The following pages have had redactions made to them and are identified with yellow highlights and the abbreviation 'piid*' which stands for *'personally identifying information deleted'*.

Page 84-85, Page 89, Page 91, Page 108, Pages 115-116, Pages 122-123

The following pages have had redactions made to them and are identified with yellow highlights and the abbreviation 'cfid*' which stands for *'commercial/financial information deleted'*.

Pages 146-147

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

convenes the

TWENTY-SEVENTH MEETING

ADVISORY BOARD ON

RADIATION AND WORKER HEALTH

EXECUTIVE SESSION

The verbatim transcript of the Meeting of the Advisory Board on Radiation and Worker Health held at the DoubleTree Club Hotel, 720 Las Flores Road, Livermore, California, on December 13, 2004.

C O N T E N T S

December 13, 2004

TRANSCRIPT LEGEND

The following transcript contains quoted material. Such material is reproduced as read or spoken.

In the following transcript: a dash (--) indicates an unintentional or purposeful interruption of a sentence. An ellipsis (. . .) indicates halting speech or an unfinished sentence in dialogue or omission(s) of word(s) when reading written material.

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

-- (phonetically) indicates a phonetic spelling of the word if no confirmation of the correct spelling is available.

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

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

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

In the following transcript (off microphone) refers to microphone malfunction or speaker's neglect to depress "on" button.

P A R T I C I P A N T S

(By Group, in Alphabetical Order)

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AGENDA SPEAKERS

(in order of appearance)

Dr. John Mauro, SC&A

STAFF/VENDORS

CORI HOMER, Committee Management Specialist, NIOSH
STEVEN RAY GREEN, Certified Merit Court Reporter

AUDIENCE PARTICIPANTS

BEHLING, HANS, SC&A
FITZGERALD, JOE, SC&A
HALLMARK, SHELBY, LABOR
HINNEFELD, STEVE, NIOSH
HOMOKI-TITUS, LIZ, HHS
KATZ, TED, NIOSH
KOTSCH, JEFF, LABOR
MCGOLERICK, ROB, HHS
NESVET, JIM, LABOR
NETON, JIM, NIOSH
NUGENT, MARIAN, U.S. GOV'T ACCOUNTABILITY OFFICE
PORTER, DIANE, NIOSH

P R O C E E D I N G S

(1:00 p.m.)

DR. ZIEMER: We're on the record for the closed session. For the court reporter, if you would, state your name and your affiliation and we'll just send the mike on around.

MS. HOMOKI-TITUS: Okay. Liz Homoki-Titus with Health and Human Services.

MR. MCGOLERICK: Robert McGolerick with Health and Human Services.

MR. NESVET: Jim Nesvet, Office of the Solicitor, Department of Labor.

MR. HALLMARK: Shelby Hallmark, Labor.

MR. KATZ: Ted Katz, NIOSH.

MR. KOTSCH: Jeff Kotsch, Labor.

UNIDENTIFIED: Rob (unintelligible), NIOSH.

MS. NUGENT: Marian Nugent with the U.S. Government Accountability Office.

MR. HINNEFELD: Steve Hinnefeld with NIOSH.

MS. PORTER: I'm Diane Porter with NIOSH.

MR. FITZGERALD: I'm Joe Fitzgerald with the SC&A team.

DR. MAURO: John Mauro, SC&A.

DR. BEHLING: Hans Behling, SC&A.

DR. NETON: Jim Neton with NIOSH.

DR. ZIEMER: Thank you very much. Now I want to make sure that everybody at the table has the various materials that we need. First of all, you should have a booklet from SC&A which is the compilation of their findings. It's a plain-covered booklet. Inside it says audit findings, task four, first 20 review cases. That material that's in the binder should be replaced, I understand, by something that looks the same but it's simply stapled together. So --

MS. MUNN: Everything that's in the binder?

DR. ZIEMER: No, the first packet in the binder that --

MS. MUNN: Thank you.

DR. ZIEMER: -- is kind of the summary. What do we want to do with those, pull the old ones out -- is that correct, John or Cori?

MS. HOMER: Pull them out.

DR. ZIEMER: And are we giving these old ones to somebody?

MS. HOMER: You can give them to me.

DR. ZIEMER: Okay. Just pull out the old one and Cori will collect those so that we have accounted for them. And that should be

replaced with this updated material that looks the same. Now does everybody have -- or anyone that didn't seem to get the new insert? This is a separate, plain-covered folder. Pull out the first section, replace it -- everybody okay on that?

Then in addition there's a packet called NIOSH preliminary comments on SCA review of dose reconstructions, so you should have that. And then in connection with that, you have the secret decoding sheet, which is the number -- the case number, one through 20, and a cross-referenced NIOSH ID so you can cross-reference that with the cases that you actually reviewed. That sheet with those two sets of numbers needs to be turned in at the end of the session today because this is -- this is the secret code, relates these numbers to the real case numbers. Okay? Anyone who lacks that or the NIOSH document?

Now one of the questions that has arisen is the extent to which the Board wishes to review each case individually versus having an overview and kind of a summary report at the front end. I believe that SC&A felt that it might be helpful

just to do an overview summary. Is that correct, John or Hans? But -- but they're willing to do either. One of the concerns was if we go through each case, case by case, that we may run out of time. But I leave it to the Board. Do you wish to step through the cases individually at the front end, or would you rather hear the overview first?

Okay -- comment, comment, comment. Okay, Jim?

DR. MELIUS: I would like to hear the overview first. I guess to say this -- I mean it would be helpful in future meetings, if we're going to be doing this, is to have both this summary and the NIOSH report or response, whatever you want to call it, ahead of time 'cause --

DR. ZIEMER: Right.

DR. MELIUS: So I'm a little bit at a loss as to how we proceed here 'cause we may have to go into some individual case findings. But I think it would be helpful to hear an overview first and then move on from there.

DR. ZIEMER: Let's get feedback from others on that, too. Wanda, are you addressing that issue, as well?

MS. MUNN: Yeah. It would be preferable from my

point of view to have the overview. As a matter of fact, there is some question in my mind whether an individual case report is in fact what we wanted to do. It had been my understanding that that's why we broke the case load up into smaller bits, so that each one of us could be familiar with what had transpired with a given number of cases, rather than having to devote our energies to the entire group. I'd prefer the overview.

DR. ZIEMER: Tony?

DR. ANDRADE: I also would prefer the overview. And during the overview, if whoever's prepared to give that could tell us if any of the discrepancies they've found were such that any of the POC's were pushed close to .5.

DR. ZIEMER: Let -- let me see if -- we've heard from three people that they'd like an overview approach to start with, and we can always go back and look at individual cases. What about the rest of you?

(Pause)

DR. ZIEMER: There seems to be a consensus that we proceed with the overview.

MS. HOMOKI-TITUS: I just have a question for the

Board. Are you all going to be interested in providing this document publicly when you have this discussion publicly? 'Cause I'll be more than happy to start redacting it so that we can get copies for the public discussion. Yes? Is that all right?

DR. ZIEMER: I'm not sure we even know. I've not even seen what's in this document, so --

DR. MELIUS: Can you ask that again in about an hour?

MS. HOMOKI-TITUS: Sure.

DR. MELIUS: Yeah, I think that'd be -- 'cause I'd hate to have you do all that work and -- you know, it may...

DR. ZIEMER: Then John, if you would kick it off, or however you want to proceed.

(Pause)

DR. MAURO: (Off microphone) I'd like to start off by sort of setting -- setting the table, so to speak, which I think would be helpful. Are we live here?

(Whereupon, difficulties with microphones were addressed.)

DR. MAURO: Thank you. I'm going to take my time a little bit up front to set the table. I think it's important to set context.

We received our set of cases, and -- and then we put together a process that we discussed I believe at our last meeting whereby the process we had elected to do was to -- after a small core group of SC&A elite people reviewed the 20 cases, we distributed the cases amongst our what I call case managers. We had about seven case managers.

Each case manager was asked to review each case -- and I'm trying to get to the next slide, but that doesn't seem to be working for me.

DR. NETON: Push the red button on top.

DR. MAURO: The red button?

DR. NETON: Make sure that's off. Make sure the red button's off, then pull the trigger.

DR. MAURO: Oh, I've got it. Okay. There we go.

In effect, this is our contract regarding task four. We are to -- and it's specifically for basic review, so we were asked to perform a basic review of 20 cases, and this is our checklist of criteria. It's -- I'm not going to go through it in detail, but one of the -- from this morning's discussion when we considered matters of scope, how much are we doing, did we do too much, did we do too

little, our marching orders were in effect delineated based on this statement of work. And then of course the judgment becomes, within the context of those marching orders, do you folks feel that we in fact did accomplish for each case these line items that we were asked to examine, and of course did we go into enough depth. So -- but these were the marching orders given to the seven case managers.

We went through the review cycle. Each of us, quite frankly, had to come up to speed. Namely, we had to review not only the -- the file that was provided to us, the disk, the CD with -- with the -- with all of the supporting material, but of course in -- in just about all cases we also had to review the site profile that stood behind it. Now on some cases the site profile review was well under way, if not completed, when we began our work. In other cases, it was not -- it had not begun. So in effect, to a certain degree, a mini site profile review was performed for each case, to the extent that we could.

Quite frankly, I felt that except for a couple of instances, we were able to perform what I

considered to be an effective review in spite of the fact that the site profile review had not been completed. I'm going to point out a couple of exceptions, and one of them is Savannah River, when we get to that. We'll move on.

MR. GRIFFON: John, going back to that last slide, any reason for the highlighted ones? Were they (unintelligible) --

DR. MAURO: Good question. I did not highlight those. The -- the edi-- the -- I -- no. Okay. Given that mandate that was previously shown, we in effect had three fundamental objectives when we got into this, is that -- you know, there's all the DOE data that's out there that was provided as part of the record. And of course there is the CATI interview that we had. And so our starting point was okay, let's take a look at the dose reconstruction report. And in effect what we really asked ourselves was the input file that's used as IREP that's in the back of every -- I don't know if you folks have all had a chance to look at some of these dose reconstruction reports. The very back of every one of them has the

input file that is used for the dose recon-- for the IREP line. So the way we visualized our mission was to determine whether or not the numbers that were in the table that was used as input were in fact valid scien-- in fact, the two big issues are scientifically valid/claimant favorable, and compatible and consistent with the -- the records that were sup-- that are behind them, namely the DOE records, the CATI interview.

We also asked ourselves did they follow their own procedures. By the way, an interesting side of this is that while this work was going on, simultaneously we were reviewing the procedures. So in a funny way the -- though we've broken up our program into effectively three task areas, task one being the site profile review, task three -- we're going to jump over two; two is -- really is a record-keeping so that's really not something we need to talk about right now. Task three is the procedures. There's a stack of about 30 procedures that are what I call generic procedures that have universal applicability to all dose reconstructions. And then of course

task four, which is the actual review of the dose reconstructions.

Well, they really all come together when you're performing a dose reconstruction review, and you need to be familiar with all parts of the process. Namely, you need to be familiar with the procedures. You need to -- that -- that were used. You need to be familiar with the site profile in order for you to perform an effective review of the actual individual cases.

Now what we tried to do is convince ourselves that we understood each line item input that was -- the input to IREP, each dose calc-- each line item dose and its uncertainty, and the -- and the scientif-- scientific validity of the approach used to come to that number, and we try to duplicate that number ourselves -- or as many of them as we felt we needed to duplicate to convince ourselves that we understood what was done by -- by NIOSH and its contractors, and that was essential and within the context of the records, the DOE records, the CATI, the procedures. And also places where there was -- certain technical judgments had to be made

where the analyst had to -- where there was no cookbook form to follow but where he had to use some scientific judgment, and whether or not that judgment is valid. So this sort -- as -- was -- this is how we came out of the gate. Now --

DR. ROESSLER: Can we have a question on that slide? Could we go back to that slide?

(Pause)

DR. ROESSLER: My question deals with your note, and I'm not sure that -- I'm not clear on the -- how you evaluate this with regard to the POC, and I think Tony had a question earlier --

DR. MAURO: Oh, yeah, it's very important. I'm sorry to interrupt.

DR. ROESSLER: Yeah. Okay, my question is --

DR. MAURO: We did not.

DR. ROESSLER: Well, when -- in our group, when we got the three reports, one of them did show that your team had compared the POC that had been developed, compared to the one that your team member developed. Another case, the POC that your team member had developed was not given, but during the discussion this was brought up quite a bit. You know, this would

affect the POC. You know, I just want a clarification on just how does the POC come into play as you're doing this.

DR. MAURO: It should not have. Our mandate is not to make a statement regarding the POC. Our statement is simply was a good job done in doing the dose reconstruction, scientifically robust and claimant-favorable when necessary, when appropriate. We did not and we should not have -- there should not be any words in our report anywhere where we make a statement regarding the significance of our dose findings with respect to Probability of Causation. If --

MR. GRIFFON: John --

DR. MAURO: -- there's words in there to that effect, they really should not be there.

MR. GRIFFON: Well, I just want to point back to our scope here, part C, number two, the basic review. (Reading) Verify dose calculations are appropriate for purposes of determination of POC.

DR. MAURO: Right.

MR. GRIFFON: So you -- it's a -- I mean it's a -- it has to come up in some way, I believe.

DR. MAURO: Yes. Within the conte-- within the context of what we're trying to accomplish and the -- the --

MR. GRIFFON: Right.

DR. MAURO: -- reconstruct doses for the purpose of using as input into the POC calculation, yes, that's within our mandate. So that, for example, if -- if some simplifying assumption, efficiency assumption is made -- okay? -- we did look at that efficiency assumption as being reasonable, given -- give the fact that the -- our -- the intent is eventually to run a POC calculation, but we did not make a judgment whether or not the -- we -- we would -- we would make an assumption whether or not we felt the -- that number was reasonable, scientifically defensible, claimant-favorable, consistent with the CATI, consistent with the records, consistent with the procedures that were -- but we di-- as they're designed to be used to -- to con-- to reconstruct doses that eventually will be used to run a POC. But we never evaluated whether or not -- if we found a problem with a number, we did not take a position on whether or not that would have a

significant effect or not on the POC. That was outside of our mandate, cle-- at least within our understanding of our mandate as delineated in the previous slide. So we -- we should not have gone anywhere near any statement saying the degree to which it might affect the POC.

DR. ROESSLER: Well, you brought up another word, and that's "efficiency". And this is kind of a general question and I don't know the answer to it. When NIOSH employed the efficiency process to a case, and then you knew that and you knew based on information that you had, did you also then apply the efficiency process or take that into consideration and let's say be less critical of detail on that particular case because they did employ the efficiency process?

DR. MAURO: Absolutely. Perfect example is there are two Bethlehem Steel cases which were granted -- the claim was granted, and the calculation of dose was limited to a very limited number of pathways. In other words, they would look simply at the inhalation dose to the lung and stop at that point and not consider the external exposure from -- from -- from the source that the -- the -- so when we -- when we

were reviewing -- and you'll see a slide here, in fact I think it's the fifth -- the fifth case we reviewed -- when it was self-evident that there really was no need to go any further in terms of the rigor and level of analysis, we -- we would re-- review the position taken by NIOSH: Hey, listen, we stopped at this point because there really was no need. The only -- the only degree that we -- we -- we reviewed said do we agree with the inhalation dose, are there any problems with the inhalation dose. We agree that, given this inhalation dose, you know -- you know, the -- and the fact that they stopped the -- and the -- the dose at the point that they did.

Let's -- for example, let's say they -- they ran their calculations, limited it to the inhalation dose from -- of uranium and -- and came up with a PC of greater than .5 and stopped at that point, we did not question that. We just convinced ourselves that yes, they -- they evalua-- and -- and they evaluated the airborne dust loading correctly using the data -- or incorrectly, if we were critical. They evaluated the inhalation dose correctly,

and we reproduced the dose to the organ of concern by running IMBA. So in effect, what we did is if it turns out that the -- the -- the analysis was NIOSH needed to first try to reconstruct what the airborne dust loading was for the worker, what the exposure duration/inhalation rate was for the worker, what the organ -- the dose to the organ was to the worker, and we would check each one of those steps and the back-up documentation for it that would be contained in all of the references that were cited in the dose reconstruction report, and also in the site profiles. To the extent that we could come to the point where we felt that they reconstructed the dose to the org-- to the lung correctly, and on that basis we agreed with their dose, we did not -- and then we -- we stopped at that point.

We did not ask whether or not they should have looked at some external dose. We took it on faith, on face value, that they got a PC of greater than .5 'cause we never ran the PC calculation to see if in fact that's true. Okay? I think that's important. So -- so we don't make any

statements regarding whether or not they converted their dose to PC correctly or not. Okay?

DR. ZIEMER: Jim?

DR. MELIUS: Yeah, I have a related question. That's how do you know from looking at the file that that's what they did? Or -- and there may be other instances at the other end of the spectrum where there's very low exposures and maybe they don't do as precise a job or -- I'm not sure -- is there some notation in the file or some no-- note or...

DR. MAURO: Yeah, the dose reconstruction report makes it very clear: We stopped at this point because there was no need to go on.

DR. MELIUS: Okay.

DR. MAURO: The words -- every one where they stopped, they say that. In fact -- yes.

DR. MELIUS: Okay.

DR. ANDRADE: John, just one more quick question, same slide -- but you don't have to go back to it, at the very bottom of your note -- and by the way, I appreciate the clarification about the fact that you all are not commenting on POC. But you did say that for select

discrepancies SC&A did quantify the resultant impact on the assigned radiation organ dose.

DR. MAURO: Yes.

DR. ANDRADE: Okay. I guess throughout your presentation if you could give an example of that --

DR. MAURO: Oh, yeah.

DR. ANDRADE: -- I'd -- I'd appreciate that.

DR. MAURO: Well, I'll give you one -- right -- well, you'll see -- we broke the work up -- I took on all the AWEs, there were five of them, and the other -- the other 15 were distributed amongst the other six members of the team. But the person that was responsible for overseeing the QA of everything is sitting at the back of the room is Hans Behling, so he's intimately familiar with everything 'cause we did go through a QC process.

