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

WORKING GROUP MEETING

ADVISORY BOARD ON

RADIATION AND WORKER HEALTH

HANFORD

The verbatim transcript of the Working Group Meeting of the Advisory Board on Radiation and Worker Health held telephonically on December 1, 2006.

C O N T E N T S

December 1, 2006

TRANSCRIPT LEGEND

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

(By Group, in Alphabetical Order)

BOARD MEMBERS

CHAIR

ZIEMER, Paul L., Ph.D.
Professor Emeritus
School of Health Sciences
Purdue University
Lafayette, Indiana

EXECUTIVE SECRETARY

WADE, Lewis, Ph.D.
Senior Science Advisor
National Institute for Occupational Safety and Health
Centers for Disease Control and Prevention
Washington, DC

MEMBERSHIP

CLAWSON, Bradley
Senior Operator, Nuclear Fuel Handling
Idaho National Engineering & Environmental Laboratory

MELIUS, James Malcom, M.D., Ph.D.
Director
New York State Laborers' Health and Safety Trust Fund
Albany, New York

POSTON, John W., Sr., B.S., M.S., Ph.D.
Professor, Texas A&M University
College Station, Texas

IDENTIFIED PARTICIPANTS

ALVAREZ, BOB, SC&A
BEACH, JOSIE, USW
BEHLING, HANS, SC&A
BRACKETT, LIZ, ORAU
BROEHM, JASON, CDC
BUCHANAN, RON, SC&A
BURN, JOHN, ORAU
CAREY, ANNETTE, TRICITY HERALD
CONSCHAFTER, MIKE, CONG. DOC HASTINGS
DUNCAN, FRED, ORAU
ELLIOTT, LARRY, NIOSH
FIX, JACK, ORAU
HEMINGWAY, DIANE, USW
HOWELL, EMILY, HHS
HOYT, ROSEMARY, CLAIMANT
KOTSCH, JEFF, DOL
LAM, LIVIA, SEN. MARIA CANTWELL
LIPSZTEIN, JOYCE, SC&A
MACEVICK, GREG
MAURO, JOHN, SC&A
NELSON, CHARLES, HANFORD TBD
ROBERTSON-DEMERS, KATHY, SC&A
ROLLINS, GENE, ORAU
SCHMIDT, KELLY, USW
SHIELDS, LASHAWN, NIOSH
THOMAS, ELISE, ORAU
ULSH, BRANT, NIOSH

P R O C E E D I N G S

(1:30 p.m.)

WELCOME AND OPENING COMMENTS

DR. LEWIS WADE, DFO

DR. WADE: Well, again, this is Lew Wade and I'll -- I'll begin the call. I have the privilege of serving as the Designated Federal Official for the Advisory Board, and this is a meeting of a working group of the Advisory Board. This working group is focused particularly on issues relating to the Board's review of the Hanford site profile.

This workgroup is chaired by Dr. Melius and members include Dr. Ziemer, Dr. Poston and Brad Clawson. At this point Dr. Melius is with us, Dr. Ziemer's with us, Brad Clawson is with us. I assume that Dr. Poston is not with us. That's fine.

I would start by saying that, you know, as we go through introductions we'll be dealing with issues of conflict of interest for different participants. None of the working group members are conflicted at all.

Dr. Poston --

DR. ZIEMER: Lew, could I -- oh, sorry.

DR. WADE: Did Dr. Poston just join us?

DR. BEHLING: No, I just joined, Lew. This is Hans Behling.

DR. WADE: Okay.

DR. ZIEMER: Could I ask that we ask people to identify by -- by the entity with which they're with? For example, get all the SCA folks first and --

DR. WADE: Right.

DR. ZIEMER: -- and so on.

DR. WADE: Right, we'll go through and do that next. I'd -- I'd start, though, with asking if there are any other Board members on the call. The only Board members I'm aware of are Melius, Ziemer and Clawson. Are there other Board members on the call?

(No responses)

Okay, then I would establish that we don't have a quorum of the Board and then we can continue. What I would like to do is I'd like to start by asking members of the NIOSH and ORAU team to identify themselves. I would also ask when you introduce yourself to state whether you have any conflicts relative to the Hanford site.

When we're completed with that we'll ask SC&A to identify themselves and again specify conflicts.

After that I would ask if there are any other federal employees on the call by virtue of their employment and ask them to identify whether they have any conflicts.

Then we'll ask if there are worker reps, workers, members of Congress or staff on the line who wish to identify themselves. Then we'll give the opportunity to anyone else who might wish to identify. So let's begin with members of the NIOSH/ORAU team, and I would ask if, when you identify, you identify any conflicts you have relative to the Hanford site.

MR. NELSON: Hello, my name is Charles Nelson. I'm the Hanford TBD point of contact. I have no conflict of interest with the Hanford site.

DR. WADE: Thank you.

MR. MACEVICK: Greg Ma-- Greg Macevick, health physicist with OCAS and I have no conflicts with the Hanford site.

DR. ULSH: This is Brant Ulsh filling in for Jim Neton this afternoon. I have no conflicts

for Hanford.

DR. WADE: Other members of the NIOSH/ORAU team who are on the call?

MR. ROLLINS: This is Gene Rollins. I'm the technical lead for dose reconstruction Task V for Hanford and I have no conflicts.

MR. BURN: This is John Burn. I'm with ORAU and a task manager for dose reconstruction research. I have no conflict at Hanford.

MS. BRACKETT: This is Liz Brackett. I'm the principal internal dosimetrist for ORAU and I have no conflicts with Hanford.

