samples here, air only, lack of monitoring. We have got an reliable source in the mix.

I mean, it's just very hard to have a lot of confidence that-- I mean, how much of dose reconstruction is an exact science? Because, I mean, I am no health physicist or nothing of the sort. I am just a housewife, but I wondered how exact is the science because coming from a lay person, it just seems like there are a lot of things in

the way.

CHAIRMAN MELIUS: Any additional comments or is that --

MS. EATON: Well, that is the only one I have for now.

CHAIRMAN MELIUS: Okay. Thank you. I wasn't sure I understood.

Yes, LaVon?

MR. RUTHERFORD: I want to clarify that of the 210 air samples, 133 were breathing zone samples. So if you want to look at it as roughly 65 percent, 70 percent?

CHAIRMAN MELIUS: Any other comments or questions? David, David Kotelchuck?

MEMBER KOTELCHUCK: Ms. Eaton, I taught graduate courses in nuclear physics and occupational health for many years and taught in this area. Of all the areas that I taught in in occupational health, this was always the most difficult. It was the most difficult for our students because there is a lot of exact

knowledge about some particular kind of particle, what the effects of an alpha particle of a certain energy are. These are very well-known.

The problem is that, first, we are trying to put together pieces from internal exposure, external exposure, alpha, beta, gamma neutron. And it does become, if you will, a bit overwhelming to listen to and to try to follow through.

Obviously we can't. If we could make an exact measurement or if exact measurements were available on all of these pieces, that would be fine. Normally that is not the case. And so you try to put together something that is the best estimate, being friendly to the claimant, because when in doubt, the claimant should be respected and compensated. So that is what is behind this. It is complicated. The science, if you will, the pieces, all of the pieces of the science, I think, are pretty well-known and quite

exactly known with research for decades.

CHAIRMAN MELIUS: Any Board comments or questions?

(No response.)

CHAIRMAN MELIUS: If not, we have a motion from the --

MS. EATON: Well, I guess my --

CHAIRMAN MELIUS: Excuse me?

MS. EATON: -- of these records that you supposedly got a hold of, a lot of records, are you referring to those that Westinghouse at first didn't think they had any records and then, all of a sudden, they had truckloads? Are you relying on the records that you received from Westinghouse?

CHAIRMAN MELIUS: Excuse me? We're just doing comments now. And it really is not the time. The Board needs to take action. There have been Work Group meetings and other meetings where there has been interaction on these.

So let me go back to the Board.

And we have a motion from the Work Group, a recommendation on that. Is there any further discussion on that recommendation?

(No response.)

CHAIRMAN MELIUS: If not, Ted, do you want to do the roll call?

(Roll call.)

MR. KATZ: It was 12 in favor, a number of absentee votes, but the measure passes.

CHAIRMAN MELIUS: Okay. I believe we have done most of our Board business, work session business, except for some additional letters that will be ready for review tomorrow.

So, LaVon, while you are close? Let's get back to NIOSH. I thought that was the one that had so many slides it was taking a long time to load.

MR. RUTHERFORD: Okay. After much ado, I am going to give the status of all current SEC petitions. This is LaVon

Rutherford for those on the phone. We provide this update routinely for the Board so that they can prepare for upcoming Work Group meetings, Board meetings. It identifies what petitions we have got in that are qualified, we are evaluating. Also it identifies the petitions that are in the 83.14 process as well.

As you can see, as of September 7th, we have 207 petitions. We had zero in the qualification process at this time. We have 127 petitions that have qualified, 5 petitions that are in the evaluation progress. Actually, this will be adjusted a little bit because some of these reports were completed prior to this Board meeting. And I will discuss that a little bit and so on through the table.

SEC petition evaluations presented at this Board meeting, we had Oak Ridge National Lab, where the Board took action. There is some additional work that is going on

at Oak Ridge National Lab associated with calutrons and cyclotron.

Los Alamos National Lab we presented as well revision 1. Again the Board took action. However, there is still additional work that has gone on post-1995.

Rocky Flats petition was presented at the Board meeting. The Board has pushed this on to the Work Group and some additional work that is going to be done by us at NIOSH.

Mound Plant, an 83.14 was presented that the Board took action on.

Nuclear Metals Inc. will be discussed tomorrow.

Currently we have the Joslyn Manufacturing and Supply Company petition that is in the evaluation phase. It was at Fort Wayne, Indiana. All employees who worked at the Joslyn Manufacturing and Supply Company from January 1, 1944 through December 31 of 1952. This is one of those early year metals operations. We received this petition on

March 15th of 2012. We expect to be completed in December of 2012.

We did have a slight delay on completing this due to some -- we had done, actually, some classified document review at OSTI, and had identified some additional records Dr. Glover had and actually some outreach in interviews that had possibly identified other resources. We wanted to take those and make sure we got those resources before we completed our evaluation. We do expect to be completed in time for the December Board meeting.