Now I'll give you an example of one case where -- for example, Blockson Chemical Company -- in fact, it's the first one -- where a person had a prostate cancer, and we reproduced the doses that were -- that are in the table in the back of the dose reconstruction report and -- for every pathway, from inhalation, external

exposure, resuspen-- what-- resuspension, residual radioactivity, all of the pathway -- X-ray, we reproduced every number, or we tried to reproduce every number and get to the point where we say we agree that that -- that -- that dose is correct, or we believe there's an error in that dose. Turns out in Blockson you'll see major errors. We believe there -- for example, we -- we -- one of the pathways is that the worker is standing next to a drum filled with natural uranium -- yellowcake -- and there's a dose calculation that's -- an estimate is made of the dose to the organ of concern from a worker who'd be standing next to that, and there's a dose presented. We reran -- we ran MicroShield and MCNP to see if we could duplicate their doses and convince ourselves that -- the numbers that were correct, so -- so yes, so we -- we ran the calculation, and it turns out that we came up with a dose that's five times higher than the dose that was reported in the report.

We did that for everything. That is every dose that's reported, we attempted to duplicate it. And when we could not duplicate it, we try to

find out what's wrong. In many cases we -- and on more than one occasion I would actually call up some of the folks at NIOSH, say listen, I'm having a real hard time matching an inhalation dose using IMBA. And to be honest, when we first started, I'd never used IMBA before, so it -- I was concerned. I -- listen, I thought I understood what I was doing here. I ran IMBA and I'm missing your number by a very large amount and maybe I'm doing something stupid; help me out. And they did, they helped me out. We walked through the case. In some cases, I was doing it wrong. In other case I uncovered some errors. So we're at the point now where our team is comfortable with running IMBA. Our team is very comfortable running any of the external dosimetry codes because we've been doing that for a long time. But IMBA is the new player on the block for many of us -- except for Joyce Lipstein*.

Joyce -- Joyce is our internal dosimetrist and she -- in fact, she runs a different code than IMBA. So what we would do is I would run IMBA, I'd get a number, and then I'd call Joy-- Joyce, run this scenario for me -- or I'd e-mail her -

- and then she'd run it and -- and see if I got the same result. So we got to the point where we had lots of ways of cross-checking. But we did try to match every number in the -- in these tables at the back. And -- and when we couldn't match them, we tried to figure out why we can't match them. Is it something that we don't understand, or is there possibly an error.

If you -- in attempting to capture on one slide -- well, really two slides -- this is the overview slide that is -- it -- it covers two pages. You'll see that -- and we'll go back again. It's a two-page slide that is the overview slide.

Okay. What we found is that for the 20 cases, almost all of them had some significant problems, except for perhaps five. You'll see that the ones that were -- where we basically said look, no problem, say no concern. Let's see, on this page there were some significant problems, in our opinion from our review, on all -- the first 12 and the -- on this page, so we only found one, two, three, four that we say we -- we agree with, for all intents and purposes,

entirely. The other 16 we have varying degrees of criticism or concern -- maybe that's a better word.

And in some cases we consider -- for example, the first two, Blockson and Huntington, I did those mys-- I did -- in fact, I did the first five, found some what I considered to be major errors, and what I believe to be major breakdown in quality. Okay? In those -- in those cases, something was wrong. I think it's an important finding.

Other cases we found that -- and Hans'll talk a lot more about this. The problem was more that the author of the dose reconstruction got confused in following the procedures. As I mentioned, one of the things we were doing, while we were doing this, is reviewing the procedures. Now it turns out -- and Hans'll speak to this -- the procedures are very, very complex and it's no easy task to figure out what procedure applies under what circumstance. You have to go through -- oh, perhaps a foot of material to start to put the puzzle together of oh, okay, this is how we're supposed to reconstruct the doses associated with external exposures when

you're below -- below the limits of detection at Savannah River in this time period. It's -- and it's -- so it's very di-- it was very di-- in my opinion, it was very difficult for the dose reconstructor to fully understand the procedures and then follow them. So we found a lot of what I would say errors where there -- they did not follow their own procedures. And I think the reason for that is there are some problems with the procedures, and Hans will speak to -- speak to that.

I'm trying to -- I'm trying to capture -- 'cause there's so much detail when -- we could -- we could spend an hour on each case. We -- we -- for -- a good way to group it is for the AWEs, there -- a generic protocol was set forward. Blockson -- Blockson -- in Blockson and Huntington, for example, the whole thing is based on the site profile, so we went in and looked at the site profile. And I have to say that I found major errors that went both ways. Some of them resulted in an over-estimate of the dose by 4,000 -- from an internal dose. Other errors underestimated -- other pathways underestimated the dose by perhaps a factor of

five or a factor of ten. I believe that -- and that would be for those first two.

Then -- of course the Bethlehem Steel, we could probably put that off -- the next three are Bethlehem Steel. Well, you've seen the Bethlehem Steel critique. We've got -- we've got a concern with the -- the fundamental approach 'cause all of the doses for Bethlehem Steel come right out of the -- the site profile. So there is -- there is no data. I mean for -- for the first five, there are no data on those workers. Everything comes out of the site profile, so the site profile's the whole ball game. And so we review those site -- so I -- I did a review of Blockson and Huntington. Of course we know that Joe and his crew did a review of -- of Bethlehem Steel. And basically the criticisms that -- that we have of Bethlehem Steel are virtually identical to the criticisms that we put in our report on Bethlehem Steel, and perhaps we'd be better off holding that off until tomorrow when we discuss Bethlehem Steel.

So then -- then when we move on and we move into the -- the actual cases where the majority of the

ex-- of the exposures were not -- were not based on the site profile but were based partially on the site profile and based on actual DOE data. And in those cases, to try to give you a big picture on it, if you break it out between the kinds of problems we encountered with external dosimetry and the kinds of problems we -- we observed regarding internal dosimetry, they came to -- external dosimetry, it was clear that the authors, in many cases, were confused; that -- that weren't quite sure how to reconstruct the external doses based on the procedures that were laid out before them and I'd like Hans to speak to the -- some of the conc-- some of the problems we encountered in -- in the fact that it did not do a -- use a consistent approach or the correct approach.

There was -- another category has to do with the X-ray exposures. We found that though there was a very nice procedure written by Ron Katherine* to reconstruct the doses from X-rays, we found that it was not used consistently. An example would be the -- the way in which it's supposed to work is if -- if -- let's say the organ of

concern is the bladder. Okay? Now there's a very nice procedure that allows you to determine what the dose is to the bladder from a chest X-ray, and it's usually about one one -- let -- about 1/100th to 1/500th of the dose to the chest. But we found that in some cases they simply used the dose to the chest as if it was the dose to the bladder because it was claimant-favorable.

Now in my opinion, I don't think that should have been done. In other words, someone could say well, that's claimant-favorable. But it seems if you have a procedure -- if you have a procedure that says this is how you calculate your dose to the bladder, you follow that procedure. And another problem we ran into with regard to the X-ray was that if you go before 1960, the procedure says -- prior to 1960 photofluoroscopy was commonly used as opposed to just traditional chest X-rays. And in many cases -- not all cases, but in many cases the -- the reconstructed dose ignored that and never gave -- and that's important because I think the doses from the photofluoroscopy are at least ten times greater

per exposure, if not more, than the X-ray. So what happens is there -- we -- we found lots of inconsistency. We found errors, calculational errors, sometimes major errors. We found inconsistencies in the way in which the external doses were reconstructed from either employing the efficiency procedures that were laid out -- and there's a big pile of procedures that -- that have been published. Or we found errors in going from the records that were provided by DOE and translating those records into the input parameters into IREP.

I'm trying to think of other broad categories of error -- in fact, I'd like to ask Hans to come up and help me out. He -- quite frankly, he's a lot more familiar, since he checked everything. And I'm trying to capture a sense of where the problems are, but I -- we do feel strongly that there are some quality problems in -- across the board. We only found four or five that I would say were -- had no problems. The rest had problems that in some cases were -- showed a very -- a complete breakdown in quality.

I'm not going to say, though, that there will be one

reversal. I cannot say, standing here before you, that any of the -- if we were to redo any of these doses of -- and -- from scratch, replace all the input parameters for -- input to IREP, then run IREP, whether we would go from a non-compensable to a compensable. We're not in a position to say that. All we're going -- all we did in our report was point out places where there were some minor problems and some major problems in the way in which the dose reconstructions were performed.

Hans, I -- I know you -- you may want to add something. I tried to do something in a -- in an overview.

DR. BEHLING: If I may, I guess I wasn't really prepared to do a -- an abridged version. I was fully prepared to do all 15 of the non-AWE cases, and I also was in a position to perhaps take select number of the 15 and then go through each of those with some level of detail. But at the pleasure of the Advisory Board, we're going to try to obviously avoid even talking about a single individual case and just summarily talk about some of our findings.

But I just want to go over a couple of things that

were just brought out a few minutes ago by different members of the advisory committee as to what it is that we did. In fact, one of the things that we did do was to not necessarily address the magnitude of an error. If there was an error which we felt was either a failure to adhere to a procedure or protocol, or if it was a nominal arithmetic error, I didn't really care too much if it was a millirem that slipped a decimal point or rem, but the fact that the error existed was the key issue. And in some instances, while we weren't concerned about the POC, we wanted to at least identify the magnitude of the potential error in some cases where the error could have translated into something as much as ten, even 15 rem into an organ dose. So as on a footnote stated in one of the slides that John previously reported, SC&A did quantify the resultant impact of the assigned radiation organ doses in select cases, and that was strictly to give you some understanding as to what potential impact such an error might have made on the POC. And without necessary -- going through any speculation, I believe that there are at least

a couple of instances where the POC as calculated by NIOSH was sufficiently high, in the 40's, where perhaps a dose of ten rem could very easily translate into a compensable case. The other issue that I wanted to briefly address that was more or -- more or less generic are a couple of the others -- one of the things that I'm not sure I knew what the answer was in response to a question raised by -- are the members really familiar with the dose reconstruction report as we received it in behalf of the 20 claims. Now I do have one claim that I selected which is very typical of the other 15 that I looked at that I have for distribution with the Privacy Act issues stricken, and I was hoping to be able to actually distribute that dose reconstruction report to the Board here so that you can sort of get an understanding of what it is that we started out with, what is the information that we had when we started our dose reconstruction report. And quite honestly, in one of the slides maybe I'll have a chance to show it, I do have some concerns about the report itself in terms of the brevity and -- and the limited

information that's available. And for us to do a dose reconstruction -- and as stated in one of the footnote, we did a 100 percent verification of each and every entry, so that when you look at a dose reconstruction report -- and the one that I have with me here as about 300 dose entries, so that means verifying 300 entries, and they're not easy to verify because what you get in the dose reconstruction report as Attachment One is nothing more than a citation of numbers. You have no idea whether entry one through 15 was a dose that was -- that reflects an actual empirical dosimeter dose, whether it's a missing dose, whether it's a internal dose, you have no idea. And so our starting point when we looked at these dose reconstruction was to first identify which each -- what each of those entries represented in terms of the typical categories that one looked for. And if it's -- if it's the Board's approval, I would like to distribute one of those claims and the dose reconstruction report associated with that claims (sic) to the -- each of the members so you can have an understanding of how difficult it is and how

time-consuming it is to -- to duplicate and verify each and every single number, because the -- the report itself, in many instances, confines itself to a one or two-sentence statement about how these numbers were derived, without specifying the -- necessarily the procedure that was used or the parameters that modified the particular dose reconstruction. And so you essentially go through a blind process that starts out with numbers that you don't really fully understand, and you have to now identify the procedures that was used, the parameters that was used. You then check the numbers and you determine whether or not there is a consensus among the people in our group whether that was a correct number to use.

While Dr. Ziemer was out I'd mentioned to the Board that I have a particular dose reconstruction report that I had sanitized with regard to the Privacy Act that I would -- with your permission, of course -- distribute among the members so that the members have an understanding of what it is that we start out with, because that would answer an awful lot of questions about the complexity and the time

that is required for us to duplicate that dose reconstruction and essentially define whether or not we agree with the findings. And if it's -- if it's with your approval, I would like to pass out this report.

DR. ZIEMER: Well, I've not -- I have no objection. Does the Board wish to see that?

(Affirmative responses)

DR. ZIEMER: While that's being passed out, could I ask a general question? There's a number of cases where you have identified actual apparently calculational errors?

DR. BEHLING: Yes. Yes, sir.

DR. ZIEMER: What I'd like to ask, and I haven't had a chance to read all of Jim Neton's stuff, are there some errors that have been identified that NIOSH agrees were calculational errors? I mean if it's simply an error --

DR. NETON: Yeah --

DR. ZIEMER: -- that somebody made, I assume you would look at that and say oh, yeah, we made an error and you would...

DR. NETON: Sure. There were several cases -- a number of cases -- I can't quantify exactly right now off the top of my head -- where

missed dose may have been inappropriately calculated. But you'll see in our comments that SC&A also made calculational errors, as well. And also there was a -- a reasonable misunderstanding of our procedures. I'll admit that they're complicated and complex, but they misunderstood to the point where they were stating that we were off by a factor of two in dose. If you looked on the IREP input sheet, it would appear under two different radiation categories as two separate doses. Those are listed as errors of factors of two. You'll see those kind of issues throughout the review process.

DR. BEHLING: Yeah, I need to make also a comment here with respond-- in response to what Dr. Neton just mentioned. The original report that you have with the 20 cases was in fact a draft report. And in fact, the slides that I would have shown you that correspond to this have been amended to some extent. So in agreement with what Dr. Neton just said, there were a couple of errors. We were in a very, very real rush to get that to you, and it was only when I actually summarized those particular cases that

I realized that those -- there were several cases that I personally did not necessarily have a -- an oversight role in it. And when I collated the data in each of those reports into a single page for the purpose of this presentation, I recognized there were a couple of errors and -- and it is in fact just a draft report. We knew it was a draft report. We also solicited comments from the members of the Board here, with the expectation that a final report will correct those errors. So yes, in fact if you compare the slides that you were given here, the abridged version, with the ones that are in our three-ring binder, you will see a few differences where in a couple of instances the numbers have changed, the explanations have changed, and in some cases even the yes or no -- is it claimant-favorable, is it scientifically valid, have gone from yes to no and no to yes in a couple of instances. And I also want to mention in context with the types of errors, we were not partial in terms of what we considered an error. There were many instances where we found a -- in a dose assignment that we didn't agree with, even

though it was highly claimant-favorable, most notably among the occupational medical exposures where again -- as John already pointed out -- was a convention approach of saying oh, let's go with the highest organ dose and -- and call it claimant-favorable. Well, I don't really believe that should be done because claimant-favorability is really based on instances, or it should be used in instances where you don't have the data, when in doubt, when there is an absence of data, lean towards the claimants as -- as a gesture of -- of favorability. But when you, for instance, have an occupational medical dose and, as John mentioned, the target organ is the bladder or the testes or the rectum or the colon, why would you use another number that's -- doesn't reflect that -- that dose. And this was a consistent finding we have and in many instances this would say well, you're not claimant-favorable. No, I think we're interpreting the procedures as they should be, and that is when you have the information, use it. And claimant favorability is not designed to -- to misuse it or just to pretend you're

claimant-favorable when in fact, you know, the POC's never going to even approach 50 percent, use the real number. In fact, in some instances we believe that claimant favorability as it was being done may actually come to haunt you because in the event that a person -- let's say has a POC of 40 percent, and an error was done, and then among the 40 percent that was derived by NIOSH you were extremely generous or NIOSH was extremely generous, excessively generous with the dose, but then only to find out that a serious error was made that in -- when you compensate now for that error, puts you over 50 -- the percent level, would be likely that NIOSH would say well, wait a minute, we're not going to be as generous as we started out to, so let's have the original report back and we're going to have to withdraw that -- that claimant-favorable assumption about occupational radiation exposure or something else, and we're now going to have to accept the notion that we were more generous than we should have been. And I think -- those are the two --

DR. ZIEMER: Obviously we have already had cases --

DR. BEHLING: -- (unintelligible) --
DR. ZIEMER: -- like that I believe where the second cancer occurred --
DR. NETON: That's true.
DR. ZIEMER: -- so in a different process --
DR. NETON: I'd just like to comment on that, briefly. I think this is -- this is a situation where one needs to take into context the volume of the claims that we're processing. SC&A has laboriously reviewed 20 cases and in fact expended far more energy than we spent processing them in the first place. In that review it is true that we were claimant favorable, but actually that used -- the process in our dose reconstruction regulation that allows us to use worst-case assumptions to process claims in an efficient, timely manner to give the claimants an answer earlier than later. And in doing 6,000-plus cases that we've done, we don't have the luxury to sit and labor over every one. And when one generates spreadsheets that process these calculations, it is much more time-efficient to insert the highest organ dose. And yes, as a factor of a hundred, you're talking about .1 rem --

millirem versus ten millirem, we're not giving them 15 rem, I believe it's part and parcel to the efficiency process in getting claimants a timely answer to their dose reconstructions.

DR. BEHLING: I would like to make a comment to that effect, however. If you have a table and the table is the ultimate source for your information and the table says 83 millirem to the lungs for a chest X-ray for a certain time period, then on that same table two slots down you have the dose to the bladder, I don't perceive that as a efficiency process. You're going through the same motion. You're looking at the same table, but electing to use an 83 millirem dose to the lung when in fact the person in question has a bladder cancer. And you can't say oh, well, that saved us a step for -- for a few millirem which wouldn't make any difference. The truth is there on that same table is the exact dose you should use for the -- for the cancer in question.

And it's not a process of efficiency in this case. I certainly understand efficiency. If -- if it's likely that you're going to save a few hours of time to do, for instance, an internal dose

assessment based on urine data or -- and you realize it's not likely going to make much difference, you can default to a -- a high five for -- for Hanford or for -- for Savannah River or -- or the standards of reactor/non-reactor radionuclide inventory, I understand that. And that certainly will save you tremendous amounts of time. But when you have a table that gives you specific organ doses, and the organ in question is the bladder, why would you choose something other than the bladder? It makes no sense. It certainly isn't time-efficient.

MR. HINNEFELD: Just as a matter of explanation, whether something is efficient or not depends upon the process you're using to develop the dose reconstruction. So it's not a fact that a dose reconstructor will necessarily manually look at that table, pick the number off the table and write it on the IREP input sheet, but rather chooses a selection button and -- on a worksheet or a tool in a worksheet will then pull up a string of doses -- you know, he'll say from this year to this year, medical X-ray on a maximizing approach, and it will pull up a number and put it in the spreadsheet. So I

understand what you're saying. But in order to know whether the work process is efficient or not, or whether the decision was an efficiency process, you need to understand the work process that the dose reconstructor followed. And in fact, it was efficient. And at various times it's become -- it's -- the tools have been more refined so that it's a less grossly over-estimating efficiency, but the actual process was efficient to choose that, even though it doesn't seem like it by looking at the table. When the dose reconstruction was done, it was efficient to choose that number.