MS. THOMAS: And this is Elise Thomas and I'm the principal medical dosimetrist for the ORAU team, and I have no conflicts with Hanford.

MR. FIX: This is Jack Fix. I'm the principal external dosimetrist for the ORAU team and I am conflicted for Hanford.

MR. DUNCAN: This is Fred Duncan. I'm on the ORAU team, a Hanford dose reconstructor, and I have no conflicts with Hanford.

DR. WADE: Anyone else on the NIOSH/ORAU team?

(No responses)

Let's switch to our friends with SC&A. Please identify and specify your conflict.

DR. MAURO: Yes, this is John Mauro with SC&A. I have no conflict.

DR. BEHLING: This is Hans Behling, SC&A. I have no conflict.

MR. ALVAREZ: This is Bob Alvarez, SC&A. I have no conflicts.

MS. ROBERTSON-DEMERS: This is Kathy Roberts--

DR. LIPSZTEIN: Joyce Lips--

UNIDENTIFIED: (Unintelligible)

DR. WADE: Joyce, please.

DR. LIPSZTEIN: Oh, Joyce Lipsztein and I have no conflicts.

DR. WADE: Kathy?

MS. ROBERTSON-DEMERS: This is Kathy Robertson-DeMers and I am conflicted with Hanford.

MR. BUCHANAN: This is Ron Buchanan with SC&A. I am not conflicted with Hanford.

DR. WADE: Any other SC&A team members?

(No responses)

Now I would ask for other federal employees who are on this call by virtue of their employment. This is Lew Wade. I work for NIOSH. I have no conflicts with Hanford.

MS. HOWELL: This is Emily Howell with HHS. No conflicts.

MR. KOTSCH: Jeff Kotsch, Labor -- Depart-- Department of Labor.

MR. BROEHM: Jason Broehm, CDC Washington office. I have no conflicts.

MS. SHIELDS: LaShawn Shields, NIOSH, no conflict.

DR. WADE: But a cold, it sounds like.

MR. ELLIOTT: This is Larry Elliott, NIOSH in the Office of Compensation Analysis and Support. I have no conflicts.

DR. WADE: Anyone else?

DR. POSTON: Yeah, Lew, I just joined -- or Jim.

DR. WADE: Okay.

DR. MELIUS: Oh, hi.

DR. ZIEMER: Poston.

DR. WADE: Okay. So now we have Dr. Melius, Dr. Ziemer, Dr. Poston and Brad Clawson all on. And again, I had mentioned that -- Dr. Poston, that no members of the workgroup have conflicts.

DR. POSTON: Okay.

DR. WADE: Any other federal employees?

(No responses)

Any workers or worker reps or members of

Congress or staff who would like to identify?

MS. LAM: Lydia Lam from Senator Maria Cantwell's office.

DR. WADE: Welcome.

MS. LAM: Thank you.

MR. CONSCHAFTER: Mike Conschafter with Congressman Doc Hastings' office.

DR. WADE: Thank you for spending the time with us.

MR. CONSCHAFTER: Thank you.

MR. SCHMIDT: I guess, Kelly Schmidt with the United Steelworkers Local 12369.

DR. WADE: Welcome, Kelly.

MS. BEACH: And Josie Beach from USW steelworkers.

DR. WADE: Welcome, Josie.

MS. HEMINGWAY: Diane Hemingway, steelworkers.

DR. WADE: Welcome. Any other workers or reps who wish to identify themselves?

(No responses)

Anybody else who wants to be on record as being on the call?

MS. HOYT: Yes, my name is Rosemary Hoyt. My father worked out at Hanford. We filed an EEOICP claim and my sister and I have also

filed a Special Exposure Cohort petition that was recently qualified.

DR. WADE: Welcome. Thank you for joining us. Anyone else who wishes to identify?

MS. CAREY: Annette Carey* with the TriCity Herald.

DR. WADE: Welcome. Now I assume, Ray, you're with us and functioning?

THE COURT REPORTER: Yes, sir.

DR. WADE: Okay. Dr. Melius, it's all yours.

PURPOSE OF MEETING

DR. MELIUS: Now we've done introductions you probably -- all probably need a break. The purpose of this call is to start to organize our new and sort of what we call comment resolution process on the site profile document. And these are always fairly complicated things because it's -- sometimes it's a mov-- appropriately a moving target. The -- NIOSH, with assistance from its contractors, are always continually updating their doc-- their site profile documents and their other, you know, Technical Basis Documents that go along with those that -- that are also changing so that while SC&A may -- has

done a review of the site profile as it existed at the time, there are -- are updates to it and so we -- we're trying to -- to the extent we're going to discuss technical issues and try to resolve some of the comments, it's a -- in some cases that -- it may be that we're better off waiting a little while and -- while, you know, NIOSH completes a, you know, a change to a section or -- that they're working on or something like that. So what we hope to accomplish in this call is sort of look -- going through the original set of comments, sort of figuring out where things stand with the site profile review and response to the site profile review and ongoing changes on the site profile that would be -- so that we can organize our time -- our future workgroup meetings and focus on things in an appropriate fashion and not spend a lot of time on a -- on a particular technical issue that may be resolved by a -- you know, an ongo-- you know, a change in the site profile or another document that may -- may address that.

So what we hope to accomplish this afternoon is to go through the -- that material and then try

to figure out, you know, where we need to -- you know, what should be prioritized in terms of focusing on that document.