CHAIRMAN MELIUS: What do you mean in time for a Board meeting?

MR. RUTHERFORD: We will shoot to have the Evaluation Report to the Board one month prior to the Board meeting. Do you hear that, Dr. Glover? Where are you? Or sooner, or sooner.

CHAIRMAN MELIUS: Excuse me. The Board meeting is in December.

MR. RUTHERFORD: Yes, yes.

CHAIRMAN MELIUS: The completion date is December.

MR. RUTHERFORD: Well, you know, as they --

CHAIRMAN MELIUS: Where does the month come in?

MR. RUTHERFORD: We will shoot to have that to you 30 days before the Board meeting.

CHAIRMAN MELIUS: So in November?

MR. RUTHERFORD: Yes, in November, November.

CHAIRMAN MELIUS: Sam?

(Laughter.)

MR. RUTHERFORD: This is a short presentation, but I want to say we are working on a couple of 83.14s at this time. These are 83.14s that we have been working on Site Profiles for a while trying to get information back and forth. I didn't want to put them on here because the details really haven't been

ironed out on them, but we do anticipate we will be presenting at least one of those at the Board meeting in December as well. In fact, we will be presenting at least one of those at the Board meeting I am just thinking.

CHAIRMAN MELIUS: And we will see those 30 days before --

MR. RUTHERFORD: Yes, you will.

CHAIRMAN MELIUS: -- before the December Board meeting, that one that we will be presenting?

MR. RUTHERFORD: That's pretty much it. Any questions on current SEC status?

CHAIRMAN MELIUS: Can you read back -- no. Okay. So don't go away.

MR. RUTHERFORD: I thought I'd slip out of there.

CHAIRMAN MELIUS: Yes. Two things. I am just thinking ahead to the Board meeting and timing and so forth on that. And do we need three days?

MR. RUTHERFORD: Well, I know we

have -- I think we have an addendum to, if I remember correctly, SRS addendum that -- and I wish Mark was here, but I am pretty sure we committed to getting an SRS addendum on the remainder of the thorium period to the Board for the presentation at that meeting.

MEMBER KOTELCHUCK: That's right, yes.

MR. RUTHERFORD: So that is one additional item.

You know, actually, I apologize. I just missed another -- we do have another petition under evaluation. And that is Baker Brothers. It will not be ready for the December Board meeting, I do not believe. There is a chance it would, but I don't want to commit to it right now.

However, during a Board conference call, I am sure I could give you a better date on completion for Baker Brothers.

MEMBER FIELD: LaVon, what's the site? Where is it --

MR. RUTHERFORD: Baker Brothers? I can't remember. Toledo. Correct. Toledo, Ohio.

MR. KATZ: I was thinking there was another maybe 83.14 that you had intended for this meeting but didn't make it. Not so?

MR. RUTHERFORD: Well, no. The ones that we intended for this meeting made it. The one that we have been working for some time, I don't believe it was intended for this meeting.

MR. KATZ: Okay.

CHAIRMAN MELIUS: So the reason I wanted to bring this up now is, one, we have a little bit of time; but, secondly, if you remember, right, the December Board meeting starts on a Monday. And I think that if we are going to plan ahead for it and so forth and we think we can do our Board business in two days, we could come in on the Monday, rather than on the Sunday, --

MR. RUTHERFORD: Right.

CHAIRMAN MELIUS: -- for people and handle it that way, which would ease travel, at least for some people. For everybody, it should make it easier and so forth. And I think what I am hearing is that we should be able to do that.

MR. RUTHERFORD: From the new SEC petitions, very few.

CHAIRMAN MELIUS: Yes.

MR. RUTHERFORD: There are only a couple.

CHAIRMAN MELIUS: Well, GSI we hope. Rocky Flats I'm not sure that we will be. I think there is enough by that meeting.

Pantex we don't know, but we could -- I don't think Pantex would necessarily take a lot of time because we have gone through that. I think we all know the issues. I think the question is going to be, one, is the data available that we think might be available. Is that the term, Brad, that we heard? Maybe, yes.

MEMBER CLAWSON: Yes.

CHAIRMAN MELIUS: The right material. And either way I think we are going to know. No. But if we do have to deal with that, I don't think it is something that is going to take necessarily an extended period of time for discussion.

MR. KATZ: So I think we are talking about a two-day meeting.

CHAIRMAN MELIUS: Okay. Okay.

MR. RUTHERFORD: I wonder about Hanford 155. Do you think that the Work Group would be ready to act on that?

CHAIRMAN MELIUS: I think we will be ready for that. And, again, I don't think that -- it takes some time but not -- because we have done some briefing here. I think the issue is usually it's the first time something is presented to the Board or it's been a long review process from the Work Group and getting everybody up to speed. And enough information that people feel comfortable in making a

decision I think is usually what takes more time.