DR. ZIEMER: It's okay -- we're -- we're --

MR. HINNEFELD: Now I think we're probably qualified (unintelligible) --

DR. ZIEMER: -- (unintelligible) process where the end result is not going to change. I know that scientists get more bothered by this sort of thing, and this occurs -- I've read through all of the -- all of the dose reconstructions, and that occurs in a number of cases where a scientist will say that doesn't make sense when you -- you could have done it this way. But again, it doesn't affect the result.

DR. BEHLING: And chances are many of them don't. But I took a very different viewpoint --

DR. ZIEMER: No, I under-- I understand where you're coming from on it, and they've explained where they're coming from in terms of the approach to achieve the correct answer from a claim-- from a compensa-- compensation point of view as opposed to the sheer science of it.

DR. MELIUS: Could I --

DR. ZIEMER: Jim has a comment.

DR. MELIUS: Could I ask a question first? It's nothing to do with the point/counterpoint. I'm trying to understand the written reports, though. And -- and if somebody can clarify for me, I think I understand this. SCA developed these individual dose reconstruction reviews. There was conference calls that the individ-- the Board members, as assigned, participated in. You know, I did for -- for my four cases and so forth. Believe NIOSH staff also participated in those -- those conference calls.

DR. MAURO: They were physically at the meeting.

DR. MELIUS: Physically -- okay. So -- so they were at the meeting. Then the reports -- draft

reports, individual dose reconstruction review reports were written up and submitted to -- to the Board. I believe NIOSH received them at the same time. Okay. So the first opportunity for NIOSH to review these written reports as contained in this report that was handed to us today -- correct, Jim? Is that...

And if I'm looking at this report -- and I'm just going to pick one as an example here, case number two. I have the summary from SC&A and it looks like there were seven issues that -- that they -- they raised in their review. Okay? You -- NIOSH responded to two of those seven issues, I think -- if I understand this right. So is that -- I just -- sort of procedural process so what I want to know is is that saying yes, these other issues are -- not are they important, but are they legitimate, or did you have time to respond to everythi-- I'm just trying to understand what's --

DR. NETON: It's the latter, Dr. Melius. We -- we just didn't have time to digest 300 pages of information in the several weeks that we were allotted, and I think we tried to capture that in our last sentence here that these should not

be considered complete review but rather early comments on some issues that could be readily addressed. In some cases we recognized very quickly that there was a misunderstanding by SC&A of our approach. They made calculational errors. There's a difference of opinion on the use of ICRP versus ICRP-60 things --

DR. MELIUS: Uh-huh.

DR. NETON: -- so we commented on those as appropriate. But we're not willing to say that silence on those remaining issues implies that we agree with them at this point.

DR. MAURO: Could I -- by way of --

DR. NETON: It might. There are some issues that we -- we do agree with, but at this point we're not there yet.

DR. MELIUS: Okay.

DR. MAURO: There's a process issue I think that we really have not talked about. What you have before you -- and some of you have the full set. Paul, I think you have the full set. Jim, you have the full set you asked for. Right? So there -- other -- other folks have the full set.

All right. At the time we delivered that full set,

then we went forward and started to prepare our presentation. Now it's a very long presentation. We haven't really started yet, but we're trying to not do that 'cause it's going to be painful. I mean it's a long -- and now -- but what is useful, and I'm going to suggest this as part of -- as the process, is when you get to each case -- for example, here's Blockson. Okay? And everyone has the same format. This might be a -- a useful tool -- okay? -- to get through the process. When all is said and done, what -- what I -- for example, I did Blockson -- here -- here are the -- if I was to say on one table here's what I found out, I'm not going to go into the details now, and the next page goes on -- here are my concerns -- okay? -- and I list them, the concerns I have. Now if you want to know more about any of these concerns, you can certainly go into the report. But what would be very useful as -- by way of processes, is whether or not -- and I think -- I'm trying to think in terms of -- the -- what's the end of the process? I think the next step in the process -- and this could be a -- time-consuming is, as

Jim pointed out, we may have misunderstood. We may have made an error. Or you may agree, and we have already found numerous places where we feel we need to make some corrections that -- that need to be made. So we can issue -- for example, right now we could issue an errata sheet -- we'd say replace this page with this, this page with that -- where we found problems. We're ready to do that.

But then Jim correctly may take a position regarding one or more of these criticisms, and we're very anxious to hear what they are. And let's say -- let's say -- and I realize that won't be a small job. But I think in the end -- will the next step in the process be reissuing our big report to the Board and to NIOSH, making the changes that we want to make based on the errata sheets that we've already prepared and -- and reviewing the commentaries and -- that Jim would provide and then we would put out a final report? Or do we stop at this point? I'm not quite sure, you know, the process you'd like to proceed. We'd be the first to admit that we may have taken a position -- like for example, I'm very familiar with the Blockson

case. Quite frankly, I believe that is one of the places where I found -- I believe I found some major errors. But I also made some judgment calls.

Let me give you a good example of a judgment call that I think is worthy of a debate amongst the Board and to discuss. In the end, the way in which the inhalation dose was calculated for this particular claimant was there was some data re-- on bi-- urinalysis data, which -- and the -- the information said that we have some-- we have something like ten or 20 urinalysis samples that sort of capture the range of concentrations of radionuclides of uranium in urine, and it ranged -- I'm going to point to this bullet in particular -- it ranged from zero to .017 milligrams per liter.

Now that range, based on my calculations -- which I believe are correct, and they were checked -- corresponds to an intake of anywhere from zero to 240 picocuries per day. So what are we saying? We're saying well, we have a claimant. We don't know what his intake was, his chronic intake was while he worked at the Blockson facility. But we do have some generic data on

urinalysis that says some people had zero picocuries per day and others may have had as high as 240 picocuries per day.

Now the way in which NIOSH elected to reconstruct the internal dose to this worker was to use a geometric mean of 24 picocuries per day, which -- which is not the highest value. It's someplace in between the two. Now I believe it turns out to be the geometric mean, I'm not quite sure, but my reaction to this was, you know, I'm a little bit concerned. We have a limited amount of measurements that go from zero to twenty-- zer-- basically zero to 240 picocuries per day as chronic intake that this population of workers experienced, some close to zero, some may be as high as 240, some may have been higher than 240 because there's only a limited population of numbers.

Now to pick 24 as the geometric -- as the -- as the value, at least the geometric mean of the value for this particular worker disturbed me. And in my mind, I would have said -- in fact, I wrote this up in the report -- I probably -- you know, given the mandate, I probably would have done something along the lines of saying

let's take the upper 90 percentile of that distribution because that would error (sic) on the side of the claimant. I would be -- rather than use 24 picocuries per day, with -- with an appropriate one sigma, which is sort of like the -- the median of this distribution, which -- you're really not giving the benefit of the doubt to the claimant now. You're basically -- that's claimant-neutral.

In other words, I would argue that taking that tact (sic) -- and by the way, this is a recurring theme that we see throughout all of the cases. Whenever the dose is reconstructed, they work with the geometric mean that applies to the whole work population, and then they say that applies to my claimant. Now I see that as claimant-neutral, and we may have a difference of opinion here, Jim. I'm almost done. I would say there's got to be another way of picking your distribution that would be more claimant-favorable and keeping with the theme as laid out in the procedures, that perhaps you wouldn't go with the geometric mean. Maybe you'd pick a fixed value at the 90 percent level as opposed to going with this -- 'cause

it seems to me that this approach is -- I call it claimant-neutral.

DR. ANDRADE: John, before you go on, and before I even make my own comments, I know Mike has been wanting to make -- why don't you go first, Mike?

MR. GIBSON: Well, it's -- it's going back to a different issue. Hans talked about on this case here that he handed out that he had to go back and personally look up 300 and some datapoints to verify that this stuff was correct. That gives me great concern about quality assurance of NIOSH and ORAU having a -- an auditable trail for this data. And if they did, how much time would that save on these dose reconstruction audits and how much money would that save that we've been talking about all morning?

DR. BEHLING: In fact, that's one of my statements at -- at the end of the Hanford claims where I summarized a couple of comments that reflect this very issue. And a few minutes ago we heard from Dr. Neton that in some instances we may have spent more time verifying the numbers than the original dose reconstruction, and I'll

explain you why. I mean when we do this, I have to first decipher what was done, and it's almost like a crime scene situation where you have to figure out what goes where and what is meaningful, what's not meaningful. Certainly as -- and this is the very reason I handed out this particular dose reconstruction report for you to look at. In the back you will see the Attachment One, which has I believe 300 and some-odd entries, and you have no idea what any of those entries represent. And you have to go in there and say let me see now, what do -- what does the first series of entries represent? Is it the real TLD dose, the film dose, is it the missed dose, the neutron dose or -- which process did they use in terms of the neutron dose, is it the neutron/photon ray shield? All these things, all these parameters -- the original dose reconstructor, he knows what he wants to do, but I can't read his mind, and so I have to now, in verifying each and every number, go back -- in many instances the reference given for doing something is we used Technical Basis Document such-and-such, with no page number, no table number, no number for

defining what the parameters. I have to now go back and say did he use a -- a neutron correction factor -- the ICRP neutron correction factor that has this value? What was the -- the neutron/photon ratio at this location? That takes more time than the person who did it. And then I have to go back and say do I agree with the number, and then write my comments. To answer the question did we use more time, yes, I'm sure we did, and there's a justification for that.

DR. NETON: Well, let me just say a couple of things before we go too far away from John's issue with the urine sample -- could I, please? If I go ahead?

First I'd just like to address Hans's issue that I think SC&A themselves admit that there was a learning curve involved. Occupational radiation dose reconstruction is an arcane science, understood not by very many. And I think they would agree that many people on their team had a steep learning curve to understand that. But yet they're there, and I suggest it's a strength of the program that the sufficient document was there for them to

reconstruct every single line of every code. Not once have I heard them come back and say we cannot figure out what you did here based on your documentation, so --

DR. MAURO: Could I -- could I just --

DR. NETON: Yeah.

DR. MAURO: -- (unintelligible) on this point? You could have made it a little easier on us.

DR. NETON: Absolutely. But again, we're striking a balance between processing 17,000 cases, giving people a timely answer. When it goes to final adjudication and the claimant has an issue, we can sit down and leisurely reconstruct it at that time. But the audit trail is there, I'll submit that.

Number two, John's issue with the urine samples. This is a case where SC&A again has failed to pull the thread on the available data. We did not base those intakes on that population on individual bioassay samples, but rather on the multiple bioassay samples that were taken on those people. They are intakes based on samples over a period of time. In fact, 21 out of the 25 people -- and this, again, is addressed in our write-up -- 21 out of the 25

people had multiple samples, indicating that these were in a higher-exposed population. We believe that this is representative of the most likely exposed group at Blockson Chemical, and there indeed are not hundreds of other people that this is representing. These are the workers. So I think it's -- it's inappropriate to say that this does not represent the actual worker exposures.

DR. MAURO: I understand what you're saying. In fact, I spoke to David Allen about this, but from reading the report -- see, to me, I -- I look at the report, I look at the data. We did not have actual access to individual measurements -- almost done -- so given -- given that the information we have is that some 25 samples were taken from ten individuals --

DR. NETON: Multi-- 21 people.

DR. MAURO: I forgot the exact number, you have it there, good.

DR. NETON: Twenty-five people, 21 appear on more than one urinalysis report.

DR. MAURO: Okay. Now, what I do is now -- now here I am trying to stay -- get the job done. I say let me see if I can reconstruct the 24

picocuries, and I -- and I said -- and I was able to reconstruct -- I was able to get to 240.

DR. NETON: Right.

DR. MAURO: So I said gee, I'm getting to 240, but I can't get to 24, so I called David Allen and we had this conversation, and David said well, we believe -- the reason we didn't go with the 240 is we believe the zero to 240 was already your critical group. And see, I'm used to the world where when you're do your risk assessment, dose assessment, you work from the point of view of the critical population group. That is, you say -- if you don't know -- if you have a population of people and you want to reconstruct their dose or risk to an individual and you don't have any information, you -- you -- the way I look at it is you err on the side of the claimant or you try to say well, what would be a reasonable upper end reconstructed dose. And in my mind, from looking at the data, 24 was not the right number.

But now you're taking the position -- and this is a good -- and this is worthy of mention --

DR. NETON: Right.

DR. MAURO: -- that is, if it turns out that that population that was sampled was already a subset of the total population, which was the high end group --

DR. NETON: That's exactly right.

DR. MAURO: -- I'd be surprised that you'd get zero for some of them.

DR. NETON: Right. But that's exactly right, John. And I guess I take exception to the fact that, based on that observation where you couldn't pull the thread far enough, conclusions were drawn -- such as a total breakdown in quality I think is an inappropriate conclusion.

DR. MAURO: Well, not on this one. I didn't say that on this one.

DR. NETON: Well, but you point it out as a poster child for an issue and I raise that objection.

DR. MAURO: No, I -- I -- there are other places where there was -- I made it very clear when I -- when I started, this was an issue that I felt was worthy of debate, but it's a judgment call. I made a judgment call. I felt as if taking the geometric mean of the zero to 240, without any other information, is not -- is claimant-neutral. I did not say that this was

a breakdown in quality.

But there are other places -- for example, the external dose calculations -- that I believe --

DR. NETON: Let's discuss that, the drum.

DR. MAURO: The drum, yeah.

DR. NETON: SC&A modeled it using MCNP. We also did that. We did not have a lot of confidence in the MCNP calculations so we went and actually used a drum that was surveyed at a site and used that value. I'll admit that that value's lower than the MCNP value, but I think the jury is still out, and it's not definitively proven by SC&A that their value was correct and ours is wrong.

DR. MAURO: I'd like to comment on that, and I think this is productive. I'm not -- this is not a -- you know, a -- what we did is when we could not match the external dose from the drum from Blockson, we said what's wrong here? Maybe we don't understand the geometry, the densities, the material that the container is in. So we called Jim and said Jim, could we talk to the author of the work -- the MCNP calculations. And we found out from our conversations with Dr. Hertell* that his instructions were when

you model the external dose from the uranium in the drum, only model bremsstrahlung, don't model the other photons coming off the uranium series radionuclides because they're not going to penetrate the drum barrier.

Now that was the instructions that -- that's what we were told.

DR. NETON: Okay. But John, you're ignoring the fact that we didn't use the MCNP calculation.

DR. MAURO: Yeah, but that was a factor of two.

DR. NETON: Right, but listen. MCNP calculations are notoriously poor for modeling bremsstrahlung. Bremsstrahlung is a very difficult radiation type to model.

DR. MAURO: No, brem-- disagree. I respectfully disagree.

DR. ZIEMER: Now look, I'm going to interrupt here at this point 'cause we could have these debates on hundreds of points here.

DR. MAURO: Absolutely.

DR. ZIEMER: One of the -- one of the things that we have to come to grips with is that there are a number of observations, and I think you need to be careful as to which are observations versus -- you know, if something's a calculational

error, that's straightforward and people can handle that. You have a certain view on that, and -- and it's fine to point that out and then NIOSH can say well, this is important or it isn't and here's how we deal with it, and there may be a number of those kind of issues. And there's nothing wrong with the contractor, even though you may -- and you may point out, we didn't have all the information. This is what it looks like from what we gathered. That's -- that's part of an audit --

DR. MAURO: Yeah, I guess that's how --

DR. ZIEMER: -- you know, and we can go back and forth and you could go through all kinds of iterations on this till everybody agreed on every point, but that's not the point of the audit.

DR. MAURO: Yeah, I guess that's what -- I'm looking for some guidance.

DR. ZIEMER: Yeah.

DR. MAURO: We deliver -- in other words, you have --

DR. ZIEMER: I think if we get the factual things out, if there's other things like this that arise that maybe -- if NIOSH comes back and says well, they didn't have all the

information, fine. You point it out based on what you have, what it appears.

Let me get back to Mike.

MR. GIBSON: Thank you, Paul. I'm beginning to feel more like a juror than having a presentation (unintelligible). I was just reiterating what Hans had mentioned to us. My question, and I want it on the record, and I would like an answer from NIOSH or ORAU (unintelligible), is there an auditable trail so that the -- our contractor does not have to waste time verifying every piece of information and they can indeed do an audit rather than a complete dose reconstruction?

DR. ZIEMER: And I think Jim was saying there is a trail, but it's not necessarily --

DR. NETON: Yeah, all I can mention to you is that we have documented procedures that can be used by auditors to reconstruct our doses. Now if we were to have increased the size of our dose reconstruction, say to 100 pages instead of an average of seven to ten, that would slow down the processing cases and delay timely decisions to claimants, but it is -- there is an audit trail. There are procedures, there are

guidelines -- I think Hans mentioned 30. So we've done a great deal of documentation in this program. They are issued as rev numbers. When a new rev comes out, there is --

DR. ZIEMER: Audits may, as audits often do, take long to --

MR. GIBSON: Is it a -- is it a transparent audit trail?

DR. BEHLING: May I make a comment on that? As Dr. Neton as said, it can be audited because, after all, that's what I did. But it wasn't easy. Now the first thing that I would like to recommend, which would be a very minimal effort, is to take the Attachment One and for each dose entry define what that represents. Entry number one through 25 is truly the dose that was determined from actual records, DOE records, film badge data, let's -- let's have that. This way I don't have to question whether or not that number represents something from medical or something else. That would be very, very easy thing to do.

But the thing that does concern me to some extent is the fact that the difficulty in auditing this dose reconstruction report, from my point of

view as a health physicist, and hopefully a qualified health physicist, how -- how is this viewed, for instance, when a claimant gets it and says this is your closing interview with you; you've received your dose reconstruction report, what do you think? I mean I can't imagine what they will think in looking at this and saying I don't have a clue what it says. And then also the issue of internal QA.

DR. WADE: Let's just summarize where we are. I think we've established that -- that even in your opinion, there is an auditable trail. The question is -- the trade-off is how much effort is spent by the people preparing the original estimate to allow for that audit to -- to happen, or for the -- the dose reconstruction to be understood by others.

Now we would very much like to hear from the Board on that, if there are opinions you would like to give us. Then I think we need to move on.

DR. ZIEMER: Tony?

DR. ANDRADE: Absolutely, I agree with Mike. I know it doesn't sound good to you, Jim, but whenever a number is put down, there should be a minimal reference rather than just, you know, noting

that there are procedures that have been used.

DR. NETON: It's tied to a specific procedure.