I'll add that the -- the way that the Board has usually worked on these is that the same workgroup that's looking at the site profile usually -- involved in looking at the Special Exposure Cohort evaluation. Now it's obviously -- since the petition just qualified, it's very early in that process. NIOSH will be working on its evaluation and so forth, so eventually we may be addressing concerns related to that, but I think it's probably a little bit premature, but everyone just should be aware that that process is -- is also going on, but it -- as I said, it's just started and NIOSH'll just be really in the process of developing its plans for the -- that evaluation and -- and so forth. So we'll not be talking about that certainly today. We may in future meetings of this workgroup.

I think, as everyone should know, is that these -- all the workgroup meetings are, you know, publicly announced and we will, you know, communicate with people that are interested

about participating and so forth and to -- to let people know about the meetings and keep them in public view and that -- and it -- we do have a person transcribing all the meetings and those -- the results of that transcription is also publicly available or -- as soon as Ray gets around to completing it. So -- and that's available usually through the -- through the NIOSH web site.

The documents we have circulated for this that will be on and I apologize a little bit 'cause some of these just went out in the last day or two as we were getting -- getting organized. Some of this is, you know, delayed. Some of these documents are a little bit dated -- do that. But we have an agenda for this meeting which is simply a list of issues that SC&A do this -- in the last couple of days did a listing of sort of the issues in their -- raised in their site profile review and then sort of cross-index that to the matrix, which was this longer document that NIOSH produced that's listed as Table 1, summary of task, site profile findings issues which will also be something that we will be referring to here.

The purpose of this SC&A agenda document is just to make sure that we at least cover all of the areas and understanding where they are in the -- your resolution matrix.

And finally the -- there's another document that NIOSH just circulated also this week which is a three-page document which is called "Update of Previously-provided Responses Addressing Issues from the SC&A Review" and it's dated 11/22/2006 and it -- it really simply just updates where they are with particular revisions, documents and that -- and so forth so that -- it is helpful and it is something we may want to refer to later.

My plan was to sort of go through the agenda item by item and just sort of deal with it that way. I don't know if anybody has any comments or questions about the agenda or the proposed procedure, like now is the time.

DR. ZIEMER: This is Ziemer. I just want to confirm that we all have the same version of the matrix. I think the version that I'm looking at today has a -- a date on it of -- well, let me see. It actually --

DR. MELIUS: I think it's July. It's -- I...

DR. ZIEMER: Well, yeah, but the one that -- the version that has the NIOSH comments on it.
DR. MELIUS: Right, that's the one that's entitled -- I'm -- the version I have does not have a date on the thing. I believe it is from July and it is -- the top of it says "Table 1, Summary of Task I, Hanford Site Profile Matrix, Primary Issues".
MR. NELSON: This is Charles Nelson. There should be a -- July 18, 2006, I believe. There's no date on the document, though.
DR. MELIUS: But that is the one that's -- actually I think that's the only version that's been circulated.
MR. NELSON: That is correct.
DR. MELIUS: Yeah. Paul, is that the document you have?
DR. ZIEMER: Yeah, uh-huh.
DR. MELIUS: Okay.
DR. ZIEMER: So -- we had -- you know, we had the original version with -- with just the SC&A comments.
DR. MELIUS: Right.
DR. ZIEMER: Right, then we had the version with the NIOSH -- I want to make sure that's

the -- there's only that one version with that.

DR. MELIUS: There's only that one version with the NIOSH response, and there's really the addendum to that which is called the update on previously-provided responses, the one that's dated 11--

DR. ZIEMER: Right. That's just a regular --

DR. MELIUS: Yeah.

DR. ZIEMER: -- list, though.

DR. MELIUS: And Chuck just provided that to us in the last --

DR. ZIEMER: Right.

DR. MELIUS: -- days, which again will be helpful --

DR. ZIEMER: And also there's a memorandum from Mr. Alvarez I think that I just got in the last day or so.

DR. MELIUS: That was just -- it was -- it's dated yesterday, so --

DR. ZIEMER: Yes, okay.

DR. MELIUS: Yeah, that's a document -- I think it'll come up as we discuss --

DR. ZIEMER: Right.

DR. MELIUS: -- dated November 30th, 2006.

DR. ZIEMER: Right.

DR. MELIUS: That was also something I -- I circulated, as well as was circula-- should have been circulated within NIOSH.

MR. CLAWSON: Dr. Melius, this is Brad. Are we going to be following the agenda for -- that you sent out?

DR. MELIUS: Correct.

MR. CLAWSON: Okay.

NEUTRON DOSIMETRY AND EXPOSURE

DR. MELIUS: And why don't we start with that and, again, just in case people don't have this in front of them, I'll read some of this. It's -- item number one is a neutron dosimetry and exposure and it is referenced -- matrix comments one and two cross-reference. I wonder if someone from SC&A wants to sort of briefly summarize what comments were and -- in that area.

DR. MAURO: This is John Mauro. Unfortunately Joe Fitzgerald is in the air right now so I'll sort of sit in for him in sort of orchestrating SC&A's participation. The first item is -- the lead on that is Hans Behling, so I'd like to turn that over to Hans and ask him if he could get -- you know, tell his story regarding this

particular combination of issues.

DR. BEHLING: I'm going to have to make a couple of comments here is that the matrix really does not track the actual information that we provided in our review. The essential issue that surrounds the neutron/photon ratio methods are really discussed in section 5.1.4, which goes for a period of -- of -- for nine consecutive pages and -- and the statements that are currently addressed in item one, which corresponds to 5.1, 5.1.2, 5.1.3 are really introductory comments and really at this point I would have very little to say about those. I believe Bob Alvarez will comment about some of the things that are identified in 5.1.2 and 5.1.3, but my presentation that I hoped to give really centers around 5.1.4 and it's -- as I said, is a fairly detailed and lengthy discussion about the neutron/photon ratio methodology that has been prescribed for dose reconstruction for the Hanford facility and I have multiple, multiple findings associated with that and I'm not sure we're in a position to go into those today.