So let's plan on meeting on the 11th and the 12th of December in Oak Ridge and coming in on the Monday.

MEMBER BEACH: And it is Henry's birthday on Monday. So he would probably rather travel that day than be in a meeting.

MEMBER ANDERSON: Oh, yes, absolutely, yes. I'll party on the plane.

CHAIRMAN MELIUS: Well, maybe we should all greet him at the airport with the champagne --

MEMBER ANDERSON: Yes, right.

CHAIRMAN MELIUS: -- and the cake and that.

MEMBER ANDERSON: December is Oak Ridge.

CHAIRMAN MELIUS: Oak Right, yes. Do we have a hotel?

MR. KATZ: Not yet.

CHAIRMAN MELIUS: I didn't think

so. I just wanted to get practice asking that question. Yes. Okay.

We have one more item remaining. And, LaVon or Stu, do you want to try to get up Wanda's demonstration --

MEMBER MUNN: We can do that, no problem.

CHAIRMAN MELIUS: -- while we have a little bit of time here? And then while we are getting that ready, I'll just remind for tomorrow morning, that would then leave Nuclear Metals to be presented. And I think that will be pretty much it. And then we will have some letters to go over.

So I am expecting that we can finish by 10:00-10:30, something in that range. I don't know how long Nuclear Metals will take, but if that helps people with planning and so forth for travel and so forth. I don't know. It doesn't help me.

MEMBER MUNN: All right, ladies and gentlemen. Come and play along with me.

You see what I have got on my screen. If you can get yours there, too, if you are not already there? In case you are, for those of you who are not ready to go onto your screen?

Once we get the virtual desktop up, we need to go to Explorer since we are going to take you to Tools. However you are accustomed to getting to Staff Tools is fine.

I have on my screen book marked the site as a favorite because it is a long-winded URL to get there. And I find this much simpler for myself. You probably will, too, if you have not already book marked this.

We are going to Explorer, as I said. Explorer will take you to the CDC Connects page. Since I have marked this on my favorites, what you are going for is DCAS Internet Staff Tools. And here is the URL you want. At the top of your screen, if you don't already have that one book marked, then if you are going to use this program, I would suggest that you do it.

That was not where we wanted to go. And I rather desperately here need a mouse, which I don't have. No. That's okay. That's okay. I'm just complaining.

Here are the Staff Tools. And what you want to see is the Board Review System. When the Board Review System comes up, you get our full Board review database. And the database itself is very helpful if you want to start searching for documents. If you don't want to start searching for documents, then what you want to do if you are going to look for the report that I am trying to give you today, you ask specifically for the reports. You will see that a drop-down gives you three options. The first one is the one that will give you the numbers you want. I am trying to get this screen a little larger for you. Probably the best bet if it doesn't go completely off screen. It goes everywhere except where I want it to go.

There are three sets of large

groups of procedures that SC&A gave to the Subcommittee at different times. You will see the finding date on the left, which we have kept in this format primarily because it is easier for us to track it and make sure when we report to other groups or to the Secretary exactly what we had at what time.

In between those sets, we have been given the task of identifying findings for individual procedures. At various times through our history, you will see the dates that those individual procedures were given to us. And in the first column, you will see the total number of findings that we have from each of those groups or individual procedures.

Now, when you are looking at these and looking at the totals to see where we are at any given time, you need to keep in mind very clearly what the headings of those findings mean. Open means we have not addressed them at all. They are exactly what the heading says. Those are open findings

that we haven't addressed.

In progress means we have looked at them and that there is work going on to resolve those specific issues. When you get to abeyance, that is for our Subcommittee already a closed issue. Any finding that is listed as in abeyance is a finding that we have looked at, have addressed, have resolved, and is now in the hands of NIOSH to incorporate into the next document that is applicable to that particular finding.

In most cases, things that are in abeyance are findings that have been resolved with respect to procedures which either were very early procedures and have been subsequently overridden by or canceled or they are for procedures that are awaiting a revision and will be updated as time allows us to do that.

Addressed in finding in the next column simply means that this finding was at some other time, perhaps at the time of the

issuing of the original SC&A report or perhaps later, the finding was duplicated somewhere else. And addressed in finding simply means this is closed to us because we are addressing it in some other finding, some other place.

Transferred simply means it has gone out to a Work Group somewhere and some other Work Group is in the process of dealing with that particular issue. When that issue has been closed by the Work Group, hopefully the Work Group Chair will call to our attention the fact that that issue is now closed so that we can accommodate that on our database.

Closed means, for whatever reason, whether we resolved it, whether somebody else has resolved it, we have closed that finding or that set of findings.