DR. ANDRADE: I know that a specific procedure may be cited, but I'm saying if -- for example, there's a number and it corresponds to low energy photons or X-rays, that should be stated. Or if you used MCNP or if you used -- or somebody used MicroShield or somebody -- if you used an actual measurement, whatever. That, I think, could be -- that would be very useful.

Second is that in the quality assessment business things are usually put into three categories. Okay? And those categories are results -- I'm sorry, findings, results and observations. And they all have a very specific meaning. And John, you know, I take your -- your example down there on -- on the -- on the urine data, and you have -- you have a valid concern -- okay? -- that can be addressed by Jim and company.

However, your very first one up there, that's a philosophical disagreement. I mean that goes down way at the bottom. That's an observation, to me. I mean when they're using an S type

release, that to me is very claimant-favorable. And if you don't -- I mean not you personally, but your -- your agency personally doesn't agree with maybe a prospective look in which a claimant may come back and say well, there's another error and that might lead to complications, well, that's their problem. That's not your problem. That should be an observation. To me, that is very claimant-favorable. So it's the way you want -- it's the way one looks at it.

DR. MAURO: (Off microphone) Can I (unintelligible)?

DR. ANDRADE: Sure.

DR. MAURO: There's just one little -- one -- one brief paragraph. You see, if you're doing a -- the dose calculation to an organ and you assume it's class M, you're being claimant-favorable other than -- if you're doing a dose reconstruction from inhalation from -- and you assume it's S, you're being claimant-favorable.

DR. ANDRADE: Yes.

DR. MAURO: If you assume it's class -- and -- but you're doing a dose calculation to the bladder, you assume class M, that's claimant-favorable. But something interesting is happening here --

bear with me. What we -- what was done is they collected data from urinalysis and -- to -- to de-- and it's the urinalysis data that they're looking at now. Now when you're -- when you're looking at data that was a urinalysis data, what do you assume is the condition or the type of material -- in other words, are you being claimant-favorable -- here's my question. Are -- are you being claimant-favorable if you say I have a certain number of picocuries per liter in the urine, and I want to predict what was inhaled -- okay? -- am I being claimant-favorable by assuming S or by assuming M? Because, remember, it's in the urine because it's -- because of its (unintelligible) --

DR. ANDRADE: Its ability to get in --

DR. MAURO: -- so it's not -- it's not -- and this is -- so I agree with you on the simple problem where you have airborne levels, you're going to model internal dose, you pick your M or your S based on the organ. However, when you have urine data and you're trying to predict what was inhaled and what assumptions regarding the chemical form or transportability, it's not self-- it's not immediately apparent to me

whether or not -- now I think that that's a -- and it might be -- and now it might be an important issue, and I'm not quite sure -- we stopped at that point. See, one of -- one of our frustrations is --

DR. ZIEMER: Oh, S is soluble.

DR. MAURO: Regarding solu-- or -- no, slow versus -- slow versus -- right.

DR. ANDRADE: John raises -- John raises a very good point; you know, how does it get into the urine? And that means that it would be F. Okay? But the thing is, you know, Jim and crew probably were thinking, you know, the best thing we can do is just assume that these people swallowed the damned stuff -- okay? -- and that -- again, like I said, you know, you can't read his mind, but it is very claimant-favorable.

DR. NETON: We have a direct reference for yellowcake, which is what was produced at Blockson, that indicates a half life of about 140 days in the lung, which is very close to type M --

DR. ANDRADE: Oh, okay.

DR. NETON: -- and that's what we used.

DR. ANDRADE: Okay.

DR. NETON: Thank you.

DR. ZIEMER: Mark? Jim?

MR. GRIFFON: So that could have saved a lot of heartache if that was known up front -- a reference, maybe.

Anyway, I agree with Tony's notion on the finding, observation -- finding, observations -- and I'm missing the last one, but it might have helped in all of these 'cause I think in the dose reconstruction report each author had a little different style of --

DR. MAURO: I agree --

MR. GRIFFON: -- presentation.

DR. MAURO: -- right.

MR. GRIFFON: It might have helped us digest some of these -- some of these -- some of the lower-level ones maybe we wouldn't have such heartache over and -- and this ongoing debates and findings -- you know, maybe we could -- could have paid more serious attention to some of those. So that, in -- in going forward, I think that would be a reasonable way to present things.

I also think the -- getting to the auditable trail, I

too had that same problem, and I think -- I think we need to try to strike a balance, and SCA probably has some recommendations for that, as to how best NIOSH can -- maybe with a limited effort -- make it more auditable. We're not trying to, you know, make this impossible. But when I went through those external doses, too, I had the same problem. I found myself X-ing things and trying to match them with the text, and a simple extra column saying that these were calculated based on missed dose, these were calculated based on TLD badge -- you know, this section was from the ambient dose, yeah, that would have saved a lot of, you know, unnecessary effort, and it's a pretty easy fix on their part. So I think if you have a series of recommendations like that --

DR. MAURO: That's one -- that's one of --

MR. GRIFFON: Right, right.

DR. MAURO: You see how -- we have a last slide that --

DR. ZIEMER: Jim? Jim?

DR. MELIUS: Again, going back to our process for digesting all of this information, and would it

be helpful if -- as -- when SCA presents this to us that we have these issues divided into -- there'd be technical issues, maybe significant, less significant ones. There are going to be miscalculation errors that were found, be second. And there'd be sort of procedural issues that would have come -- some of which may be due to confusion over the procedure, some may be people not following the procedure, and us getting an overview of what's going on in 20, you know, dose reconstructions. That may be sort of what we're more interested in. Some of the technical issues we're going to say yeah, we need to go back and talk about that, and we probably ought to schedule some time at a meeting to do that. Others saying look, you know, okay, it's reasonable -- it just isn't worth the effort, you know. NIOSH made some sort of judgment and that's fine for -- for going forward. But -- and I think some of the -- the procedural sort of stuff and stuff, I think we have some back and forth between NIOSH and SCA, hopefully without a, you know, a mediator or a -- someone to break up the fight that we could -- could sort of try to get some

stuff resolved so by time it gets to us to talk about it at a meeting, we have some way of sort of summarizing it, getting into these categories, and then deciding how to -- how to proceed and so forth -- as well as sort of being able to follow things as -- as they go through time. And -- I mean some of these issues I think will get clarified as the procedures get improved by NIOSH or at least get the writing for the procedures to -- or they develop new procedures that SCA, you know, maybe understands some of them better and so forth, then I think it'll be a much more efficient process and really get at what we're trying to get at, which is the -- you know, the accuracy of these dose reconstructions.

DR. ZIEMER: That's a good point, and let me add something to that, John. If you look at the reports we got and put it against the criteria as you've summarized, I've noticed that there was a lot of inconsistencies amongst the various reviewers on these items. Some of them addressed some of those items. Some of them addressed only the dose.

DR. MAURO: Right.

DR. ZIEMER: And it seems to me it would be helpful if -- if, for example, we were able to say out of the 20 cases reviewed -- I mean if you had this information on all of them -- we found that in 19 cases NIOSH received and requested all the needed data, or we found that NIOSH appropriately addressed their work history and events reported by the claimants. Some of the re-- some of the reviewers addressed that, some did not. That would help us see if -- it's the quality of everything, not just these -- the focus here has been very much on technical issues, some of which are sort of scientific debates. But we have a whole list of quality things, which may have been looked at but have not always been reported on. So I'm wondering if we can think about that kind of an overlay, and also the categorization of the findings.

DR. MAURO: This business of the data has been frustrating because we just crossed the line into the site profile reviews. In other words, we're not performing a site profile review, and very often the site profile review is the place where --

DR. ZIEMER: Yeah, on some of these that's the case

and I understand, and some of these wouldn't apply then and you could simply state that. Yeah, okay.

DR. MAURO: Right.

DR. ZIEMER: Okay. Roy?

DR. DEHART: As I read through a number of the reconstructions and the audit that was done on those, it appeared that -- although one could classify it as technology, it often seemed to be more philosophical and opinion than really an error in the performance of the original document and could --

DR. MAURO: Yeah, I --

DR. DEHART: -- can we --

DR. MAURO: I would agree with you.

DR. DEHART: -- address that?

DR. MAURO: I would agree with that. I believe the most important -- most -- I would say 80 percent of our comments were based on what we believe that an error was made. Okay? We believe that the wrong procedure was followed or an arithmetic error was made. But there is a sub-- a smaller part, and thi-- and I pointed this out because that is a philosophical one, and as -- it goes a little more than

philosophical, is what is the intent of the -- when you read the words in 42 CFR 82 and then you read the words in the procedures, OCAS-1 and 2, it begs the question whether or not when you are doing your dose reconstruction do you -- do you try to come up with the best estimate, with uncertainty, on the dose that the person got, or do you come up with a reconstructed dose for a person which is claimant-favorable, it errors (sic) on his behalf.

In general what I've found in the cases that I've reviewed when -- when -- you know, when there was no data -- and this usually happened on the AWEs, and we're going to hear a lot about that tomorrow when we talk about Bethlehem Steel -- a distribution is created that represents the facility. In this case here, it was a distribution on urinalysis. Here's the measurements we saw, and it's in -- it's in the technical background document. In the case of Bethlehem Steel some distribution is constructed of the airborne concentrations of radionuclides throughout the facility. Okay? So -- and this tries to characterize the radiological environment that -- that -- for

the entire facility, goes from here to there, with some geometric mean. Then the question -- here's the philosophical question. Given that setting and given that you have no data on the individual, and you have no information on where he worked, what do you? Do you assume that that person -- every person that you're going to reconstruct a dose for is the average person that experienced a dose, exposure situation, that represents the full range from zero to 240, so therefore you go with the geometric mean and an appropriate standard deviation, which would be claimant-neutral? That's what was done, by the way, in our opinion, in constructing -- Jim is not -- this is -- this is good -- this is good. We're doing what we're -- we're supposed to be doing here.

I feel that if you -- if you don't have any information regarding the worker and where he worked, and -- but you do have information on the distribution of the airborne concentration that might have existed throughout this entire facility, I would argue -- and this is a philosophical argument and one that has to be

an interpretation of the statute and then the regulations that implement it -- do you assume claimant neutrality, assign the geometric mean and geometric standard deviation that was observed for the facility, or do you assume that no, we're going to assume that this worker that we have no information on happens to be working at a station in the facility where we know was a high end. We're going to see this tomorrow. We're going to be talking about Bethlehem Steel. We're going to be talking about roller location number one. If it turns out that the person happened -- this person that -- this claimant happened to work there, his distribution of -- his exposure is going to be a lot different than let's say the foreman, who may have worked the whole place and his job was to walk around the whole facility 'cause then he would have experienced a distribution that was representative of the full distribution. But if he happened to be a worker that worked at roller location number one, or in this case -- see, this person you have a real problem with because he -- when we looked at his CATI and it turns out he was a --

he was a piid*, I believe it was called -- a piid*, which means, we believe -- but I could be wrong -- it means he was the guy piid*. Okay? That puts him up close and personal piid*. Right?

Now -- all right, that means that, you know, this is not your average guy. This guy is someone who happens to have a job where he's going to experience the high end tail end of the distribution. Now -- so that's why I had a problem with the 24. I would still have a problem with the 24 if we had no information on what his job was because what you're doing is you're assuming he's claimant-neutral, but in this case I think it's a problem because we've found out he's a piid* and now unless -- and now I believe -- like I said, the piid*. Now that puts him up here. That puts him closer to the 240, if that was his job. So here's something that I think is important for all of us to come to grips with. When we have information regarding the worker, or should we try to get information by talking to coworkers, here's where -- here's where the rubber meets the road. How far do we go to get a better

handle on the claimant's actual working environment when we don't have any bioassay data or external dosimetry data, such as the case with AWEs? How far do we go to find out a little bit more about this guy's job? Because if it turns out at Bethlehem Steel he was the piid* -- by the way, that's the case for the Huntington -- the next one after this is the Huntington plant; it turns out that guy was a piid*. And using the full distribution made sense for him because it's -- 'cause based on the write-up, piid*. He was sort of – piid*. But this guy, he was a piid*, and that placed him in a location where he was probably toward the high end of the distribution. I think that this is an important issue that's cross-cutting how you approach the problem when you don't have the bioassay data. Okay? And this really is an AWE issue.

DR. ZIEMER: Now John, let me in a sense answer your question. You don't pursue it. That's not the auditor's job to pursue the --

DR. MAURO: Just raise the issue.

DR. ZIEMER: Right. Your job is to raise the question. It may or may not be a valid

question. In your mind, it is. And if it is, you can raise it.

DR. MAURO: That's all I did here.

DR. ZIEMER: You can attempt to categorize it. It's -- it's not a cut and dried error.

DR. MAURO: Nope.

DR. ZIEMER: I'm not sure if it's a concern, but that's why categorizing these things would help. If it's a concern or an observation, then it goes back to NIOSH and they can deal with it. Ultimately, you don't have to solve the problem.

DR. MAURO: I didn't try. That's why I call it concerns.

DR. ZIEMER: No, no, I'm -- and maybe that was rhetorical, do you follow up. And I think on many of these kinds of questions where it's not clear-cut, there's differences in opinion on what assumptions one should make, you -- you can -- you've looked at it in a somewhat different way, and that's helpful. And NIOSH can evaluate that and say what should we do with it.

DR. MAURO: Right.

DR. ZIEMER: Maybe nothing, maybe something. I think

Mike's next, and --

MR. GIBSON: But these -- this, to me, it doesn't seem like it's a matter of opinion. I mean if NIOSH was going to do an adequate dose reconstruction on the individual to see if they were indeed compensable, then that should not have been left blank for -- as a blank question for them to bring out. It should have been looked at before a dose reconstruction was done. I mean it's their job to --

DR. ZIEMER: Well, in any event, I'm saying it's not their job to -- to search out that information. They raise the question.

MR. GIBSON: I understand, but it should have been looked up before a dose was rendered for this person by NIOSH or ORAU.

MR. GRIFFON: Yeah, the only thing I would add on, Paul, to -- to your -- and I agree with the categorization would really help. The one thing I notice in our -- in our debating back and forth, you know, sometimes there -- there have been some things which might even be considered opinions, and I've heard NIOSH reply that -- well, you didn't pull the string enough. So I think the ground rules have to be

a little clearer, you know. Sometimes the auditor has to pull the string in order to make the case -- that it's a finding, for instance. And I would say -- you know, in this case what comes to mind with me -- and the same goes for Bethlehem Steel tomorrow, what comes to mind for me at first glance is -- I don't know if this was a triangular distribution or a lognormal, whatever it was, if you use your upper distribution for this worker because you felt he was in a more highly-exposed area, did it make a difference from the organ dose standpoint --

DR. MAURO: Well, it would here. I mean sure.

MR. GRIFFON: -- and would it make -- do you think it was -- so then, if I found that out, that's -- that's a minimal level of effort further down, I think, for the auditor to do. And if it would make a significant difference in the organ dose, then I'd say that that might be bumped up in terms of your degree of importance in your finding versus observation versus -- you know.

DR. NETON: But we've got to keep in mind that these are not individual samples. John keeps

pointing out that it was 250 picocuries per day. That was one sample of a series of samples that was used to calculate an intake on an exposed worker. So what his intake was was not based, more than likely, on that one value. It's a dose reconstruction, so you can't say that the -- they range from this to this and so that guy had 240 -- I mean he may have had a lower exposure than the guy who had multiple samples that were over a longer period of time. You cannot make that leap of judgment there. It's not possible.

DR. MAURO: Well, I -- in defense of my position, my position is -- is simple. He was a piid*, which puts him in a more exposed situation. And that being the case, given this range -- as best I could judge, it seemed to be 24 -- should have been closer to the 240, or some effort made to put this person in the setting that he was at where his potential for exposure could have been several-fold higher. I'm not saying it's going to change -- it'll change a dose -- it would meet the geometric mean of a dose direct-- directly proportional. What it will do to your probability of causation, I

have no idea.

MR. HINNEFELD: I'd like to try just one more comment on this issue. Okay. The largest urine sample -- highest urine sample number was collected from a person who also had other urine sample data. Okay? His intake was calculated using the entirety of the urine data. So his intake would not correspond to 240 picocuries per day, which would be what you would assume if the -- you only had the one data block.

DR. MAURO: Okay.

MR. HINNEFELD: So the intake for that person is not 240 picocuries --

DR. MAURO: Oh, okay.

MR. HINNEFELD: -- per day. It is some other number.

DR. MAURO: Okay. Okay.

MR. HINNEFELD: And the dos-- and the intakes and the distribution of intakes that are in the site Technical Basis Document are based on -- okay, employee number A, let's do the best fit of his intake; employee B, let's do the best fit of his intake -- those daily intakes, chronic exposure assumption -- and say given that distribution of intakes, what is the mean and what's the standard deviation? And it was

lognormal and it was -- it was not -- it does not go up to 240. So that highest urine sample by itself is not relevant.

DR. MAURO: Okay, so --

MR. HINNEFELD: It's the intake of the highest exposed person.

DR. MAURO: Oh, so you're say-- okay -- no, I hear what you're saying -- this is good. So you're saying that if we -- you're trying to come up with a high end estimate of what the chronic intake would be for someone who worked there for ten years, and you're going to -- you know, for a long period of time. Assuming 24 picocuries per day is certainly an upper end estimate of what a person might have experienced, piid*, because -- I mean in effect -- that's what I'm looking for. I'm looking for --

MR. HINNEFELD: Okay, I departed from your --

MR. GRIFFON: I think he's saying they did an individual estimate for that individual. Right?

MR. HINNEFELD: Right, that -- I kind of departed from your point of should this person be -- the distribution or higher in the distribution,

that's not what I'm trying to address. What I'm trying to address is the distribution doesn't go up to 240 per day. The distribution is based upon the fitted urine samples from -- from that person, and he had more than that one urine sample. So when you fit an intake that best fits all of his excretion data, it's not 240 pic-- it's not 240 per day, it's something smaller than that.

MR. GRIFFON: So could -- this is -- I'm just using this as an example, understand. I didn't even review this case. But it seems to me is this an opportunity where in the rep-- NIOSH's report it could have stated individually calculated intake.

MR. HINNEFELD: I think it does.

MR. GRIFFON: It does. Okay.

MR. HINNEFELD: I think it does. I think it says --

MR. GRIFFON: In other cases (unintelligible) --

MR. HINNEFELD: -- intakes were --

MR. GRIFFON: -- (unintelligible) you would say --

MR. HINNEFELD: The distribution of the intakes was generated from this dataset of 21 people -- or 25 people, 21 of whom had more than one sample -- something like that, so distribution of

intakes was generated from that data.