DR. MELIUS: We're not planning on going into

detail on any issues today. I think the idea is to try to organize and identify issues that -- for -- it's timely and appropriate that we do spend more time (unintelligible) workgroup meetings.

DR. ZIEMER: This is Ziemer. Could I ask, though, Hans, when you're referring to what you just described as multiple findings, are these additional findings that were not on the original matrix, or --

DR. BEHLING: Well --

DR. ZIEMER: -- I wasn't quite sure what you were --

DR. BEHLING: Well, the matrix at this point really responds to findings identified in our review as 5.1.1, 5.1.2, 5.1.3 and -- and there's a couple of pages of columns that address those issues. But when it comes to the issues that surround 5.1.4, which is a nine-page section, the response principally is "see our response to the -- to the item number one," and so as far as I'm concerned, I can't really comment if I cannot go into any of the technical detail, which is really the crux of the entire neutron/photon dose reconstruction

process.

DR. ZIEMER: Okay, but I think what you're saying then is that the original SC&A comment -- this is -- in the matrix -- I think it's item two in the matrix. Correct?

DR. BEHLING: Right, item two is briefly what I'd hoped to talk about, which --

DR. ZIEMER: Right.

DR. BEHLING: -- is quite lengthy --

DR. ZIEMER: That's a kind of a broad finding, neutron-to-photon ratios derived from limited source, and what you're saying is you have much more detail on that finding. Is that what I'm understanding?

DR. BEHLING: There are many, many issues that I'd hoped to be able to discuss, but --

DR. ZIEMER: Yeah, were there sort of specific items under that broad issue?

DR. BEHLING: Yes, but again, they're quite numerous and -- and they're quite detailed, and I'm not sure we're in a position to discuss those today.

DR. ZIEMER: Yeah.

DR. MELIUS: But -- but I --

DR. ZIEMER: But maybe they can be identified

to us in some way at an appropriate time.

DR. BEHLING: Oh, yes.

DR. ZIEMER: Yeah.

DR. MELIUS: Yeah, but I think what -- and I'd be interested in hearing from NIOSH, but I think that that would be an issue that we would identify that we ought to be talking about at a, you know, an in-person meeting of -- of, you know, the workgroup with, you know, NIOSH and SC&A. I think it's going to take time and it's something that it -- it appears that we need further discussion to make sure that everybody understands it and -- and then focus on what the re-- you know, NI-- NIOSH's response to that issue.

DR. BEHLING: Yes, and I agree. I think it's too complex and I'm looking at the matrix and the response, and there is very little if anything that addresses the issue raised in those pages in our review that starts with page 37 and go for approximately nine pages -- 37 through 46 -- so those are key issues. They're very complex and -- and I don't think this conference call is really the appropriate meeting to discuss this with NIOSH.

DR. ZIEMER: This is Ziemer again, could I ask one more question, Hans? Is the -- the matrix was developed, I think, out of the SC&A report which -- which you folks provided last fall, I think it was in the September time frame, to the Board. Is that correct?

DR. BEHLING: Well, I'm not sure who drafted the matrix, quite honestly.

DR. ZIEMER: No, no -- well, I mean the matrix is based on the SC&A report.

DR. BEHLING: Yes, I -- I assume whoever wrote the matrix through those comments, but as I said, the --

DR. ZIEMER: Well, what I was just getting at, there are a number of findings in the SC&A report, and I guess what I'm asking you is are you -- do you have additional detail now or are the items that you're describing already ones that were in that initial report?

DR. BEHLING: Yes, I probably have just a small number of supplemental pieces of information that I would like to draw on, but for the most part the nine pages in question from the report, pages 37 through 46, are pretty much the summation of issues that we have

identified.

DR. ZIEMER: Okay. So -- so basically it's not a whole lot of new things, but items that you had talked about in the re-- in the September report.

DR. BEHLING: Yeah, if there's one -- one additional item is -- an additional statement regarding the 28 percent efficiency factor that correlates NTA film to proportional counter and I was actually hoping to bring out a couple of more items that are of serious concern here which were not identified in the original report.

DR. MELIUS: NIOSH, do you have any comments on this?

MR. NELSON: What we might suggest maybe is that SC&A put a bulleted list together and we put them in the matrix and address those. That seems like a logical approach at this point.

THE COURT REPORTER: Excuse me, who was that speaking, please?

MR. NELSON: Chuck Nelson.

THE COURT REPORTER: Okay, thank you.

DR. MAURO: This is John Mauro, just to hopefully help out a little, we -- we -- the

SC&A team had a meeting yesterday where we spent several hours going through the matrix and discussing these -- these eight categories of -- that are in the agenda. And one of the things that became apparent as we went through the discussion of it is we're finding, especially with regard to the -- Hans's issue -- that it is a -- it's more I guess functional to discuss the issue as a holistic story related to neutron dosimetry, photon dosimetry and the overall approach that's being used in areas that we find that need to be looked at by the working group. And from that perspective we found that the matrix in its current form does not really facilitate the -- the -- the issues in a way that I think needs to be communicated. So I guess where -- where I'm coming from is that when we engage, perhaps in a working group meeting face to face, we -- I think it's important to keep in mind that -- that sometimes the matrix and -- in an attempt to make discrete items that we address one by one separately, doesn't serve the process as well as it can. Sometimes it's better to really discuss an issue that really is a

combination of multiple items that are in the matrix, and I think that's one of the reasons that we worked with Dr. Melius and prepared this agenda in the form it's in. So I just wanted to point that out, that when we do get to the point in time in this process, we prob-- we probably want to talk about the subject of neutron dosimetry exposures and draw upon a broad range of issues that sort of converge into one whole story -- that I think is very important, by the way. One of the things that came out of yesterday's conference call in my mind is that of these eight categories of issues, the first one seems to emerge as the one that I would say -- I don't know if everyone will agree with it -- is the -- the issue of greatest concern.