If we go down to our totals, then you can see that we have in our Subcommittee been dealing with 561 different findings. We have currently open only 4 and a half percent

of those, or 25 are open. We have not yet dealt with them. We have 47 that are in progress. We have 81 that are in abeyance. We have 23 that were addressed in a different finding. We have 45 that have been transferred. And we have over 60 percent of all of the findings that have been handed to us to deal with have been closed.

In the event that you like color and would prefer to see something in graph form, then we can choose one of the other reporting formats that you saw up at the top of the list. We can go there if you want. They are very nice. They are very colorful documents. But, to all intents and purposes, the information you want to see I think is here.

We have put together that basic database from which we draw this information with the expectation that this kind of tracking system would be useful for those of you who have a fair-sized matrix to deal with

when you are given findings that have to be resolved in your Work Group or if you don't find it useful, then you can simply continue to do what we have done in the past and report your findings closed as they come along.

We appreciate hearing from you any time. If you have any questions about the database, you may ask me now or inquire of me later. Anything that you -- any question that you have based on what we have seen already?

CHAIRMAN MELIUS: Anybody with questions?

MEMBER MUNN: Yes, Dave?

MEMBER KOTELCHUCK: Who puts the numbers in the table?

MEMBER MUNN: There are two people who put the numbers in. We have designated individuals, one in SC&A and one at OCAS, that handle the whole thing for us. They attend all of our meetings. And we deal with the database on a real-time basis in our meetings. As issues are resolved, we revise the database

accordingly. It was very cumbersome to get up and running, but it is almost where we need it to be now.

Our folks at NIOSH and DCAS have been working very hard to populate the back end of that database so that the hot links that we wanted to have, which will make it easy for you to get to original documents, is being incorporated a little at a time.

The documents themselves are already up-to-date as are the finding lists.

CHAIRMAN MELIUS: Yes, Paul?

MEMBER ZIEMER: Wanda, I am thinking it might be helpful to the other Board Members to go back to the main page and maybe just select one of the procedures and illustrate how the findings are actually handled and recorded and so forth if we have time to do that.

CHAIRMAN MELIUS: Yes. From that page, if you were just to select one of those documents or to even select the category.

MEMBER MUNN: I am trying to get the page the size I want it. And clearly it is not easy to do with my finger. A good one might be IG-1. We clicked on it, and it is giving us the finding and SC&A pages. There are 24 findings on it, it tells us. And the first finding gives you first the internal review objective showing what the deficiencies are. This item has been addressed, and it has been closed.

MEMBER ZIEMER: I believe we can get the whole history of that, though, if we click on the plus.

MEMBER MUNN: The plus will expand it so that you see the discussions that took place and when all the way back to 2005. In 2006, 3 different times; 2007, revision of the implementation guide. Notice it gives you the -- when it says "unspecified SC&A user," that means our SC&A contact who has responsibility for it has made that change during that meeting.

And in the next one, Kathy Behling, who was the person who instituted the original finding, asked to review Revision 3 to determine whether it was addressed in any of the findings. We debated the issue in July of this year and determined it was closed because it was covered in finding 19 of this same set of findings. So this is one of those things that now shows in our Covered in Findings column for this particular issue. It is closed to us because it is going to be taken care of in finding number 19.

If we want to go all the way down to finding 19, if I can just get this to go there without creating any real disasters. As you can see, we are going down the findings one at a time. One more, and we should be down to finding 19.

Finding 19 reads, "Review is fragmented structure and illogical sequencing of information. During the findings resolutions, NIOSH agreed that SC&A's comments

were constructive and future revisions would involve a change to the structure of the document, but no such modifications were introduced into Revision 2. So it still needs yet to be done in Revision 3. You see it is noted as "In progress." So we had closed this concern in the original finding, which essentially was that the language is not well-put-together. And we are covering it in this. We will wait until the next revision comes along, at which time we will be able to close it.

Being able to do these real time, let's expand another one to see where it might take us. We'll try expanding 15 and see what discussion had occurred on that before it was closed. We addressed it first in 2005. Non-correction for backscatter only makes the reported film dose higher. Appendix B organ dose correction factors are applied to these numbers. We addressed it again in 2006, at which time it was reported as closed. We

didn't do anything with it in subsequent findings because we had identified it as closed.

Here is one that is in abeyance. Sixteen is being worked on somewhere. And 16, also addressed first in 2005, an analysis of environmental uncertainty for film badge dosimeters was not done. OCAS will revise the uncertainty language so it reflects the basis for the uncertainty approaches.

And in 2006, we asked that NIOSH modify the procedure. Still outstanding, a Revision 2 was issued, but no discussion had been added that would cover it.

CHAIRMAN MELIUS: Wanda?

MEMBER MUNN: Yes?

CHAIRMAN MELIUS: I think we got the point.

MEMBER MUNN: I think so, yes.

CHAIRMAN MELIUS: It is a little hard to follow from --

MEMBER MUNN: I know. That's why

I wanted people to do it themselves.