DR. MAURO: Okay.

DR. ZIEMER: Let's -- we've been going for two hours here. Let's take a comfort break and we'll return.

(Whereupon, a recess was taken.)

DR. ZIEMER: We'll come to order. John, where are you in your presentation?

DR. MAURO: (Off microphone) (Unintelligible)

DR. ZIEMER: Use the mike, use the mike.

DR. MAURO: What we basically have here is we took the report -- which I don't know how many pages it is -- tried to boil it down to each case, two slides. In other words, this first -- for example, we're looking at the second case right now, Huntington Pilot Plant, and tried to boil it down to the -- whatever the 20 or 30-page report is -- to two pages. And I don't think it's -- we're not going to go through each one. I think that we'll be here a long time.

But what might be worthwhile is maybe we could do the following: Hans and I may want to pick a couple that we think capture some of the places that we're especially concerned about, some issues. In other words, this particular case

reveals an issue that we think might be important. And I know I have a couple that I'd like to air.

I did mention before the problem that I had with this distribution which has applicability to just about all the AWEs.

DR. ZIEMER: I might suggest as we go through these, there are some issues that really are sort of generic because of -- they are related to site profiles, and we can't discuss site profiles as a topic right now. We're restricting ourselves to dose reconstruction.

DR. MAURO: Okay.

DR. ZIEMER: But a number of those, such as Bethlehem Steel -- maybe Huntington is in that category -- where I think the issue that is being raised by SCA is perhaps with the basis -- or the basic issues of the site profile --

DR. MAURO: Also --

DR. ZIEMER: -- for example, aside from the site profile issues, maybe the doc-- maybe the dose reconstruction itself is okay -- or not, but --

DR. MAURO: In --

DR. ZIEMER: -- you know, if it wasn't for those underlying assumptions, then the profile in

other respects may be fine -- or not, but --

DR. MAURO: Yeah, well --

DR. ZIEMER: -- what I'm -- what I'm thinking here is if there are basic issues that you can identify as being really site profile issues, so that they're not discussed with each case -- in fact, they could be identified even in a roll-up. For example, on the Bethlehem Steel case, I assume you'll have the same issue --

DR. MAURO: Yes.

DR. ZIEMER: -- on all of them.

DR. MAURO: Absolutely.

DR. ZIEMER: And it could be cited in whatever the roll-up form is that -- that this is -- the concern here has to do with the assumptions or (unintelligible).

DR. MAURO: You'd rather not do that now, you're saying?

DR. ZIEMER: I'd rather not debate the site profiles here. We're -- per se, because that's not our -- (unintelligible). Now obviously -- and if Huntington is the same way and you don't have the -- you don't have a document that's the site profile review, but if the -- if the issue being raised is really one that applies to all

of those, it seems to me that maybe -- that we can just identify that's what it is. We're not going to solve it right here.

MS. MUNN: You've lost your mike.

MR. GRIFFON: Maybe put it closer --

MR. PRESLEY: Paul, pull your mike up closer to your mouth.

DR. ZIEMER: Oh, no, it's (unintelligible), although the green light's not showing. Is that -- it's a red light.

(Whereupon, difficulties with microphones were addressed.)

DR. ZIEMER: Well, my suggestion was that we not spend a lot of time on issues which are the site profile issues more than a particular case. Do you understand what I'm saying?

DR. MAURO: Okay, that --

DR. ZIEMER: And --

DR. MAURO: -- that being the case --

DR. ZIEMER: -- I mean you can still identify it, but --

DR. MAURO: Yeah, the first five --

DR. ZIEMER: Is that -- does that make sense to the rest of the group? Because otherwise, we can -- we can have this long debate about something

which is really -- for example, what are the Bethlehem Steel assumptions? And I'm not saying you shouldn't identify that as the issue for a particular case, but the resolution of that may have to do with the review of that particular site profile.

DR. MAURO: Okay. Well, then --

DR. ZIEMER: On the other hand, if it's a site profile you're not reviewing anyway --

DR. MAURO: Right.

DR. ZIEMER: -- you can still raise it, but it's generic -- it's going to occur, for example, to every one that comes up from that particular site, if that's the case.

DR. MAURO: Huntington is an example of an AWE where the dose reconstruction is entirely based on the site profile. It is a site profile that we have not yet been authorized to review. Whether or not you want to go through the quick findings or move on, this is basically the bottom line of the findings for Huntington, but they're all related to the site profile as applied to this claimant -- so it's always as applied to the claimant because it's the organ of -- if you'd like to go through this quickly,

then we can ski-- then after this comes three Bethlehem Steel. All of the Bethlehem Steel are very similar. It's a critique of the Bethlehem Steel site profile, which we did review. We probably would want to jump over those. There really is no need to go -- but I do --

DR. ZIEMER: We're going to do that tomorrow --

DR. MAURO: We're doing that tomorrow.

DR. ZIEMER: And on Huntington you may or may not end up -- it's certainly not on our list now, I don't believe, and it may be that you wouldn't do the Huntington as part of your process.

DR. MAURO: Right.

DR. ZIEMER: But your -- your reviewers do review it as part of the dose reconstruction. And insofar as you identify something which you think is related to the site profile, I would -- I see no reason why it shouldn't be identified as such. But it seems to me -- and again, let's get feedback from the group. It seems to me that that's a kind of category that you identify -- it's not necessarily -- it's not a calculational error. It's not a --

DR. MAURO: Well, it is in the site profile. You'll

see that calculational error in the site profile.

DR. ZIEMER: In --

DR. MAURO: But not -- but not --

DR. ZIEMER: In the dose reconstruction, per se.

MR. GRIFFON: I know what you're saying, Paul, but I think we may run into quite a few of these since they're -- you know, the efficiency method was applied. So like Savannah Rivers, they're applying the high five, and that's the site profile really where it gets into the details of how they --

DR. ZIEMER: Right, and I think -- it's my understanding that right now on those like from Savannah River, they have reviewed them with the assumption right now that that is -- 'cause that site profile's not complete, so they're saying that given that site profile, this dose reconstruction was done -- or wasn't done, but -- they're not debating the site profile in the dose reconstruction review. That's all I'm saying. It can be identified as a potential issue, but it seems to me that the debate on the individual case shouldn't focus on that, but simply point out that that's the issue

that's being --

DR. MAURO: I understand now.

DR. ZIEMER: That's my personal opinion. I certainly can be overruled by this august group.

DR. MAURO: I guess I'm still not quite sure -- would you like to go through these elements of the dose reconstruction for this claimant that we feel was in error or not? It's --

DR. ZIEMER: Does the group want to hear this? Yes?

UNIDENTIFIED: It's up there, let's go.

DR. MAURO: Okay. It'll be quick. The Huntington Pilot Plant processed nickel that contained enriched uranium. When the doses were calculated to the person who was working processing the nickel, one of our finding is that well, the uranium -- the enriched uranium that came along with the nickel that was being processed at Huntington, we believe there was a possibility -- very real possibility, based on some work we have -- some research we did -- that there could have been some other radionuclides present beside uranium -- enriched uranium. They could have -- it could have been recycled uranium and it could have been some technetium, neptunium, plutonium --

and plutonium in the nickel which was not explicitly addressed. The report -- the dose reconstruction for this person is silent on that, does not factor in this particul-- any possible exposures from those radionuclides.

We did find an error when IMBA was run. It's simply an input error. That is, we try to re-- we -- we took a look at the -- the exposure scenario and we reconstructed the inhalation exposures, and we found that there was an error made in the input for the IMBA run that had over-- overestimated the dose by a factor of about 3,000.

We -- we also found that there's some question -- don't have an answer for this -- that we believe it's possible this particular worker, the period in which he -- over which he was exposed, this ten-year period, may have really extended longer than that. It's the -- the supporting literature for his work history was ambiguous, so it might be possible that in addition to the exposures this worker experienced while working with this contaminated metal, the nickel -- processing this nickel, did not necessarily end when they

stopped processing nickel because he continued to work at that facility after the processing of nickel ended, but there may have been some residual radioactivity in the facility that he was exposed to for many more years afterward, but it's not apparent from -- from reading it that that's -- there's contradictory information in the literature, so there -- that's -- that's another question.

DR. ZIEMER: Could I ask on those cases, isn't this a Department of Labor determination, Jim? Or what did we do on that?

DR. NETON: That's correct. This is a Department of Labor issue, but I would point out that a review of the -- sorry -- a review of the -- of the file, the analysis record, indicated that the Department of Labor attempted to verify the additional employment and was unsuccessful. So the Department of Labor made that determination a priori that that employment was not considered covered under the Act. It's a non-issue.

DR. MAURO: So it -- so --

DR. NETON: The Department of Labor evaluated that additional employment and determined it was not

covered.

DR. MAURO: Okay. Even though he might have been exposed to residual radioactivity from that operation.

DR. NETON: Yes, 'cause they determined that he wasn't there.

DR. MAURO: Oh, I --

DR. NETON: He's not covered.

DR. MAURO: 'Cause I could show you a place where he said he was there.

DR. NETON: Just because he said he was there, the Department of Labor tried to validate it or verify it and could not, and so he couldn't...

DR. ZIEMER: Shelby?

MR. HALLMARK: Shelby Hallmark, Department of Labor. Just briefly, if I could say -- the discussion today has indicated to me that there are 40,000 interlocking variables here and 5 million pieces of discussion about each one of them. We would like to see the Board and its contract focus on what it can work on and be productive about. Decisions made by the Department of Labor are the Department of Labor's legal decision. And I would say that the Board and its contractor should simply walk away and roll

off those issues. You have enough of your own.

DR. MAURO: I'll move quickly through --

DR. ZIEMER: Yeah, thank you.

DR. MAURO: We believe there was a five-fold underestimate on the external exposure to the enriched uranium contained in these bird cages where they store the processed uranium, for the same reason that I mentioned earlier regarding the bremsstrahlung issue that we -- where we believe that the -- there -- the exposure from the uranium -- the decay series radionuclides, the short-lived progeny of uranium series was not taken to consideration, just bremsstrahlung. As -- as a result, we came up with a dose from external exposure which was five times higher.

MR. GRIFFON: John --

DR. MAURO: One of the recurring -- yes?

MR. GRIFFON: I'm sorry, I just -- just a general comment in a lot of the reports I've seen of yours which I was thinking about on the break, and it appears twice in your slide here -- an overestimate by a factor of over 3,000.

DR. MAURO: Yeah.

MR. GRIFFON: You know, it would be helpful to me if

-- if that was three picocuries instead of .001, that's different than three -- you know.

DR. MAURO: What they -- it was supposed to be 5.7 picocuries per day --

MR. GRIFFON: But if you could just state, you know, what are the --

DR. MAURO: I'll tell you, 'cause I --

MR. GRIFFON: -- what are the hard numbers.

DR. MAURO: I'll tell you the hard number.

MR. GRIFFON: Right.

DR. MAURO: The input into IMBA for inhalation should have been I believe 5.7 picocuries per day over a ten-year period. Now that would have been the correct input. Instead, what was put in was 14,000 picocuries, which is the total number of picocuries the person inhaled over ten years, but it was put into the box in terms of picocuries per day.

MR. GRIFFON: Right, right, right.

DR. MAURO: So as a result --

MR. GRIFFON: Which happens, having run IMBA.

DR. MAURO: Yeah, it just -- yeah, it was a mistake. In fact, I -- and this was at a time when I wasn't quite sure whether I was running IMBA correctly, so I called David Allen up and he

said yeah, you're right, you caught one. So --

MR. GRIFFON: My point more was, in going forward, any time you're going to do something like that it'd be helpful to say --

DR. MAURO: It's in the report. Oh, yeah -- the -- the -- I -- we try to reduce the report down to just one -- the best we could.

Let's see, one of the recurring problems -- and this goes to the reconstruction of doses from residual activity on the ground. Very of-- very often at these AWE facilities we found that at least -- that there was no radiation surveys taken until many years later, well after the operation ceased, and when they were about to either decommission the facility and decontaminate it. For example, not until 19-- here's a person exposed in the 1960s, and then -- and they were trying to reconstruct what the possible exposure was to the individual from residual radioactivity that was on the ground. And data was gathered from surveys taken in 1978, and then they would assume that that external exposure that they measured in 1978 applies to the -- 1960 when the person was working there. I have a problem with that.

That is -- because what we have is this long period of time when natural attenuation would have reduced the contamination level. So to assume that the level of residual contamination in 1960 is the same that it was in 1978 when the measurements were made -- I believe I've run across that on a couple of occasions -- is a problem. Some effort needs to be made to say well, if we're measuring this in 1978, what might it have been in 1960 when the person was working there. So that's a problem that I run across.

And I think that sort of summarizes the -- some of the problems I ran across on -- on Huntington. Bethlehem Steel, the list of issues are exactly the same issues that are -- that we're going to be talking about tomorrow, so there's no need to talk about that, so I'm going to skip over and go to Hanford.

In fact, what I'd like to do at this point is turn it over to Hans and -- to pick -- pick, though -- if anyone has a particular case you want to go into, we'll go into it, but we have one sort of our favorite in terms of showing insight into categories of problems that we -- that we --

are recurring, you see. And -- and if -- Hans, if you want -- if you have a few in mind --

DR. BEHLING: Yeah, I'd love to actually start with the first Hanford --

DR. MAURO: You want me to back up?

DR. BEHLING: -- 'cause I think that's much more informative -- backwards.

DR. MAURO: Am I going the right way? No, one more. That's it right there, right? Okay.

DR. BEHLING: Yeah, in fact this was the first claim that I personally went through totally on my own, and it was a difficult one because this was a person who obviously spent a total of piid* years at the Hanford site. He was in the piid*. He was monitored both for external/internal exposure, and was diagnosed with colon, POC of 40.45, so he's fairly well up there. And the question is, how well is that number representative of the true organ dose.

And as you see in the second column on that table, these are the actual doses that were in fact assigned by NIOSH. These are not my numbers, these are NIOSH numbers. The first entry is 6.811 rem for a photon dose. The next one is

neutron dose, and so forth and so forth. And the only number that really stands out very high is the internal dose at 16.986. And again, as Dr. Ziemer had mentioned, there are some instances where we are defaulting to a methodology that does not involve empirical dose measurements or bioassay measurements. And in this case, this guy was in an area that is considered a reactor area. And based on the Hanford site profile, he was given the benefit of doubt by being assigned 28 radionuclides intakes, an acute intake on the first day of employment and dose calculation was made using a protocol that was designed by NIOSH, and that number is -- therefore is a hypothetical internal exposure number as opposed to an empirically-derived internal.

But let's go through some of the issues. As you see in the column up top, we have scientifically valid, claimant friendly -- no, claimant favorable, and procedurally compliant. And you see a few no's already in the photon column. And the principal reason for that is defined here under column of photon dosimeter dose, failure to include uncertainty. And for those

of you who have the table in front of you, you can actually go to the claim itself and look in the back and see that for the entries that define photon -- empirical photon doses that were done in his behalf, the doses are entered as a single determinate value, as opposed to having a second parameter defined as an uncertainty.

And I want to just briefly mention that this deficiency was something that was consistently found in other claims. And it's not so much any oversight on the part of dose reconstructor, if I can at least make some speculative assumption as to why. If you look at the implementation guide, as it stands now, there is a very, very lengthy, detailed procedure that is defined -- that defines uncertainty and how to do this. And in looking at the cases that I had, this -- for this one, number six through 20, and I (unintelligible) all of them, even though there were other people who -- who were party to this process -- I realized that nobody ever does an uncertainty on empirical dosimeters, and the reason being is it's next to impossible. It's very

difficult to do. And let me just give you an overview as to what the difficulty is.

In the early days, as in this case, this person may have been monitored by film dosimeters. And the procedure in implementation guide one says once you determine the sigma value for each and every single dosimeter reading -- meaning that for any one given year there may be as many as 52 film dosimeter readings for which he has to determine what the sigma value is, and then collate that through error propagation and come up with a value for that year that says -- let's assume it was 1,200 millirem plus some sigma value. That is a very, very difficult thing to do, especially when you're dealing with film dosimetry data that go back in the '40's, '50's and '60's. It's virtually impossible. This person elected not to include uncertainty.

Of course that's claimant unfavorable, because now you're basically saying this is a fixed value, which is a dosimeter value, but it has no uncertainty associated with it. And as I said before, this is a problem that occurs routinely among the other claims.

Other people who have elected to look at this and say that's next to impossible for me to do, I'm going to simply multiply the actual dosimeter dose by a factor of two, knowing that that's likely to represent a 95th percentile value, which frees me or prevents me -- excludes me from having to define the uncertainty.

So those were the two options that some people either failed to include uncertainty, which is certainly claimant unfriendly, or simply multiplied all dosimeter readings by a factor of two, assuming that represents an upper bound 95th value which precludes the need for uncertainty.

DR. NETON: I just have one -- one brief comment there. Oftentimes in these dose reconstructions we allow for a dose conversion factor that will reduce the measured film badge dose to the actual organ. For instance, the colon would not receive the same dose as the badge measured on the chest. And so we, in that case, ignore that dose conversation factor and assume that that difference overestimated the dose and over-assigned the dose that would be included in the uncertainty distribution.

DR. BEHLING: Well, I -- I admit that will certainly offset -- in many instances the simplification process almost takes away the complexity that's built into the system, such as the need to convert an R dose or a HP10 dose into an organ dose by simply assuming that that value applies.

DR. NETON: Well, that's correct, and these are efficiency measures that we take where we just -- rather than propagate that uncertainty 52 times, we put a higher dose in ignoring the dose conversion factor and --

DR. BEHLING: Except that it's never identified in the protocol --

DR. NETON: Well, that's an issue that is raised that we hear. We hear that very loudly.