DR. MELIUS: This is Jim. Is that sort of -- is that adequately say summarized -- bulleted in -- like you -- on the proposed agenda item number one which refers to matrix comments one and two, or does it get into some of the other comments in the matrix. That's what I -- I'm a little confused on. But when you say it's broad, is it --

DR. MAURO: No, I -- I -- I think you're right. I think -- I think -- and Hans, you could help me. I think that being one and two in the -- in the July 18th matrix does map back probably to what we're calling agenda item number one. But Hans, is -- do you feel that one and two in effect is the full scope that you want to draw upon --

DR. BEHLING: Yeah --

DR. MAURO: -- discuss this item number one on the agenda.

DR. BEHLING: Yes, I think we all agreed that the issue of neutron-to-photon ratio methodology for dose reconstruction is probably the single most important element of concern here -- as it stands with -- with regard to the matrix, it's items one and two.

MR. FIX: This is Jack Fix on the ORAU team, and I prepared much of the material that was being discussed and -- both for Hanford and for a lot of other facilities, and I agree, this is too complicated a topic to resolve in a teleconference. There is a lot of history and there's probably a better forum to work this issue. It is important to note that the -- our

approach in the dose reconstruction was to come up with favorable-to-the-claimant bounding evaluations. It wasn't to come up with a precise reconstruction of dose, it was to make sure that we had a method that did not underestimate the dose.

DR. BEHLING: I would say -- this is Hans Behling again. I would say, based on my comments and what I interpret these information that was presented in the TBD, I would say that the -- the approach taken is anything but claimant favorable.

MR. FIX: Well, that's why we need to work this issue, because we have quite a bit of information and we also used the approach used by a number of other organizations historically, as well as the AEC headquarter investigation in 1972 of neutron exposures -- lifetime neutron exposures for Hanford workers.

DR. MELIUS: Well, let's just, you know, tag this as -- as item number one to be discussed at our next workgroup meeting and something, you know, may take considerable time to -- to discuss and we -- we need to leave time for -- for a full discussion of it.

MR. FIX: Is there a possibility of coming up with another alternative of evaluating these complicated topics, such as trying to form a small working group, because you know, there's a lot of issues here and it brings in a lot of peripheral information, and there's a lot of judgment involved as to whether or not we're truly being favorable to the claimant, if we have the adequate information, et cetera.

DR. ULSH: Jack, this is Brant Ulsh. If I could just speak from my experience with the Rocky Flats process, a process that has seemed to work well for us in that venue is to organize issue-specific conference calls between NIOSH and SC&A. I of course defer to Dr. Melius and the rest of the working group about their comfort level with that, and the way that we've done it with Rocky Flats is we make the issue-specific conference calls known to every working group member so that they can attend if they so choose. But that's worked well for us at Rocky Flats. I just put that out there, maybe you would want to consider something like that.

DR. MELIUS: Thanks, Brant. I don’t

necessarily object to that, but I actually think it would be helpful and my understanding and recollection is with Rocky Flats that that -- that was something that was done following at least some sort of more technical -- discussion of some of the technical issues to help give some focus on, you know, what's the most worthwhile approach to take and where -- you know, what needs to be discussed. We are also committed to, you know, this is a public process, so I guess I -- I'd prefer to reserve that until after our next meeting. You know, let's spend a meeting talking about this and laying the issues out so that everyone understands, you know, the -- the approach that was -- was taken and dev-- you know, developing this, you know, technical ap-- approach dose reconstruction and then -- then, you know, and what some of the concerns are and let's see if there -- you know, may very well be that a smaller group having a conference call to discuss some of these technical aspects may very well be appropriate. I don't think -- how anybody else on the workgroup feels, but I think -- I -- I think it's helpful if we at

least have some perspective on what you will be doing in a little bit more detail before we go ahead with something like that.

MR. FIX: This is Jack Fix again. I think this issue of neutron-to-photon is a generic issue. It was also an issue for the Rocky Flats plant technical guidance and it's a general -- generally applicable to a number of sites, and so we do -- and you know, neutron-to-photon ratios were used in the -- at the Rocky Flats plant and also in the neutron dose reconstruction project that was funded there -- the multi-year neutron dose reconstruction project.

DR. BEHLING: Let me just weigh in on this. I realize that the neutron/photon ratio is somewhat generic in nature because of the use of NTA film at different facilities prior to the development of multi-- the -- the Hanford multi-purpose dosimeter. However, the issues that affect the Hanford site is somewhat unique because we have the eight production reactors, the single-pass reduction reactors, we have the N reactor and we have the 200 and 300 area where plutonium was separated and finished, and

so the -- while the generic issue of neutron/photon ratio may be one that's complex-wide, the uniqueness of the N gamma ratios that were developed are basically those that are limited to Hanford and -- and are unique to Hanford.