CHAIRMAN MELIUS: I know. Well --

MEMBER MUNN: I see that fell on deaf ears.

MEMBER CLAWSON: Wanda, I do have one question. How do you get to the next page? You have got all of these, and it will allow you to go --

MEMBER MUNN: There should be a tab up at the top that will move you over.

My primary purpose was to make sure that you had the URL in your own little arsenal of tools so that you knew how to get to it and that you understood that all you had to do to get to the report that gives you the full summary is just to click on the first of the report options that are available to you.

Having done that, I have nothing else if we can resolve --

CHAIRMAN MELIUS: Well, I don't think we want to resolve this in a Board meeting.

MEMBER MUNN: Okay.

CHAIRMAN MELIUS: Okay? Individual --

MEMBER MUNN: We'll do this.

CHAIRMAN MELIUS: No individual instructions to --

MEMBER MUNN: Yes.

MR. HINNEFELD: We built this with the idea that it could be broadly used by site-specific groups and things like that and it could maintain the discussion of the findings on various documents like on a Site Profile review, they would be entered, the findings would be entered here. And rather than keeping it on Word matrices, you would have the history of it all in one place. There is an authorizations table. Who you authorized, who's able to write, change statuses.

And, David, to your question, the numbers in the table are actually generated by the software from the statuses. You know,

each of those categories of opened, in abeyance, closed, transferred, those are the options on the drop-down table for the status of a particular finding. And so when you generate that report, the application generates those numbers based on the statuses of the various findings.

MEMBER MUNN: So you don't actually plug in the report. It does it for you automatically. That is why I said you can always get the current status because no one has to do it. It has been done in Committee.

CHAIRMAN MELIUS: Thank you, Wanda.

MEMBER MUNN: Thank you.

CHAIRMAN MELIUS: I believe we are all set. And we now have a period of time for a break, a couple of quick announcements. One is just an update. The Rocky Flats Work Group, I have added Phil and Dave Kotelchuck to that. So they will be joining. And, in response, Stu has appointed LaVon as the DCAS

coordinator contact on that. So we are set on that.

Also, Josie has agreed to chair the Kansas City Site Work Group. And I believe I convinced Gen to chair the Oak Ridge, though she is still going to look it over tonight.

MEMBER ROESSLER: It is Oak Ridge National Lab?

CHAIRMAN MELIUS: Correct, yes.

MEMBER ROESSLER: Yes, I will.

CHAIRMAN MELIUS: Okay. Okay. She has agreed. I have got a few volunteers for those Work Groups. Those of you who haven't talked to me yet who are interested in serving or want to run the other way, just sort of let me know because I will try to finalize those by tomorrow before we leave, at least for the most part. I still have to talk to Loretta also.

And I think we should adjourn. I have no idea how many people will be here

tonight. And so I checked earlier. Nobody signed up, but one person I believe had signed up. But we won't know. So why don't we try to get here a little bit before 6:00 anyway, which would be the start of the public comment period. And we will see how things are.

So you are welcome to rest, whatever, for the next hour and a half. Practice whether you can recall Wanda's lessons today.

(Whereupon, the above-entitled matter went off the record at 4:33 p.m. and resumed at 6:01 p.m.)

CHAIRMAN MELIUS: If everyone gets seated, we will get started, please. LaVon, Jim, will you sit down, please, or move outside? Okay. We have a public comment period. And I will let Ted go through the rules.

MR. KATZ: So I am not sure there are any new people for the public comment session, but, as I said last night for public

comment session, there are verbatim transcripts for all of these Board meetings, including the public comment session. Everything that you say in your public comments will be captured and transcribed and available for the public to read, however private it might be.

Anything you might say about another individual, however, will be redacted to the extent to protect their identity and their privacy. And that is the basic rule. And more detailed information should be available on the back table as well as if you are listening by telephone, it's on the NIOSH Board website. It's sort of on the front end of that Board page.

Thank you.

CHAIRMAN MELIUS: Okay. And I am going to start with -- we have two people signed up that are here in the room. I will start with them. Terrie Barrie, please?

MS. BARRIE: Thank you again.

PUBLIC COMMENT

MS. BARRIE: The reason I am here is because I didn't have a chance to thank you last night for taking another look at the issues with the Rocky Flats Plant.

And I do understand that there might be like a little issue about you voted on them once before, but I do have some new information that Stephanie just gave me tonight or this afternoon that you might be interested in. This is an industrial hygiene processing report. And you can have this. She has other copies. Tritium is listed almost every year on this, but there is also thorium listed for waste certification technician. May 21st, 1984 through 11/15/1990 lists thorium here. I don't know if it's the thorium welding rods or if it's another process or whatever, but I thought that you might be interested in that.

CHAIRMAN MELIUS: Yes.