DR. BEHLING: Further down you see missed dose. And again I want to clarify, missed dose does not mean we don't have the records. Missed dose, by definition, according to the implementation guide, is nothing more than a person who was monitored but whose TLD or film badge comes back as a zero read. In other words, he was below the lower limit of detection, and the assumption therefore is, generally speaking,

that we define his missed dose by taking the low limit of detection -- which is a floating value. In the early days the low limit of detection for film badges may have been as high as 40 millirem for a given cycle. In later years it was reduced to ten and even lower. So the protocol, generally speaking, for missed dose is to look at the person's individual DOE records. And for this guy, the number of pages that I had to go through were about 200 and some-odd pages, and you look at each individual dose entry for every cycle. Most -- hopefully, in many instance, they went from weekly to monthly, so for every year you have at least 12 values to look at in saying how many zeroes did he get and how many times do we have to now account for that zero dose as a missed dose. And in this case there were -- I believe this person only looked at the summary DOE sheet, which gives you, for the 200 and some-odd pages, a simple summary up front that says between -- or let's say this guy -- well, I don't want to -- I do have the dates up there, which is all right, I guess, in a closed session here. But he started in piid*, and you will see the entry

for piid* as the -- as the external whole body deep dose for that year, but you don't really know if that was in a single month or spread over a full 12 months. So in order for you to really do a missed dose, you have to really go to the individual dosimetry data that defines each month or each cycle as a measurement. And as it turns out, as you can read under missed dose, there were problems with '92, '93, '94, and there was a failure to include missed dose for a period of over piid* years in one instance, the stretch from piid* through piid*. And I counted the number of zero dose that he should have used in converting to a missed dose. There were approximately 100 zero reads which were missed.

Also there's a issue of how do you define the dose that is classified as a missed dose. Right now we have only protocol or guidance that says if the dose comes back as zero, you apply the missed dose calculation. Well, that creates in itself a problem because in some instances, even though we have come to the conclusion that the LOD for some of the early film dosimeters may have been as high as 40 millirem, they

reported down to one or two millirem. Which means that if the person did his homework, under current guidance he would say well, one millirem is greater than zero; I don't have to apply it. But guess what? If he was given the LOD over two, he would get 20, he would get 40 divide by two for that period. He would get -- if he had zero dose he would get 20, but if you actually look at the dosimetry record and you see an entry of one or two -- and I provide some information to some of these -- he will actually be cheated -- he'll get less for a real dose than a person with a zero dose. And so there's another procedural problem that doesn't define the need to account for missed dose under conditions when the -- the actual dosimetry record identifies a value that's less than LOD divided by two. Is that understood?

Same thing -- as I said, with neutron doses we have a whole (unintelligible) -- as I said, I went very, very systematically through all the DOE records and identified neutron doses, and again, he missed piid* years of missed neutron dose.

Lastly, occupational dose, and we've touched on that

briefly already. My estimate for -- for his occupational medical exposure is only 17 millirem, so I'm not always consistently just looking to see how I can increase it, but I'm trying to comply with procedures. When you have the data, use it. And if you want to default to some higher value, at least make some explanation, which I didn't see here. But in this case, as I said, I was somewhat concerned by the simple fact that the POC for this individual, based on the current dose estimates, was as high as 40, and I see an awful lot of missed doses here that will certainly add -- now I didn't run the POC calculation, which was not part of our charter, but it's possible -- quite possible, that he may approach or even exceed 50 percent.

DR. ZIEMER: Hans, on your chart where you have the column called procedurally compliant --

DR. BEHLING: Yes.

DR. ZIEMER: -- for example, on missed dose, when you say "no", are you indicating that NIOSH did not comply with their own procedures, or you think the procedure itself is faulty? What do --

DR. BEHLING: Well, it's probably a combination of

things that involve a complexity of procedures, which makes this kind of error almost a -- a high probability. But in this case --

DR. ZIEMER: Well, let me ask it a different way. On the first one, photon dose, I think Jim said that you're using the whole body value as a surrogate for the organ, since it overestimates. Is that contrary to NIOSH's procedure or are you saying that you believe the proce-- this column says it's not compliant with the procedure.

DR. BEHLING: Yes.

DR. ZIEMER: And I'm interpreting from what Jim said that that is the procedure.

DR. NETON: No, I don't think that's specifically called out in the procedure, but that is an approach that is used fairly commonly to circumvent the elaborate uncertainty propagation that we use.

DR. ZIEMER: I'm just trying to get a handle on --

DR. BEHLING: (Unintelligible) it's procedure, not compliant. The answer is, you're trying to offset one efficiency by overestimating another. In other words, the failure to incorporate into the IREP code an uncertainty

measure for each of those (unintelligible) --

DR. ZIEMER: Oh, okay, I see what you're --

DR. BEHLING: -- (off microphone) doses, partially offset by a DCF that has been arbitrarily assigned one. And clearly when you talk about 30 to 250 keV, the dose conversion value for an AP (unintelligible) to the colon is considerably less than one.

DR. NETON: That's correct.

DR. BEHLING: (Off microphone) So therefore you're trying to compensate one against the other, but the procedures don't say that that --

DR. NETON: The procedures don't say that, but we do have latitude with the individual do-- it's a guidance document. It's not a procedure. The implementation guide is not a procedure, let's -- let me state that. So a dose reconstructor does have some latitude to use his judgment to efficiently process the case. But I hear you. It's a very valid --

DR. BEHLING: If it were stated, I would accept that.

DR. NETON: No, I agree.

DR. BEHLING: I'm not a nit-picker. I'm just looking to state whether or not a procedure was followed, and --

DR. NETON: I hear you, and we totally agree that we need to do a better job with that.

DR. ZIEMER: Thank you.

DR. BEHLING: I have several others, but you know, as I said, they all follow things that involve errors that are arithmetic, the -- the freedom and maybe subjective nature of individual dose reconstructors to --

DR. ZIEMER: I did want to also ask, and maybe Jim can answer, the one that he pointed out where if the doses are below half of the minimum detectible but are still recorded --

DR. NETON: Right.

DR. ZIEMER: -- is there -- in fact, does the procedure --

DR. NETON: I think we do --

DR. ZIEMER: -- call for us to use the -- it seems like it's --

DR. NETON: The procedure's silent on that, and it's a valid point, that we do need --

DR. ZIEMER: It probably doesn't change things very much --

DR. NETON: It makes a minimal impact on the dose reconstruction.

DR. ZIEMER: -- but it could.

DR. NETON: But it does need to be more specific and spell out that it is our opinion that if it is below the limit of detection that we should --

DR. ZIEMER: You would go ahead and assign --

DR. NETON: Absolutely.

DR. ZIEMER: -- the value rather than using --

DR. NETON: Correct.

DR. ZIEMER: It seemed to me it was a valid point.

DR. NETON: Yeah, and I think that was a valid point that -- where there were just -- you know, we were silent in our documentation.

DR. ZIEMER: Yeah, thanks.

DR. BEHLING: I have several more, but it's up to the Board to decide whether or not you want to hear any more or -- I do have one (unintelligible) --

DR. ZIEMER: Are you talking about the other Hanford ones, or just some other --

DR. BEHLING: Well, I have -- I selected five, with the assumption that John might have two or three and I might have five instead of the 15. But again, this is a decision that you will have to make. As I said, I'm prepared to do more if you would choose to go through several other claims.

DR. MELIUS: Can I make one comment? Just that we need to leave enough time that we -- I think we need to resolve two issues. One is how are we going to -- how is the Board going to report on this at our public meeting tomorrow; what are we going to say? And number two, how do -- how -- we go forward from here with all this paperwork that then comes with what changes procedurally needs to get done?

DR. ZIEMER: Let's allow about 15 more minutes for specific things, and then at 4:00 we'll start to address that, if that's agreeable. Mike has a comment here.

MR. GIBSON: I think we also need to spend a little bit of time trying to determine how that our contractor and NIOSH is going to carry on dialogue so that when we get to these meetings we can have constructive meetings rather than what seems to be more like arguments.

DR. MELIUS: That's what I mean with what do we do with it.

DR. BEHLING: Let me talk about the claim involving piid*, Rocky Flats. The person was employed for about piid* years, various locations. His job description is defined as piid*. He was in

fact monitored externally/internally and his cancer was rectal cancer with a very low POC of less than one percent.

This one is a case where I believe we have a problem with the interpretation. I chose this one because it depicts some of the problems with too many procedures that are sometimes very difficult to -- to identify. And let me go to the next slide, because I think we can summarize what those problems might be.

Yeah, in this case -- this person has a missed external photon dose that was defined in a very, very convoluted way. He went through a procedure, and I think it's -- I don't have it in front of me. It's the procedure entitled "Maximizing External Dose". In other words, it's intended to give the dose reconstructor a handle to say let's skip the trivia and let's go -- and to maximize the dose in order to avoid certain things, such as the issue of uncertainty. And what that procedure calls for is -- and I think it's right here, I defined the procedure, the -- ORAU-OTIB-0008. What that procedure tells you is that for -- for missed dose, you can use LOD instead of the LOD

over two. In other words, if for that dosimeter period involving let's say film, the LOD was 40 millirem, the conventional approach using the implementation guide one would say take the 40 millirem for each zero dose divided by two and assign 20 millirem as the external whole body dose for that individual.

To avoid the issue again, I'm sure, of uncertainty -- because when you use that approach you then have to also use uncertainty of 1.52, even for -- for a missed dose, just let's go and give him a slightly higher one by simply using the LOD. Give him the full 40 millirem if that was the LOD for that time period.

In that same procedure there's also an issue of simplifying dosimeter dose, real dose, that says if you have -- let's say in -- in the first cycle you have zero dose, you would say what is the LOD; and if it's 40, that's what you'd give him for that cycle -- let's say January 1 of that year. The next month let's say it's February and the guy has 100 millirem of real dose, that's measured, it's recorded. The procedure there also says instead of worrying about the uncertainty, which is quite

complex, let's just double the dose and be 95th percentile sure that that dose will cover the uncertainty associated with that 100 millirem, so he would be given 200. But that multiplier of two, or dose correction factor, is not to be used in combination with the LOD. So what this person did, he took not only the LOD of 40 millirem -- let's say, for an example -- he multiplied times two and said I'll go with the 80.

And then he said -- in error two, he integrated that procedure with implementation guide one that says but in accordance with implementation guide one, I'm going to divide it by two. First he multiplies it by two, then he divides it by two. And so you have a situation here, and it's strictly a -- I don't want to be cynical or laugh, but you have a situation here where it's clear the dose reconstructor was not fully aware of how to implement one procedure at the expense of something else. There was some maximizing procedure that says let's put this in fast-forward and be done with it by taking LOD instead of LOD over two. Well, this guy used LOD and then multiplied times two, and

then he divided by two. In the end he got the right number, but only by accident. Only by accident.

Let me see, other issues are onsite ambient dose -- one of the things that I did want to mention is that onsite ambient dose, when it's used, is usually through a default mechanism. But I -- and I'm going to have to ask Dr. Neton for clarification here. I don't know how ambient onsite dose was calculated at the various sites. I can only imagine that those were environmental onsite film or TLDs that were hung up or at various buildings or -- and so forth, but it's likely that they represent the deep dose. Is that correct?

DR. NETON: That's correct.

DR. BEHLING: Okay. And that protocol would be very, very adequate if in fact the tissue in question or organ in question were in fact one that was a deep organ. When -- when that num-- when that protocol falls apart is if the cancer in question is a skin dose, and I have -- and one of the cases here, in fact, I provide a ratio value of empirical data where the shallow dose -- that is, the 7 milligram per centimeter

square skin dose -- and when you look at that and compare it to the HP10 deep dose, they're a factor of almost ten apart, which means that in certain circumstances the use of onsite ambient dose, if in fact the cancer in question turns out to be a skin cancer, it's going to be considerably off lim-- off the mark.

DR. NETON: Excuse me, Hans, I do just need to say it depends on the site. I mean if they're -- for instance, like an accelerator facility where there's -- there are plumes of beta-emitting radionuclides circulating about, it would not just be the deep dose, but I don't have the data at the tip of my fingers. But we'd have to look at that individually, but we would not just ignore the deep dose if there were indeed circulating beta emitters in the air.

DR. BEHLING: Yeah. I'm only basing it on my own experience since I used to be affiliated with a nuclear power plant operation and I was in charge of the health physics program at Three Mile Island, and of course environmental doses were usually measured by hanging TLDs onsite, off-site, and it was the deep dose that was recorded, not the shallow dose. And it's

strictly a minor issue that I just wanted to bring up that may have selective application in -- in cases of skin cancer.

DR. ZIEMER: But not for this particular claim.

DR. BEHLING: Not this one, but it just happened to -- to strike my -- my fancy here when I looked at -- I have something circled about onsite ambient.

Again, in this case the occupational medical dose was the lung and -- was the rectum, but for occupational medicine -- occupational medical dose they were to calculate for the rectum and again they used the lung, but I guess we heard from Dr. Neton, apparently there is some guidance that I haven't seen that says that it's perfectly okay to assign 80-some millirem for a dose that in reality should have been less than one millirem. But you know, if this is something that NIOSH has -- has deemed acceptable as part of the efficiency process, I'm certainly not going to argue with it, except I didn't see it as a procedurally compliant approach.

Is there any -- anything else I can -- I did want to just briefly come to maybe a final slide which

summarizes my concerns, and if the Chairman agrees, I can go to the slide.

DR. ZIEMER: Sure.

DR. BEHLING: Okay, summary conclusions. And again, these are my opinions. I'm not going to say that I may not be in error, but let me say this. I have had now the privilege of being very much involved under task three, which has yet to be discussed, which is a review of all the procedures that are applied to the dose reconstruction process. And I've also -- under task four, did seven of the dose reconstruction and very, very carefully QA'd some of the others, so that among the 15 that you see in front of you I have a fairly intimate knowledge of all those 15.

And what I've drawn to as a conclusion is that you can categorize some of these errors as simple arithmetic errors, and we've seen sample of that.

There are errors resulting from use or misuse of procedures -- and again, I think Dr. Neton has pointed out maybe it's not as much misuse, except that there's this guidance that we haven't seen and were not aware of, and I will

certainly strike those -- those statements if it turns out that there's guidance that says go ahead and use the lung dose when in fact the organ in question turns out to be testicle cancers -- testicular cancer or prostate cancer or something else.

Failure to follow procedural guidance, as I said, there are certain guidance, and I believe they were written for a purpose and the purpose is to apply them. And part of the concern that we always have is consistency. And I've always wanted to be able to do one thing, and that is take one particular claim and then hand it at randomly to 20 different dose reconstructors who are currently out there, without them knowing that there's 19 other ones doing the same thing, and so to see how consistently are they going to process the same individual claim. And as a QA measure, so to look at it, say we -- how -- we have 20 independent people concurrently doing the same thing using the identical procedure, how consistent are their -- and I think it's important that these dose reconstructions do follow some pattern that ensures consistency so that there's reasonable

numbers that you can expect when you hand somebody a -- the raw data, the DOE documents, et cetera, and assume that well, maybe not down to the millirem, but maybe plus or minus 15, 20 percent would be in reasonable approach to assuming that that is the level of consistency.

And there lastly, four, there are some inconsistency with which procedural guidance is applied among the individual claims, although that's just what I just talked about or finished up.

So my gut feeling at this point is how do you account for these errors that we've observed in these first 20 cases, and it's reasonable to assume that for some complex dose reconstruction you have to be willing to put an awful lot of time into 300 pages worth of DOE documents, to go through all of the -- in fact, some of the earlier documents -- I've looked at whole body count data. They don't give it to you in nanocuries, body burden, as you would today's world if you have a sophisticated system. You put the guy in front of a Canberra, whole body counter, and it spits out to you how many nanocuries of cesium, cobalt, iodine, et cetera, et cetera.

In the old days I looked at data that gives it to you in counts for each radionuclide, and I assume it's full with half max-counts under the peak of a sodium iodide crystal. But without a calibration factor, you have no clue what that means. While you can standardize it by looking at the K-40 and say if the guy weighs 200 pounds he should have maybe 120 nanocuries of K-40 and scale in accordance, but that's a protocol that would require an awful lot of effort -- an awful lot of effort. And so my gut feeling is that many of these errors were done as a result of being in the position where they have to finish so many per unit time, and the people simply said I'm going to take a shortcut here and not necessarily go into individual cycle dosimeter readings, but I'll just look at the summary sheet for the -- from the DOE and say this is the year's total without knowing whether that year's total represents a single cycle for one month or evenly spread over 12 months. So time is obviously an issue. Familiarity with the proc-- the procedures is another issue.

There are some procedures that I have to tell you

I've looked over and I keep asking other people who are in our group, whether it's John or others, and I say tell me what you make of it; I'm not going to tell you what I think, but I'm at this point very much perplexed as to whether or not I'm -- I'm properly interpreting the procedure. And I don't consider myself a novice at this. I've been around and so many of the other people at SC&A, and we're not in consensus about how to interpret some of these procedures.

For instance, I'll give you an example so that Dr. Neton will know. When you talk about -- for instance, the site profile for the Savannah River Site, you will see -- under the neutron columns you will see specific statements about maximum missed neutron for a given year, which represents the LOD and the number of cycles that usually represents that time period. And they may say 300 millirem neutron dose, but it's uncertain to me whether or not you now have to multiply that neutron dose with a neutron dose correction factor or the ICRP correction factor. These are things that I'm not sure. And I'm also convinced that the

other people who have been tasked to do this are not convinced that that number is not the final number, that you have to multiply this in some cases -- like 1.91, which is the neutron dose correction factor that represents the ICRP-60 versus the earlier version, et cetera. So there are ambiguities in the procedures that, no matter how many times I read, I'm not sure I personally would not make a mistake that wouldn't be caught by somebody else and says you misinterpreted the procedure. So that's a key issue.

And -- and lastly, and this is my own personal complaint a little bit, is the format and brevity of the dose reconstruction report. We've already touched on that. As I said, it would be very helpful for SC&A to at least take the Attachment One data and all the dose entries and at least identify what they represent. That would be a tremendous help, because part of the major up-front work, and especially when you have as many as 300 or 400 dose entries, is to figure out what is the first few entries represent, which category -- missed dose, dosimeter dose, you know, whatever

it is -- and that would be very helpful. So -- and alongside with that is that it would also be not something that would cost NIOSH an awful lot of additional help -- hours, but it would also cut back on NIOSH's internal QA because now you also have a paper trail. So when I look at a dose reconstruction report that's been signed off and I find these errors, my first question is how did this pass internal QA? And I cannot imagine an internal QA that can look at the current format and be convinced that all these numbers are truly what they should be because they would, in essence, have to go through the same exercise that I have, which is a very time-consuming exercise, to convince themselves that in fact these numbers represent real numbers that we're willing to stand behind, if challenged later on. So I think there's a need to maybe modify the current dose reconstruction report to include a little more -- as I started to say out, it's a cold trail, but a good bloodhound will still ultimately find the victim. What I'd like to see is a fresher trail.

DR. ZIEMER: Thank you, John and Hans, for your

reports today.