MR. FIX: Well, I agree with you on some facilities, but as you know, the Rocky Flats facilities were first -- operations were first located at Hanford, and I agree with you, that's why we have more than one ratio in the -- in the document.

DR. MELIUS: Let's -- let's sort of move on and save that for our next workgroup meeting.

DR. ZIEMER: Jim, this is Ziemer. I might -- in terms of your original question or the question about how to proceed on this kind of an issue, it seems to me once Hans shares all the details with NIOSH and with the Board, if there are some additional details beyond what's in the original SC&A report, then we may be -- we need either a face to face -- I mean it still is going to be a small group. For the Board it's just four of us, there are probably several from the NIOSH/ORAU team and two or

three from SC&A, but either face to face or by phone to have a focused look at that particular issue.

DR. MELIUS: I mean I -- I agree, and I guess what I was thinking is we -- we ought to have a face to face workgroup meeting and, you know, this is a major agenda item and I mean it seems to be a critical issue in the dose reconstruction, and so we ought to -- for Hanford and so we ought to sit down and spend some time on it and determine what needs to be done from there.

DR. ZIEMER: And if I might just follow up and ask, and maybe, Hans, you can make a suggestion here, just looking at the -- I'm sort of looking side by side at the matrix with the SC&A report. I think there was an attempt to take the list of findings by SC&A and -- and each one is identified, but it may be that -- under 5.1.4 it may be that SC&A would want to have some -- a further breakdown of that. I mean 5.1.4 is pretty mu-- the finding is pretty much a quote from the report, as far as I can see. And do we need additional sort of sub-findings there so that we can get a handle

around the issue a little better?

DR. BEHLING: Yeah, what I think -- you know, what happened was that I was asked to look at this whole issue of neutron/photon ratios as an independent evaluation. And when I handed in my report it was kind of tucked into the section of -- that you see on your 5.1, and somehow other it lost its insignificance (sic) and importance in trying to blend it in. Like all reports, our report is a committee report and sometimes at the last minute we scramble trying to dovetail these things in. 5.1.4 should have been the center focus of that whole discussion --

DR. ZIEMER: Yeah --

DR. BEHLING: -- and under (unintelligible).

DR. ZIEMER: -- and as it stands now, it appears to me that what you're saying is that it has lost some of its specificity and maybe the -- the particular concerns got lost --

DR. BEHLING: Yes.

DR. ZIEMER: -- in the bigger picture here.

DR. BEHLING: Yes, you're -- you're exactly right, Dr. Ziemer. We have to repackage it in the sense we're not basically fair to -- to the

issues that were being assessed here and -- and not highlighting them and saying here are the concerns that we really have and -- and identify them separately. And I may have to go through the write-up as I initially put it in there, which is somewhat different from what you ended up seeing in the actual report that we issued, and I think it's considerably more clear as to what the concerns are and -- and --

DR. ZIEMER: For practical purposes, the matrix is simply a chart taking the SC&A findings -- putting them in chart form and then asking NIOSH to respond.

DR. BEHLING: Yes. I mean the findings are so briefly stated it's not even an abstract that -- in a technical paper that you tried to capture a few buzzwords, but clearly you cannot identify the issues without reading the text. And so this is where we are with the matrix. The -- the finding as it's stated there is basically an over-simplification of issues.

DR. ZIEMER: Thank you.

DR. MELIUS: You could do that, Hans, I think before the -- have that circulated before the next meeting, I think it would be helpful.

DR. BEHLING: I will do that.

DR. MELIUS: That may -- that may -- obviously would help us when we go to the discussion.

DR. BEHLING: Yes, I will -- I will work on this and you will have it perhaps in time for the upcoming meeting in Chicago.

EARLY WORKER RADIOLOGICAL MONITORING

DR. MELIUS: Thanks, Hans. Okay, we'll move on to number two, which is early worker radiological monitoring, which is covered under comment three in the matrix.

DR. LIPSZTEIN: On this comment -- strikingly painstaking on SC&A -- I think NIOSH is redoing it based on our comments, I don't know, but there is a new Hanford internal TBD which is under revision and in comment resolution at this time, so they say that reliance on the air samples was removed from this section and -- and also the -- the new revision would contain more information on (unintelligible) and iodine-131. I haven't seen the new version because it's under revision so I couldn't even find it on the O drive, so I think we have to wait to see how it's dealt now.

DR. MELIUS: Chuck or some -- anybody from

NIOSH?

MR. NELSON: Yeah, this is Chuck Nelson. She's correct, the document is currently under review. It's undergoing resolutions between ORAU and NIOSH, so that is correct.

DR. MELIUS: Always hate to ask this and -- but I will.

MR. NELSON: I knew you were going to.

DR. MELIUS: Any idea when it's going to be...

MR. NELSON: Liz, do you have any elaboration on that -- Liz Brackett?

MS. BRACKETT: To be honest, I don't know where it is in the review cycle right now. Fred Duncan may know that.

MR. NELSON: I can -- I can provide some light on it. Tom Tomes over here at NIOSH has it and he owes a -- a response in the latest round, so it's going through a couple of iterations and we're getting closer, but I don't know that I can give an exact date, to be honest.

DR. MELIUS: That's ok-- well, prefer honesty. Do that. Is everyone agreed then that we should sort of postpone trying to address this issue in terms of a meeting until that document is --

DR. ZIEMER: Well, yeah, obviously we need to have the document first.

MS. BRACKETT: And there's actually two documents. It's tied in with --

DR. ZIEMER: Right.

MS. BRACKETT: -- the coworker document now --

DR. ZIEMER: Right.