MS. BARRIE: And the other thing I

wanted to say is on the Tiger Team report, there were four volumes published. Okay? I have two. And that's the environmental and the criticality assessment. But there is also one on the legal aspects of the raid or the review of the Tiger Team and one on worker issue, which I can't locate. So maybe you might be interested in finding that --

CHAIRMAN MELIUS: Okay.

MS. BARRIE: -- and sharing with us.

But thank you very much, and I look forward to working with everyone.

CHAIRMAN MELIUS: Okay. Thank you.

And, just to update you a little bit -- I'm not sure you were in the room when we talked about this -- we have added Phil Schofield and Dave Kotelchuck to the Work Group along with Wanda Munn and Mark Griffon, Chair. And LaVon Rutherford will be the contact and coordinator for NIOSH --

MS. BARRIE: Okay. Wonderful.

CHAIRMAN MELIUS: -- which we were just told this afternoon also.

MS. BARRIE: Okay. Well, thank you.

CHAIRMAN MELIUS: So you should know also. Okay. Thanks.

And the next person I have signed up is Dee Gallagher.

MS. GALLAGHER: Probably a little short for this.

CHAIRMAN MELIUS: That way is fine, too.

MS. GALLAGHER: I could be a singer.

CHAIRMAN MELIUS: Yes.

MS. GALLAGHER: Good evening, everybody, Dr. Melius and the Board.

I appreciate your time in allowing me this opportunity to speak. I will try to keep it short. I know it has been a really long day.

My name is Dee Gallagher. I was a pilot for Ross Aviation, also known as Hangar 481, Kirtland Air Force Base. I have a couple of things that I would like to say, but, first of all, I would like to thank the Board for all of the work that you did on our SEC. I understand it is in administrative review at this point. But I did want to thank everybody for the work that they did on our SEC.

I have a couple of things, though, that I would like to discuss. And one is the issue of the hot pads in Albuquerque on Kirtland Air Force Base.

It is my belief, but I don't have confirmation at this time, that there is a possibility that the hot pads are located on Sandia property. And if that is the case, then due to the fact that Sandia has had their SEC approved, then we could be covered under the Sandia SEC. It's my understanding that if it is Sandia property, then it is something that we can look at. Like I said, I don't

have confirmation of that at this time.

Also, I flew airplanes for Ross Aviation. And we typically flew out to -- well, we supported all of the sites.

CHAIRMAN MELIUS: Right.

MS. GALLAGHER: But I also flew to Tonopah Test Range, Sandia. So I have 70 flights over my 10-year period that could be credited also to the Sandia cohort, I guess.

Those issues are very important, but I believe that one of the most important issues to me -- and I understand that there is a law that says that our airplanes cannot be covered, but those airplanes, those ten airplanes, were owned by DOE. We answered to DOE. We were a director contractor of DOE. Those airplanes that were owned by DOE, we flew and we flew everything. We flew all of the materials and weapons. And, you know, we were at risk.

And, you know, I just wish that there was a way that we could reconsider or

look at the possibility of including those aircraft in the facility. I don't quite know how to go about doing that, but it is very, very important to me and to our people.

I will say that I am not a victim, and I don't have a victim mentality. I am a tough little cookie. That is why I am here. And I am just seeking the truth, and I just want to be recognized.

And that is all I have.

CHAIRMAN MELIUS: Thank you.

I think you should know sort of facility designation is sort of out of our hands at NIOSH.

MS. GALLAGHER: I do know that.

CHAIRMAN MELIUS: And both DOL and DOE are here --

MS. GALLAGHER: Yes.

CHAIRMAN MELIUS: -- and play some role in that. And I believe you have had a chance to talk to them or follow up with them also. Okay.

MS. GALLAGHER: Thank you.

CHAIRMAN MELIUS: Thank you.

Okay. I have at least one person I know that has signed up on the phone to give public comment. That is a Terrie Mauser.

MS. MAUSER: Yes?

CHAIRMAN MELIUS: You may go ahead.

MS. MAUSER: Yes. Terrie Mauser. I work for United Nuclear.

CHAIRMAN MELIUS: We are having a little trouble -- excuse me a second -- hearing you. First, are you using a speaker phone or are you using a regular phone?

MR. MAUSER: Is that better?

CHAIRMAN MELIUS: Yes, that is somewhat better. And then, just for anybody else who is listening in on the line, if you could, if everyone could, either mute your phone or use *6, it really helps our reception. We found that out earlier today also. So for the others on the line, if you

could mute? You will still be able to hear us, but -- okay.

MS. EATON: I'm sorry. I was unaware of how to sign up on the phone to make a comment. Am I still going to be able to?

CHAIRMAN MELIUS: I don't know. Who is this?

MS. EATON: Clarissa Eaton.

CHAIRMAN MELIUS: Yes, you can. First I'm doing people that signed up.