You have -- in a sense, you're blazing a trail, as well. NIOSH has had to develop procedures and you've found that you've had to develop some procedures on auditing as you went, too, and that's not always easy to do. And we also are developing procedures, one of which is figuring out what to do with this report.

Now let me -- let me start out by saying that it's clear, based on some comments that we've heard this morning in the open session, that there are folks that want this report -- redacted, but this report -- which I must say it seems to me, even if the case numbers are taken out, by giving all the demographic information, the job description, work locations, the employment dates, the type and diagnosis date of cancer, won't people be able to figure out who many of those folks are? Have the attorneys really figured out that this is okay with the case number off of it?

DR. MELIUS: I think the -- well, go ahead.

DR. NETON: I think what we've done is we provided the individual reports and they'll be available tomorrow morning to the general public --

DR. ZIEMER: The individual reports being what?

DR. NETON: Provided by SC&A, the dose reconstruction review reports -- the individual cases -- case reviews. Those are going to be available to the general public tomorrow morning.

DR. ZIEMER: Which ones?

DR. NETON: The 300-page binder full of --

DR. ZIEMER: Oh, the whole volume?

DR. NETON: Yes.

DR. ZIEMER: Well, that may be even worse.

DR. NETON: Well, that's -- it's been redacted. It's been through our FOIA office and completely redacted and --

MR. GRIFFON: So if they could redact that, they can redact this.

DR. NETON: I suspect, yeah; I don't know. I'm not familiar with the status of that report that you have in your hands as far as redaction. Maybe Liz can --

DR. ZIEMER: Well, this is not redacted at present. This is one Liz was offering to redact.

DR. NETON: Liz -- there's a question about the SC&A rollup report that the Board has in their possession. Is it our intent to redact that and have that available to the public?

MS. HOMOKI-TITUS: This document?
DR. NETON: Uh-huh.
MS. HOMOKI-TITUS: I've done the redactions on it. I have one --
DR. ZIEMER: What -- what's the nature of a redaction, other than removing the claim number? What else goes out?
MS. HOMOKI-TITUS: The cancer diagnosis date goes out, employment periods goes out. There's employment periods within the actual statements that goes out. And (unintelligible) --
DR. ZIEMER: Oh, okay, does the job description stay in?
MS. HOMOKI-TITUS: I believe the job description will stay in. I contacted our FOIA office to get this cleared --
DR. ZIEMER: Oh, okay. I was concerned that the -- what's here --
MS. HOMOKI-TITUS: (Off microphone) (Unintelligible) --
DR. ZIEMER: Yeah, I -- okay.
MS. HOMOKI-TITUS: -- I'm not a FOIA officer. That's why our FOIA office is looking at this. We can have it ready, if you all want to be able to discuss it in the public meeting, to have

redacted versions available for the public tomorrow.

DR. ZIEMER: Okay. That's very helpful. Now another thing that I heard sometime along during the discussion, I think John said that SC&A was or is preparing some errata sheets, which tells me that you think there are some additional changes yet so that this might not be the document that you would want out on the street, either. Is that --

DR. MAURO: That's correct. In fact, the slide presentation, the tables that you're looking at, there are differences between the summary tables that you have here and some of the tables that are in the 300-page report, because in the process of preparing this we caught -- so we -- we're in a position now where --

DR. ZIEMER: So the big report --

DR. MAURO: Is -- is --

DR. ZIEMER: -- may have some errors that --

DR. MAURO: Yeah, we -- yeah, we -- we would -- we would like to submit an errata sheet or some replacement pages to correct errors that we know. But now there's another layer here. Jim has made -- has responded to many of our

observations and findings or areas of concern. Now the question becomes would you like us to put a report out that reflects that feedback from NIOSH regarding our findings, or would you prefer -- we would of course like to have an opportunity to at least submit a revi-- the errata sheets or replacement pages, and then of course independent of that, Jim may have his commentary, which would also be put public. Or we could wait until we get Jim's material and consider that -- you know, how -- 'cause -- 'cause -- you know, so we'll -- we'll do any of the -- an -- any one or combination of these, whichever you feel is best suited for the process.

MS. HOMOKI-TITUS: Dr. Ziemer --

DR. ZIEMER: Well -- yes?

MS. HOMOKI-TITUS: -- let me just add something to that, because we have prepared the 300-page document. We've redacted it. It's ready for public distribution. But if they're going to make changes, then that needs to go through our FOIA office to be redacted before it can be provided publicly tomorrow. So if you have sheets that are going to go in the discussion

for tomorrow, we need them as soon as possible 'cause we're talking about a three-hour time difference, you know. Our FOIA office is gone at this point.

DR. ZIEMER: Yeah. Shelby, you want to add to that?

MR. HALLMARK: I would strongly urge that, given that there are changes that -- that are already on the table here, and presumably some more that may come out of the discu-- you know, the digestion of the discussion that's happened today, that the Board not issue these documents at this point. These are documents that are -- that are potentially going to be in the claim adjudication process, and I think we would be misleading individuals who may look at these and say well, my case is like that and there's -- they made these kinds of comments. I think the Board has a responsibility in an adjudicatory structure to be careful about those kinds of issues. And this clearly, to me, is premature.

DR. ZIEMER: Thank you. Jim has a comment.

DR. MELIUS: Well, not -- not to -- Shelby's -- I was trying to get more to procedurally where we're going from here, 'cause I think that's what we

also need to be able to say tomorrow. And I think we need -- do need to have a process for NIOSH to complete its review of this document 'cause I know -- if I understood Jim Neton correctly, they have not reviewed the -- the document, all the individual -- nor the summary of that, and then get together with SC&A and try to resolve issue, to the extent they -- they can be, 'cause I think they can be -- some of them can be. And I also think we need a report back, the Board does, that -- from SCA that reflects what they've heard from NIOSH, what errors they found from their internal review or based on what they hear from -- errors in this -- in their report. And also we had talked about earlier, which was this classification issue, put these errors in some context so we know what they are. Are they technical issues -- I mean I think Hans in his last summary conclusions have the categories except I think there's a fifth category which is technical issues.

DR. ZIEMER: Uh-huh.

DR. MELIUS: Some of which are site profile, some of which are others --

DR. ZIEMER: Right.

DR. MELIUS: -- and so that we can understand them better, we can understand what to prioritize and how to make recommendations to NIOSH on -- on what to do with that. And so I would see us getting back a -- this big volume corrected, whatever errata sheets that come up based on what they found so far, what they get from their dialogue with NIOSH; a new summary report that reflects those changes, also, along with a way of classifying the findings in a way that puts it in a more useful form for us. They would then present that to us at the next meeting. We would take action on that in terms of a set of recommendations to NIOSH in terms of what may or may not need to -- need to be done.

DR. ZIEMER: Let me hear from others of the Board. There's a possible approach that Jim has suggested. Let's hear from others. Do you think that's the way to go or do you have an alternative and -- Robert, you can start. We'd like to try to get a consensus here, so we need to hear from more than one or two.

MR. PRESLEY: I agree with Jim, except I would like

to see this before we go to the next meeting so we've got a chance to study it.

DR. MELIUS: Oh, I -- yeah.

MR. PRESLEY: This bringing stuff in at the last minute and us having to sit here and look over it, not knowing what it is, I'd like to have it at least more than a couple of days prior to the meeting.

DR. ZIEMER: Who else? Roy, then Leon.

DR. DEHART: This is a question. Having announced publicly that there will be a report, can we back out from that and -- with some excuse for -- that's acceptable?

DR. ZIEMER: The report that's been announced I think is the release of the site profile report.

DR. DEHART: Site profile.

DR. ZIEMER: I'm not sure -- did we publicly announce something on this?

DR. NETON: It was my understanding this morning, and I did mention that we were prepared to release the individual dose reconstruction reviews in their redacted form.

DR. ZIEMER: But again, subject to the Board's --

DR. NETON: That's correct, yes. Yeah, that's the Board's decision.

DR. MELIUS: I just think we should decide where we're going to go procedurally, then decide how we report and what we release or recommend being released again.

DR. ZIEMER: Roy -- oh, I'm sorry.

MR. OWENS: I agree with Dr. Melius's approach. The only thing I might add is, and I believe I heard Dr. Neton say that there were some areas that NIOSH concurred with the findings by SC&A, and I'd like to see those areas at least identified in this overall strategy.

DR. ZIEMER: Thank you. And --

DR. MAURO: May I make --

DR. ZIEMER: John?

DR. MAURO: -- one comment, please? Thank you. We -- we feel that the nature of the errata sheets that we would like to incorporate are not critical. What I mean by that is, we don't feel that the -- the extent, the nature of the changes, are so substantial that it is critical, you know. In other words, so if you -- if you folks feel that you would like to put out this redacted version, perhaps with some qualifier that it's still -- this is a step in the process -- that is, here is a product, a

work product that was put out, it's been redacted; it is undergoing this review cycle with NIOSH. We -- I'm speaking for SC&A now -- we have no problem if you decide to go that route. That's perfectly fine with us.

I would also like to point out that when we costed out our work hours per case -- in other words, the budget that we submitted -- we basically came up with an estimate, when all's said and done, that's going to average out to about cfid* work hours per case, and that includes basically cfid* hours for basic review, cfid* hours per advanced review, and they sort of -- 'cause we have -- what's left -- you know, we have 40 more cases. We basically estimated for those 40 cases we're going to come in at an average of cfid* hours per case.

Now we are building a process now that's out of scope, you have to realize. We're building a process of iterative review between NIOSH and SC&A, working together to work out our findings. This is not within the scope of work in terms of -- and I'm afraid that's it's going to -- it's going to -- we're going to find ourselves in a situation where it's going to

cost more than an average of cfid* hours per case if we go into this kind of cycle, which could be a protracted cycle. In other words, we're opening up an open-ended dialogue that is very hard to predict how long that's going to take.

DR. ZIEMER: Lew just reminded me that if the Board wishes to have this kind of iterative process, we have to, in a sense, approve that.

Okay, Robert and then Tony. Oh, okay, Tony.

DR. ANDRADE: Okay. Well, I'm sorry to have to be the one to have to break it to you, but indeed I believe that the iterative process has to occur. I just don't know of any organizations anywhere that do not submit documents to one another for factual accuracy checks. And stuff like this comment here that consideration for -- in the Huntington Pilot Plant case, consideration should have been given to the possible presence of isotopes of technetium, neptunium and plutonium in the scrap nickel. Even though that, in and of itself, has no proprietary, personal information or et cetera, et cetera, it is basically misleading because NIOSH did up the enrichment of the uranium that

was being handled to take into account those isotopes that were in the scrap nickel. So all of those things have to be taken into account when a report is issued to the public. That is indeed what is the product of factual accuracy checks. So we have to go that way. And issuing this kind of product at this point in time I think would do a disservice to the Board, to SC&A and especially to NIOSH.

DR. ZIEMER: Thank you. Roy, then Jim and Wanda.

DR. DEHART: I think the answer to my question was that we are not obligated to release, so I would join Tony and others in saying this should be cleaned up before we turn it over to the public.

DR. ZIEMER: Jim?

DR. MELIUS: Yeah, and I would just concur in the sense -- I think for this first dose reconstruction review we need to complete out this part of the process. There wasn't time and I think there are enough problems just with the formatting of what we have received that I think it's worth the extra investment to get it in better shape.

DR. ZIEMER: Thanks. Wanda?

MS. MUNN: There's a litany of issues that one could either call micro-managing or could call legitimate oversight that this Board probably should agree that they will or will not undertake to look at. Anything we put on the street is going to be widely publicized and brought to our attention again and again in future months and years. This first decision about what is going to be issued with respect to actual claimant files needs to be as precise and as thorough as we can get it. To issue anything prematurely would be probably a serious mistake on the part of the Board, and potentially damaging to some of the claimants, regardless of how well-redacted the file might be.

I would urge us to resolve some of the issues we have before us and identify what we feel the process should be between the auditors and NIOSH; identify whether some of these issues that we have laid out, whether these assumptions that are being made by both the auditors and NIOSH are accurate assumptions that we feel or correct, or at least make the decision whether that constitutes micro-management on our part.

DR. ZIEMER: Thank you. And then Henry, and then Mark.

DR. ANDERSON: Yeah, I think we need to delay. And I think -- on the other hand, I also think tomorrow we need to say that we've had a very productive session. It's the first go-round and -- and it's not as far advanced as we had hoped, and that we don't have final documents to release. And I do think between now and the next meeting I would certainly like to see more of the responses and have that -- you know, either the document contain what the report is, the NIOSH response to it, and then I think we need to come up with a summary as to where we want to go forward -- or the final document -- I think there's probably changes on both sides, once they get together and talk. And if it costs a little more money, I think that -- I would rather have the process identified now with the first set rather than wait later. So I think we've got ample explanation for why this isn't ready to go out because it is not completely accurate at this point, so we don't want to get back into arguing about that. So I'd agree, I think we -- we delay; we just have

to have -- what are we going to do between now and then.

DR. ZIEMER: And incidentally, this comes at a cost not only to our contractors, but to NIOSH in terms of time and effort, and we should recognize that, as well.

Lewis -- yeah.

DR. WADE: Let me -- to the issue of cost, I think it's terribly important the Board decides what it wants to see as its process, and then inform us and us sit with the contracting officer and we can then approach the contractor, and we can determine whether or not it represents a change or an expansion in scope. But I think it's terribly important that the Board tells us what it wants.

DR. ZIEMER: Okay. And then Mark and then Tony.

MR. GRIFFON: Yeah, I think -- I agree with this iterative approach that Jim was -- was discussing. I think at the end he -- the one thing he said also that I want to emphasize is that that final summary report is -- to the public is a Board report, it's our product. So even if we go through this iterative process, SCA submits a final report to the Board, we

have to make recommendations from that final report in a public session, so I think we want to keep that in mind, that we have to have time to do that.

As far as process, this iterative approach, I think we might want to -- also the Board members, to the extent possible, might want to be included. And -- and I'm thinking about the process we had before where each work group was involved with three or four cases up front, but then we really didn't have much contact with SCA or NIOSH after that. And I think that it might have been good to have that work group again look at SCA's final report before it came here, and maybe NIOSH's critique of that final, and come together and have some agreement on those before they -- they reach this -- you know, this point, and then a lot of those could have probably been resolved at the work group level rather than at the full Board level, so it's a possibility for iterative approach.

DR. ZIEMER: Okay. We'll get a comment from Tony, and Jim, did you have another comment? And then -- we're getting close to a point where I'm going to ask for a formal motion to

(unintelligible) -- and then Henry, okay. Tony?

DR. ANDRADE: I had -- I was going to provide a very -- some very specific suggestions for -- for process, but perhaps --

DR. ZIEMER: Well, if you want to formulate that in the form of a motion, that might help us here in a second. Let's see if --

DR. ANDRADE: Somebody else can go first.

DR. ZIEMER: -- I can get some general comments on -- and maybe you can -- yeah, Jim, you were first and then Henry.

DR. MELIUS: Yeah, I would just comment that I think we also have to spend a brief amount of time talking about what are the steps for the second -- the next 20 which -- and how do we modify that approach, and I think some of the modification may have to do with the -- NIOSH's participation in that conference call, which was really their only chance to sort of interact. And I'm not sure if there's a better way of doing that or if there needs to be another step in there, but it was -- I think we need to look about that, but I think we need to deal with this issue first.

DR. ZIEMER: Thank you. Henry?

DR. ANDERSON: Yeah, I -- I don't -- haven't made up my mind on this, but it seems that, you know, our review has steadfastly not wanted to attempt to say does this make a difference in the POC, and I do think, though, that probably as part of any formal release, NIOSH or somebody needs to say these were interesting discussions; would it have made -- you know, would the -- either proposed changes that we may be doing or recommendations, would it have made any difference in any of the cases. I think the public is going to know were the decisions good decision, regardless of how, you know, they were derived. And what we're looking for is consistency over time, so somehow -- and I think some of these -- it was interesting discussion, but the one where the POC was .45, I mean that is important for future where it may become important, but I don't know -- I'm just raising that as an issue. I'm sure someone's going to ask well, would it have made a difference? And we either need to, as a Board, say that isn't our job, but somebody -- are going to ask that so I

that's -- to me, that's a stumbling block that's to the fore as we go forward. I'm not sure the Board wants to make that comment, but I know we're going to get asked that question.

DR. ZIEMER: At the same time, it may be that it would make no difference in any of these 20. But if there are -- but it could have -- it could have some impact on future cases, yes, that's the point. And again, our charge is to look at the quality of the process, and if -- and actually, this Board and NIOSH and our contractor ultimately have the same goal, and that's that we have good, dependable dose reconstructions. And whatever we can do to make sure that that process -- and therefore good decisions on the claim-- for the claimants.

I think if we could have a motion that sort of codifies what we've talked about here in terms of the process, what is -- what is it we would like to see our contractor do, NIOSH do and what -- what is -- what do we do? It may be a multi-pronged approach. You have a comment first, or a motion?

MR. PRESLEY: Comment.

DR. ZIEMER: Comment.

MR. PRESLEY: What Henry was talking about where we had to put that in there, I think that needs to be in one of the things that we tell SC&A and HHS, that will this finding make a difference. That needs to be part of it.

DR. ZIEMER: Thank you. Jim?

DR. MELIUS: I'm going to make -- I'm trying to get a motion ready so --

DR. ZIEMER: Tony, were you getting one together, also? See if they match up? Go ahead.

MR. GRIFFON: While they're drafting motions --

DR. ZIEMER: Well, I think they both have some things written down we can --

DR. MELIUS: I'll do step one, you do step two.

DR. ZIEMER: Go ahead, comment first?

MR. GRIFFON: Oh, no, I was just a little off-topic. While they're drafting motions I was going to say it strikes me that we, as a Board, didn't have a lot of time to discuss the 20 cases today at all. We heard a lot, but you know, I noted seven large items that I felt out of these 20 cases that were at least significant issues for discussion amongst us, and at least four of them got hit, but -- but a couple of

the bigger ones that I thought should have been addressed, which we might just want to think about or -- you know. One was missed dose versus unmonitored dose and how that was handled in some of these cases. I think there were some questions. Two was validation and verification of some of the data that was used for intakes, and also for -- for dosime-- or for external doses. Specifically that one can -- that goes back to some of the site profile stuff that was used, so it might tie into site profile review. That's why I didn't bring it up. And three, and a big one, I think, which really I was surprised it didn't come up in discussions today at all, was lack of attention to interview comments. I felt that in -- and I know that these were often efficiency cases, so maybe they -- they argue -- they could argue that, you know, we didn't -- we didn't pull that thread, so to speak, because the POC was (unintelligible) --

DR. ZIEMER: Are you --

MR. GRIFFON: -- low --

DR. ZIEMER: -- talking about SC&A's report itself?