MS. BRACKETT: -- which is also in the review process.

MR. NELSON: This is Chuck Nelson. That's correct. It's TIB-39 -- OTIB-39 and the internal Hanford -- that's the two documents.

EXTERNAL BETA-GAMMA DOSE

DR. MELIUS: Next is -- from the agenda is external beta-gamma dose adjustments and uncertainty factors, which reference comments four and five. John or someone from SC&A want to --

DR. MAURO: I -- I guess I thought this was Ron's -- Ron, are you on the line?

MR. BUCHANAN: Yeah -- yeah, I'm on. I didn't know if you wanted to say anything first.

DR. MAURO: Oh, no, please help me out.

MR. BUCHANAN: Okay. This is Ron Buchanan with SC&A. A problem with number -- item number

three there, the external beta-gamma dose adjustment and uncertainty factors which is comment four and five -- by the way, comment four and five, four was on the adjustment and uncertainty factors; five was on the shallow dose. Since our revision -- our review of these TBD, OTIB-17 has come out for the shallow dose, and at this point we are fairly satisfied with that and so comment five we won't discuss today I think as far as -- today, if that's okay.

The items under number four, which we'd like to address, are the ones of the -- of uncertainty factors mainly. In the old TBD they addressed some of these. The new one just came out about nine days, ten days ago, the 11/21/06 edition. I went through it, compared it to the old edition and if you look at both editions, the second edition is very similar to the first edition, other than that they've added pages 56 through 63, made a few other changes. However, the overarching problem is that -- they do a very good job of talking about uncertainties and biases in TBD 6, the old and the new version, but in the end there's nothing really

done about it to bring it together. And I find that true in the new as well as the older version. And the bottom line is that you adjust plutonium workers by 20 percent for doses before '57 -- plutonium only workers -- and that neutron doses from '78 to '83 is adjusted by a factor of 1.35, and the rest of it is not really congealed to any final instruction to the dose reconstructor. And so my problem with this is that it may contain the information it needs, but it doesn't put it together in the end and especially an appendix or an attachment -- they changed the word to attachment A here -- on what the dose reconstructors could use other than those two things I just quoted. And so there seems to be a disconnect in a lot of good information presented, such as tables and such in the main body, to the end results of what the dose reconstructor was go-- is instructed to use. And another conflicting problem is that this table 6-12 is still in the new edition on page 32, and it's my understanding that PER-05, 6/9/06, was issued concerning dose reconstructors' problems with using the factors

in these tables, that some of them were dividing by the factors and some of them were multiplying by it, which caused -- had to go back and redo about 50 cases. Fortunately there was no real change in dose overall and none of the group -- claimants had to be redone because of it. Anyway, there wasn't any change in the final results. However, I find it confusing that that is still left in there. And so my comment is I feel that -- that the uncertainty and bias factors are laid out, but they're not summarized in the end and it's very difficult for the dose reconstructor to really see what is -- how the -- the -- all this material that's laid out is to be used at the end results.

DR. MELIUS: Chuck, any comments from --

MR. NELSON: Yeah, I'm here. What I'd like to do is get Jack Fix, he's the internal dosimetrist, to -- to reply to that if he will.

MR. FIX: Yes, this is Jack. I guess I want to -- I guess this shows the difficulty in writing a TBD that tries to provide the scientific evidence that's available and at the same time try to provide clear guidance to the dose

reconstructor. And of course we know the dose reconstructors really are -- are knowledgeable people, they understand health physics concepts and terms and they actually have training and there's weekly discussions. There's a lot of things that are provided to support their activities. In this particular case, those two tables that are referenced, those are lifted from the original documents. In one case, one author divided the table values to get an estimate HP-10 dose and in another case the -- the author -- original author multiplied a correction factor to get the HP-10 dose. I agree it's confusing, but we generally try not to modify information that's lifted from a published document. So the listed biases and uncertainty factors in these tables are not used directly in the dose reconstruction. We actually have a process. As everyone knows, the actual information used in each claim is clearly described in the dose reconstruction report and so it's a -- I -- I really find it -- I think one thing that helps add clarity to some of these very difficult issues with lots of complexity and lots of technical --

technical information is to try to focus on the individual claims because the individual claims is what we -- we use in dose reconstruction. I mean we're looking at the actual detail des-- radiological monitoring record for each employee, and that is what drives some of the -- the judgments that are used in the dose reconstruction. And certainly we use the information from the TBD, but -- but I -- but you know, it adds a lot of clarity when you look at this -- how this information is applied to a specific claim. And this is an example here. This is a compendium of scientific evidence that's been generated and -- but it's used in -- in what we -- we maintain is a claimant-favorable analysis of -- in reconstructing doses that are bounding, not that we're trying to do exact dose reconstruction. We're trying to make sure that we're not underestimating the dose that's assigned to the claimant.

MR. BUCHANAN: This is Ron Buchanan again. How is -- in Appendix A, does it tell the dose reconstructor to ever use Table 6-12?

MR. FIX: I don't have it right in front of me,

but I assume 6-12 is some of the -- is the bias and uncertainty factor?