MS. EATON: Sure. Thanks.

CHAIRMAN MELIUS: Okay.

MS. MAUSER: Are you ready?

CHAIRMAN MELIUS: Terrie Mauser?

MS. MAUSER: I'm ready.

CHAIRMAN MELIUS: Go ahead, please.

MS. MAUSER: Yes. Okay. My first question is in regards to the introduction on the White Pages. Basically the question is, what do you mean in the introduction exposures resulting from non-weapons related work, as

applicable, will be covered elsewhere? What do you mean by "elsewhere" and "non-weapons related work?"

CHAIRMAN MELIUS: We are actually taking public comments. We are not really in a position here in public comment period to answer all of these questions. I think you can follow up with NIOSH to get answers to those questions.

MS. MAUSER: Okay. Okay. Well, then, okay. So my other question is this. Let me ask you this one particular question. And that's the only really important question I have.

It is in regards to me as an individual, I worked in the Recycle Recovery Department -- plutonium and technetium-99. I don't know if I was ever tested for those particular metals. How would I find out that information, either from your -

CHAIRMAN MELIUS: So your question is regarding exposure to particular metals?

MS. MAUSER: Yes, to the heavy metals, to uranium, technetium.

CHAIRMAN MELIUS: Yes. If you're talking non-radioactive exposures, again, that's outside the scope of this part of the program. In terms of filing claims, there is a process within the Department of Labor for that.

But, again, we're taking public comment. We're not here to answer questions over the phone.

MS. MAUSER: Okay.

CHAIRMAN MELIUS: Okay?

MS. MAUSER: Okay.

CHAIRMAN MELIUS: Thank you. But follow up with NIOSH, they will be able to, maybe can help you more directly.

MS. MAUSER: Okay. And can you answer one more? Who was the person that spoke as the spokesperson for the Hematite plant on your end?

CHAIRMAN MELIUS: I couldn't

understand you. Please?

MS. MAUSER: Who was the person who spoke on your end when Clarissa was speaking on the petition, on behalf of the petition? Who was your spokesperson?

CHAIRMAN MELIUS: Well, the person presenting from the Board was Dr. Anderson.

MS. MAUSER: Okay. Thank you.

CHAIRMAN MELIUS: Okay. Now, is there somebody else on the phone who wishes to make a public comment?

MS. EATON: Yes. I would.

CHAIRMAN MELIUS: Please identify yourself.

MS. EATON: This is Clarissa Eaton again.

CHAIRMAN MELIUS: Okay.

MS. EATON: I don't have a question. I do have a comment. I feel that this investigation has been very -- it's just not set well with us at all, and the reason being is we went from no records to no Site

Profile. The Site Profile was performed in the same year that my petition qualified.

The company had admitted that they had no records in a document that they had checked. And then somehow a few years later Westinghouse I'm assuming since they are the potentially responsible party that is actually doing the decommissioning at the site today had provided them some documents, to wit, I believe the NIOSH and the SC&A group have been basing their extrapolations and everything off of.

My concern, my most recent concern, is with the fact that Westinghouse, being the administrator, just back in 2011, they were sanctioned by the Nuclear Regulatory Commission for inaccurately supplying surveys about the uranium-235. And they were found to significantly exceed the amounts reported initially to the NRC. With that same violation, they were also cited with improperly storing the uranium in containers

that were emitting 300,000 per minute. And also they had deactivated the monitoring systems.

This company is obviously very reckless in their housekeeping, even today. My concern is that the workers are still being exposed and no one is protecting them. And then you add on top of the fact that they are supplying inaccurate information to our regulators that we pay to watch out for our safety as not only a workplace but a nation.

And this isn't the first time that they were sanctioned for safety issues. They had inadvertently shipped some fuel pellets to Canada twice, metal alloys. This company that has supplied you with these records should be deemed unreliable.

I would submit to the Board that they reconsider and possibly reverse their decision. There are too many things here that aren't adding up. And everything that does add up stinks to high heaven, administratively

speaking.

[Identifying information redacted] also was -- excuse me. Westinghouse had also submitted a urinalysis that my petitioner [identifying information redacted] said he never participated in. No recourse was ever done on that end.

The data gaps, the unreliable vendors, the unreliable supplier with information like Westinghouse today is very troublesome to the fact that -- are we getting -- do we have truthful information?

I mean, these people went to work and signed a privacy agreement. And, for whatever reason, it has protected the company. And I just don't feel that these workers that were exposed that have these covered cancers are getting a fair shake in this investigation. And I beg and plead the Board to reconsider and to check what I am telling you about the sanctions from the Nuclear Regulatory Commission.

The most recent event, 48048, of June 26, 2012, again they significantly exceeded levels allowed in containers.