MR. GRIFFON: No, I'm talking -- both. I'm talking

about the original dose reconstruction, as well as the audit really didn't say much about --

DR. ZIEMER: Right, well --

MR. GRIFFON: -- some things.

DR. ZIEMER: -- (unintelligible) one of the issues that I raised, John. It seemed to me it would make sense if we --

MR. GRIFFON: Had a checklist.

DR. ZIEMER: -- had -- even if it's a checklist, that assured us that you have looked at those issues.

DR. MAURO: One of -- in the cover letter to our large report, you may have noticed that I point out that the format that -- that's used differs. We feel that the format that was used in the Savannah River cases is the one that, after going through the process, is the most responsive.

DR. ZIEMER: Be more standardized in the future.

DR. MAURO: Standardized in the future, and our plan, given no other -- I mean certainly any guidance you folks provide on how you would like us to format it, we will follow that guidance. Right now we internally have discussed the matter. We felt that the format used for the Savannah

River cases seem to have a structure that addresses the issues that are listed in our scope of work --

DR. ZIEMER: It's more encompassing, yes.

DR. MAURO: -- in a much more systematic way, so we're very much receptive to any guidance -- and that may be very helpful to us on the next 20.

DR. ZIEMER: Yeah. Yeah, and you heard the comments earlier today in terms of categorizing the findings in certain ways.

Okay, Jim, you want to start us off?

DR. MELIUS: Yeah, let me make this as a motion and -- can friendly amend or hopefully we're talking -- one, I would propose that we recommend that -- first of all, that NIOSH complete its technical and factual review of the SCA report; that the SCA and NIOSH then have a meeting or conference call to try to resolve -- clarify issues, to the extent they can -- can be; that SCA then prepare their -- a report -- a new report to the Board that would address any of the issues raised by NIOSH and any of the other technical errors they found. That would encompass both errata sheets or changes to the

individual dose reconstruction reports, as well as to a -- a sum-- a new summary report; that both of those include a better chara-- categorization of the findings into the categories that we -- we've talked about; that NIOSH would then -- would also have an opportunity to comment or, you know, somehow communicate to the Board any outstanding issues that were still left that could not be resolved. I don't think we can expect --

DR. ZIEMER: Who would communicate?

DR. MELIUS: NIOSH.

DR. ZIEMER: NIOSH?

DR. MELIUS: Yeah.

MR. GRIFFON: Unresolved issues.

DR. MELIUS: Unresolved issues. And that both of those reports would get to the Board at least one week before our next meeting, which is early in February, so it's a tight timetable.

MR. GRIFFON: I would just -- just one -- what I believe is a friendly amendment.

DR. ZIEMER: Hang on.

MR. GRIFFON: In step two --

DR. ZIEMER: Hang on. I want a second first.

MR. GRIFFON: Oh.

DR. DEHART: Second.

DR. ZIEMER: Who's on first. Okay, second is -- I have a second, first. Okay, now.

MR. GRIFFON: Now a friendly amendment. In step two, NIOSH/SCA conference call. I would just add on that we might have those same work group members that worked on the cases integrated into that conference process.

UNIDENTIFIED: That's everybody.

UNIDENTIFIED: That's everybody, I --

DR. ZIEMER: That's everybody.

MR. GRIFFON: Well, we'd just do it like we did before, is my point.

DR. ZIEMER: Oh, okay. We need to discuss that because logistically that may be an issue.

MR. GRIFFON: Yeah. Well --

DR. ZIEMER: 'Cause they may not be -- this doesn't sound to me like it's going to be structured case-by-case, or is it -- or do we even know?

DR. MELIUS: We don't know. I -- let them do --

DR. ZIEMER: Perhaps -- and we can't have all of us on the phone at the same time.

MR. GRIFFON: No, I know that. I know that.

DR. ZIEMER: Perhaps John and Jim, if this motion passes and we -- we get to that point where

there's some kind of a conference call or a face-to-face, you can let the Board know -- particularly what the agenda is -- and if in fact you end up discussing certain cases at certain set times -- although it seems to me that this is going to be very difficult in the framework. I --

MR. GRIFFON: Well, okay, this is -- the final product is the Board's, so -- I mean I just think there needs to be a step, even if it's a newly-formed work group to work with this process.

DR. ZIEMER: Well, either -- either that, a work group to take an early look at it, or the product comes back to the Board for review, we'll have it a week ahead of time under this motion -- or a week or more ahead of time. Okay, let that ride for the moment then.

MR. GRIFFON: So it wasn't so friendly.

DR. ZIEMER: Less friendly than you thought. Okay, we have a motion that's seconded. Comments? Tony -- Mike, Mike's first.

MR. GIBSON: Another part, hopefully as a friendly amendment, as part of their resolving the issues that they have between NIOSH and the

contractor, could we somehow have them make reference to the data they use so that there'll be a more clear auditable track for the contractor to use?

DR. ZIEMER: Okay. Jim or -- or John, we need to -- I'm going to ask Mike to repeat that comment, and then you can tell us if that's feasible.

MR. GIBSON: Just as part of your talks back and forth to resolve how you're going to deal with these issues, could part of the process be that NIOSH puts references to the data they use and where they got it from so that it'll be easier for the contractor to pull the string on the data, rather than go back to ground zero and look it up?

DR. ZIEMER: Well, you would tell us the basis for each issue.

DR. NETON: Right, I think that would be part of the review -- the review cycle. I mean just like we've done today, we've un-- you know, unveiled some issues that, you know, were sort of hidden in our process, and we would do the same thing, so I think that would be part -- part of the process.

DR. ZIEMER: That would be built-in then. Thank you.

MR. GIBSON: But as -- but as far as going forward and the future cases, if that was always part of the process, it would be there rather than...

DR. ZIEMER: Yeah.

DR. NETON: Yeah, I think that that sounds to me like it's ultimately going to be one of the recommendations of this report, and we will certainly embrace any recommendations the Board would make to that effect.

DR. ZIEMER: And let's -- I don't want to put that in this particular motion, but it would ultimately become part of a final report, probably, as opposed to what we do right here with this -- developing this.

Okay, Tony.

DR. ANDRADE: I wanted to comment that what has been proposed by Jim is fine, I think, for this time around. It's a bit -- it's a bit complicated, and I -- I would like to --

DR. ZIEMER: Well, it does, however, spell out the specific roles, so that's --

DR. ANDRADE: Yeah, it -- it does.

DR. ZIEMER: -- it has a fair amount of specificity to it, so I think it's helpful in that regard.

DR. ANDRADE: It -- it is. It is in that regard. But --

DR. ZIEMER: Did you have some other points, though, that you think should be included?

DR. ANDRADE: No, I --

DR. ZIEMER: Did it cover what you were thinking about?

DR. ANDRADE: Pretty much, except I had a couple of things that I -- I would like to see as we move beyond this first case.

DR. ZIEMER: Oh, okay. Jim?

DR. NETON: I just have one question -- one question of clarification. It's not clear to me whether the Board is recommending that SC&A --

(Whereupon, Dr. Neton's microphone failed, and his subsequent comments were lost behind the comments of Board members whose microphones were still open.)

DR. ZIEMER: I don't think we've asked that this be done. I think that -- that sort of question arose as a general matter, but I think in -- for example, in -- in Henry's comments, he --

UNIDENTIFIED: (Off microphone) (Inaudible) anybody's going to do it, I think that's a --

DR. ZIEMER: -- he's sort of saying after we -- after

all is said and done, does any of this matter.

DR. NETON: (Off microphone) We can certainly do that.

DR. ZIEMER: Other comments or additions? Friendly amendments? Nasty amendments?

I'll try to summarize the motion. I think our reporter has the exact words, or do you -- you want to read them back to us? Okay, he's going to read them back to us.

(Whereupon, the court reporter repeated the motion previously made by Dr. Melius.)

DR. ZIEMER: Okay. Rich?

MR. ESPINOSA: I just have a little bit of a concern with -- since this is going to reflect on the Board, that I still kind of see a need for a working group in there, maybe during the meeting that SC&A is going to have with NIOSH or the conference call. I just think that there needs to be Board representation during the communications on that.

MR. GRIFFON: Well, I would second that.

DR. ZIEMER: Thank you, that -- okay, let -- let me suggest that -- that we act on this motion, and then we can do that as a separate action. Is that agreeable? This will be a motion that

deals specifically with the report, and then we can -- is that -- if that's agreeable.

Are you ready to vote on this particular motion?

DR. WADE: Could I make a comment before --

DR. ZIEMER: Yes, Lew.

DR. WADE: And once you make a motion and then pass it on to us, what I would do is to sit down with the contracting officer, discuss what you've asked of us, and then sit down with the contractor and determine whether or not there'll be any increase in cost associated with what we're asking. You might want to provide us thoughts on that now as to what you had originally assumed such a review would encompass in terms of scope, but we would take your recommendations and sit down with the contractor and discuss it. What we do when we have that information again goes to the issue of whether you would want us to move forward with additional cost to get this done, or whether you would want us to bring that information back to the Chair or to the Board. You don't have to tell us now, but I think you need to consider that.

DR. ZIEMER: Right. I think the -- I think the --

the Board will probably have a gut feeling that this is not a major cost increase. Obviously it involves a meeting. There's some travel time for the contractor, some additional prep time and so on. But if you want to get into details -- you're not asking us to try to put a dollar limit on it.

DR. WADE: No, just what you said is --

DR. ZIEMER: Yeah.

DR. WADE: -- consistent with what I...

DR. ZIEMER: Yeah, that it's perhaps an incremental cost, but should be considered as a valid add-on, if needed.

Are we ready to vote now on this? Now if this motion passes, I assume that what will happen tomorrow in public meeting is that I would report this as the action. This motion would be the action of the Board that would be reported, and no other documents would be forthcoming. Is that -- is that the understanding?

DR. MELIUS: I think with some process -- I mean some background for...

DR. ZIEMER: Yes. Well... All in favor, aye?

(Affirmative responses)

DR. ZIEMER: All opposed, no?

(No responses)

DR. ZIEMER: Any abstentions?

(No responses)

DR. ZIEMER: Thank you. The motion carries. Richard -- no, who made the -- who -- yeah, Richard, you have a motion, which Tony's going to discuss.

MR. ESPINOSA: I'd like to make a motion to propose that a working group be set involved with NIOSH and SC&A during the conference calls and meetings.

DR. ANDRADE: I'd like to second that motion.

DR. ZIEMER: Okay. Any discussion?

DR. MELIUS: I would just -- I'm sorry, Tony, you were -- were you going to --

DR. ZIEMER: Yeah, incidentally, this could be simply a subset of the -- no, if it's a -- if it's the working -- if it's the subcommittee, we have to announce it as a meeting, so you're asking for a work group.

MR. ESPINOSA: I'm asking for a work group.

DR. ZIEMER: An ad hoc work group.

DR. MELIUS: I would just request that whatever gets done in terms of a work group not hold up the process, that we not get into a large

scheduling issue 'cause it's really asking a lot to be done in a few weeks, given the holidays, and I just don't --

MR. ESPINOSA: The only -- the only reason why I'm suggesting this is because it is the Board's -- you know, this is going to reflect on the Board. And because it's reflected on the Board, the Board should have representation at it.

MR. GRIFFON: And if it's a group as opposed to two people for each case, I think the scheduling would be a lot -- a lot --

DR. ZIEMER: Yeah, we're talking about a work group, which means --

MR. GRIFFON: Right.

DR. ZIEMER: -- it can't be more than five people, and maybe three -- would -- would be three, and probably what we want is -- if this passes, just several people to volunteer. We may not use them all, depending on when the meeting is scheduled. We don't want to have the meeting dependent on five individuals from this Board if -- if we can get by with say three.

All in favor, aye?

(Affirmative responses)

DR. ZIEMER: Opposed?

(No responses)

DR. ZIEMER: Motion carries. Let me ask if we have several individuals who want to volunteer. Tony?

UNIDENTIFIED: (Off microphone) I'm not available.

DR. ZIEMER: Okay, Mark? Rich? Wanda? Mike? Anyone else?

We will notify all of you -- or will make sure that -- that -- once the date is set, I guess we'll try to make it work for all of you, but if one or two can't make it, we're going to have to go ahead. Mike, comment?

MR. GIBSON: We've got to make it clear, if I understand this correct, that the working group doesn't speak for the Board. We just are participants in the process.

DR. ZIEMER: Right. And Liz, do you see any problems with this, having Board members there?

MS. HOMOKI-TITUS: (Off microphone) No, that's fine. You guys (unintelligible).

DR. ZIEMER: Tony?

DR. ANDRADE: This comment is really meant to address Dr. Wade's concerns, and also just a few thoughts that I had with respect to the -- the

process that we're -- that we're engaging here. First of all, I would say that, number one, SC&A should be prepared to categorize its findings first, before they -- and perhaps reword these -- before the discussions take place with -- with NIOSH and/or ORAU.

I would just like to suggest, you know, having been in the weapons quality arena for quite a while, there's -- there's many ways you can categorize things, but one way that we've found to be convenient is issuing CARS, FARS and RARS, which are -- that's a -- that's just a convenient way to say where corrections are needed, findings have been noted, or there are remarks or observations that have been found. And the first one really refers to significant findings of -- that are -- that are -- or corrections that need to be made because -- because the issues are -- are really adversely -- adversely affect quality. A finding is one that affects quality, to a certain degree. And a remark or an observation is something that could be just a philosophical difference between two organizations.

When a correction is needed, it could be -- it could

be either technical -- it could involve a technical issue or it can involve a procedural issue. In other words, a procedure has to be changed. Both are just -- both are very -- are very serious, so that's just a comment here.

But anyway, the categorization should take place first by SC&A. Those should be accepted -- the categorizations should be accepted by NIOSH, and then the give-and-take take place during meetings and/or exchanges of information for factual accuracy. That's step two, and that can be an iterative process.

Then this working group that we have just talked about can be involved during that iterative process to review and participate in discussions, and perhaps to serve to facilitate those discussions, such a final product can come forth for the full Board to consider in a later meeting, and I'd say those are the four major steps that I would put down that capture what Dr. Melius said, perhaps with a little bit more brevity.

But that's the way it should go, and we really should think about that categorization. Like I said, there should be at least three. I've given an

example of three that I've worked with. I'm sure that other people have ideas and Mark, I know you --

DR. ZIEMER: And I'm not sure that it's going to be productive for us to sit here and define those categories now. Contractor can do that. I think they have the idea. I do want to point out to you that on a closed session we are pretty much bound by the stated time. We're past it, but Mark, you have something quickly? We need to come to closure. We're past the stated time of a closed session.

MR. GRIFFON: Yeah, I just think -- one thing I was wrestling with was -- in the ongoing -- for the ongoing purpose, if we have a working group we can't, as a working group, participate in an ongoing fashion in the same task. It's by definition a subcommittee, I think, and this is what we wrestled with before. So you know, unless we rotate members or something like that to do -- for this first set, I think it's fine 'cause it's one set of work, we can have a work group. But in an ongoing capacity, I've been wrestling with well, how do we -- I think the Board needs to stay involved. If we have an

ongoing function, by definition it has to be a subcommittee. Then you're in open meetings and it just makes the whole thing blow up, so we might want to -- I would -- that's why I was talking about the -- in the ongoing capacity, having that -- those two people assigned to cases being involved in two steps in the process. One, preliminary discussions with SC&A; two, discussions after they had a final report, so that everybody sort of has a little more consensus coming into this final meeting with the -- with the work product.

DR. ZIEMER: Yeah. When you get into the rollup here, it's a little bit more --

DR. WADE: Let us -- let us consider that. We can move forward with this recommendation --

UNIDENTIFIED: Yes, yes.

DR. WADE: -- and we can think about the (unintelligible) you're proposing and suggest ways of (unintelligible).

DR. ZIEMER: Okay, let's move quickly. Roy?

DR. DEHART: This is a housekeeping issue. We have documents that we may not want to retain. What -- what should we do so that they can be properly destroyed?

MS. HOMER: Give them to me; I'll take care of it.
DR. ZIEMER: Cori will collect those. Okay, Henry, you have another item?
DR. ANDERSON: Yeah, I just wanted to say I think we initially thought about this process at one meeting we'd identify cases, the next meeting we'd review and have a report. And I think reality is it's probably going to take two meetings so that we can have the original -- the cases would go and we'd have the discussions, then we'd have a discussion of those cases here, and then final adoption and move forward at the next. I mean we'll still end up ultimately with one at -- one batch at each, but it'll be -- run over three or -- three period -- or three meetings rather than two meetings. I think --
DR. ZIEMER: Unless we gain efficiency along the way and the format becomes more clear and the review process is --
DR. ANDERSON: It seems to me at this point we need to have some Board discussion, and so the public -- we don't want to give them the expectation that --
DR. ZIEMER: Oh --

DR. ANDERSON: -- the selection tomorrow of cases isn't going to be -- final reports of those at the next meeting.

DR. ZIEMER: Right.

DR. ANDERSON: So it's just public expectation as to when will things come out.

DR. ZIEMER: Tony, can you serve as the Chair of the ad hoc committee, please? Thank you. Jim?

DR. MELIUS: I have one last housekeeping issue. It is okay if we keep some of these reports, 'cause we'd like to review that --

DR. ZIEMER: They just need to be confidential. I think the sheet that has the code on it probably goes back. Right?

DR. MELIUS: Yeah.

DR. ZIEMER: Okay, anything else -- oh, Lewis, yes?

DR. WADE: I'd like to thank the Board.

DR. ZIEMER: And thanks to Dr. Wade for assisting in the process, as well.

We're recessing till tomorrow morning. (5:00 p.m.)

(Whereupon, an adjournment was taken to Tuesday, December 14, 2004 at 8:30 a.m.)

C E R T I F I C A T E

STATE OF GEORGIA :

COUNTY OF FULTON :

I, Steven Ray Green, Certified Merit Court Reporter, do hereby certify that I reported the above and foregoing on the 13th day of December, 2004; and it is a true and accurate transcript of the testimony captioned herein.

I further certify that I am neither kin nor counsel to any of the parties herein, nor have any interest in the cause named herein.

WITNESS my hand and official seal this the 23rd day of December, 2004.

_____

STEVEN RAY GREEN, CCR
CERTIFIED MERIT COURT REPORTER
CERTIFICATE NUMBER: A-2102