I just don't feel that this whole process has been claimant-friendly. We have too many bad things that have added up against these workers. And, for whatever it is worth, I am very disappointed.

Thank you.

CHAIRMAN MELIUS: Thank you.

Anybody else on the phone wish to make public comments?

(No response.)

CHAIRMAN MELIUS: Okay. Hearing no one else, anybody else in the audience wish to make public comments? Yes?

MS. CARROLL: Hello. My name is Stephanie Carroll. And I am an authorized rep for many Rocky Flats workers, also some workers from Nevada Test Site. Thank you for allowing me to speak. I wanted to give the workers a chance yesterday.

I usually order a copy of the Department of Labor file for all of my employees or all of my clients when I take them on. And none of my clients are getting dose reconstructions, and nobody is affected by the SEC at this time because I specialize in chronic beryllium disease. So all of my work for the SEC is not for profit or anything.

I am submitting a couple of documents that I have found. I have a lot of IH, industrial hygiene processing reports. I just gave one to Terrie that had thorium listed. But I could go through my files and find a lot more that have thorium listed, and I plan on presenting those to you in the future and getting to work a lot harder on this and looking for more documents for you because I really believe that the most important aspect of this is the data integrity. And we need to know that there were no intentions on the part of the

contractors or on the contractors to falsify any records or destroy records for profit.

I noticed that it just seems that some of the agencies have this attitude towards the workers that perhaps they could be not telling the truth because there is money to be made if they can apply for the program and get approved. There is $150,000 at stake.

There is something called in the EEOICPA Program probative evidence. If you can submit evidence that is produced or documented before 2000, it's probative evidence. The Department of Labor will accept it because they assume that you are not committing fraud to get $150,000 if you are a worker.

So I just think that that's amazing that they look at workers as being able to commit fraud for 150,000, but nobody looks at the contractors and wonders, are they changing documents to get these absolutely huge fees and bonuses for closing up Rocky

Flats 40-50 years early. And we really, really need to take into account, was there any motivation to change the documents. I don't want to say anything else about that, but let's just think about that.

I have a TLD detail report from 1994 with handwritten calculations on it. So they have gone beyond what had been printed out and put in new calculations. I have an external dose-equivalent data handwritten original report with calculations not added to the final report.

I have a nasal smear report on the same day, the same employee with two different decision levels and counts. And this was -- I also have a failure to submit urine samples. And I have got that through most of my files where employees would not show up for their urine samples and over and over and over again. And a month later, they would come back and get their urine sample, two months later another failure to submit on the same

employee.

I also, since I do chronic beryllium disease, I look at a lot of pulmonary function tests. And I noticed at the medical office at Rocky Flats, that they would have different measurements for the pulmonary function test over and over and over again for all of my clients. And we're talking over and over and over again. It looks like a policy of changing the pulmonary function test so that I guess the workers could keep using the respirators and keep doing respirator work.

And I've got those. I will show them to you. I just didn't bring them to this meeting.

So I have these, and I also have an affidavit from one of my workers that has already been approved for his money. He has no financial gain from writing this affidavit. He gained his 150,000 for chronic beryllium disease after an 11-year -- it was a 10-year

fight. He actually was diagnosed in 2007 by an on-site doctor, but it took him until 2011 to get approved. I am just going to read part of it into the record.

"Related to my radiological work, I would like to discuss my tritium work. I guarantee you there were releases of that material. Working with that stuff was one spooky job.

"I took numerous urine analysis tests and never received or had access to any results. After working with tritium, we would take the UA test at the medical building. The test materials were put in Mason jars and later into open top plastic bottles. Neither of these bottle types was tamper-proof, to the best of my knowledge. These tests were called six-packs by us workers. If a worker did not fill the test container to the necessary level, the medical staff would sometimes top it off with tap water. This practice would clearly negatively affect the quality and

consistency of the test.

"Lastly, I would like to add, on occasion I witnessed coworkers would take their dosimeter badges off their bodies and put them on the fence and then go back into hot areas to continue working."

And, remember, he gets no financial gain if an SEC is passed. So I just wanted to turn these in to you and thank you so much for being here. And I just wish that we had an advisory board for the Department of Labor because it would really help to have some place to go. Please, if there was any way we could get that to happen, it would be wonderful.

And, lastly, I would like to add great appreciation to Terrie Barrie and [identifying information redacted] for all the work that they put in, you know, another two people that they don't get any financial gain from this. And they put in hours and hours of work and dedication and love into this. And I

just want to thank them for all their work.

So thank you. And thank you to you.

CHAIRMAN MELIUS: Thanks. Okay.

Anybody else in the room wish to make public comments?

(No response.)

CHAIRMAN MELIUS: Okay. If not, thank you for attending. And we will be following up. And we will reconvene tomorrow morning around 8:30.

(Whereupon, the above-entitled matter went off the record at 6:26 p.m.)

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