MR. BUCHANAN: Yes, uh-huh, and it gives a range -- overall bias that -- a range of --

MR. FIX: No, no, actually it depends on whether we're doing a best -- best estimate, a maximizing or a minimizing dose reconstruction. As you know -- for the benefit of some of the other people on the teleconference here, we're trying to evaluate these claims fairly quickly and we have sort of a triage approach. So in some cases we assign every -- all -- we assign -- maximizing a dose from several different components to see if there's any possibility that even providing unrealistic estimates of dose, could this person even -- could the person become nearly compensated. And then we have another approach which is minimizing in which we put minimum estimates of dose from several components, and if a person is -- still exceeds the -- what's called the probability of causation at 50 percent, then we know that person is compensable. So we can get -- handle those two groups of claims very quickly. Then we're left with the challenging ones of the

best estimate, the people that may be compensable or may not, depending on the various assumptions used for the dose analysis. And so that's -- you know, that's generally the analysis, so we have different assumptions that are used, depending on which -- which pathway -- which of these three gen-- three high-level analyses that are underway. And I know the SC&A team is very -- they are -- I mean the SC&A team is very familiar with that in the dose -- the claims that you people are reviewing.

DR. ZIEMER: This is Ziemer. Ron, could I ask you to clarify your -- your concern on this last item? Was it that although the document is -- the document has been revised and so on, that there was simply lack of instruction to the dose reconstructor on what to do with the information, or was it -- was it the fact that there could be confusion on the two tables, one of which used a divisor and the other a multiplier, or -- clarify again what -- what the concern was at this point.

MR. BUCHANAN: Okay. The overarching concern is that -- that a lot of the information is

provided in the text, but I don't see -- it's -- you know, give geometry factors, for example. It talks about geometry factors and the response of different detectors to different -- AP or rotational isotopic A radiation, that sort of thing. However, the end result is well, just use 100 percent AP in all cases, other than it gives a little bit of verbiage right at the end on page 921 it says -- it says if not available, the adjusted organ dose can be used for each year and the organ dose in comparison of a dose conversion factor for the respective exposure geometry for the organ of interest can be made to determine a realistic option to form a favorable to the claimant analysis. And so my concern is that -- that the -- the main text contains a lot of information, but at the end it doesn't really say okay, the dose reconstructor, this is what we recommend that you do. And I realize there's -- like Jack was saying, you have maximizing, minimizing cases, your best estimate, and I don't see it really boiled down into a useable template at the end. And in the -- in the revisions that were made, it doesn't

seem to facilitate this additionally. And to me, it's hard to look at the system and see what the dose reconstructor's going to use.

MR. FIX: Well, I think -- this is Jack Fix again. I think my explanation is that that's because the details of the claim drive what's used in the dose reconstruction. It's -- and these particular tables, one table summarizes actual laboratory measurements made by the International Agency for Research on Cancer studies of ten widely -- widely-used dosimeters in the world in support of their IARC 15-country study, and it's just a tabulation of what they observed in their laboratory measurements for AP, rotational and isotropic irradiations to three beams only that was done at the International Agency for Atomic Energy facility near Vienna. And there's another table that summarizes measurements that were made at Hanford in which for similar -- both these studies were done to support epidemiologic studies in which they were examining -- considering reconstruction of the dose of record, and the other table is for measurements that were made on an

anthropomorphic phantom at Hanford in which the phantom was placed at selected orientations throughout a 360-degree circle to -- again exposed to selected beams and in this particular case using all of the Hanford historical record -- dosimeters of record. Now of course if you're doing a dose reconstruction and you know if a worker is exposed to a particular type of nuclide, say americium-241 or if they're working exclusively in a plutonium facility and -- first of all, none of these measurements at IAEA or at Hanford are suitable for -- for the lower energy of -- of a plutonium facility, for example. I think you would key these judgments used in a dose reconstruction to what the worker's actually being exposed to.

DR. MAURO: Jack, this is John Mauro. I think I'm hearing an important overarching -- it's not an issue, it's a perspective. What it sounds like is that we should not be looking to -- at least in this case -- the site profile on external dosimetry to be a cookbook. It sounds like it provides a compendium of information and that -- that information, together with I

guess other tools and training, et cetera, is what in fact the dose reconstructor draws upon to make use of the information -- appropriate use of the information contained in the site profile and perhaps other O-- OTIBs. So maybe -- maybe the -- the -- what I'm hearing is, maybe we're -- we, when we're looking at the -- this document, we're asking too much of it; that it be a cookbook when in fact it never really -- really wasn't intended to be that. Did I misrepre-- I mean that's what I'm hearing is --

MR. FIX: No, you're exactly right, John. That's a good summary. We do have our -- our cookbooks, if you want to call them that, and we have our tools that provide us to -- to the dose reconstructors to have consistency in the dose evaluations, but that's not what's in a site profile. The site profile is really a compendium of what type of radiation fields are we dealing with. It's scientific information, what was used to develop the dose of record. You know, it has to do with the radiation field -- what the people are working with. But you're right. Your summary's a very succinct

one.

DR. MELIUS: Jim Melius. I think this is one area we have difficulty in -- in addressing because we have -- we have the site profile reviews going on, we have the individual dose reconstruction reviews. I think the issue comes up is whether the overall -- combination of all these documents and instructions and so forth, do they work and do they provide, you know, consistency in -- in terms of addressing individual dose reconstructions that -- that are being done. You know, are -- are the 20 that are being done based on this document or whatever, you know, would -- are the dose reconstructors providing, you know, consistent and fair so that -- that -- that people are treated in an appropriate fashion, and that's a complicated answer because these are individual dose reconstructions and it's a complicated area and I -- I don't know if there's an -- an easy answer to how -- some ways -- sort of how the overall system works and not how the site profile and the other documents fit -- fit in other instructions and training for the dose reconstructors' work and maybe what we should

do is move on but, you know, come back to this in our workgroup meeting just as something to discuss as to what type of finding the workgroup would want to make from this and do we need to try to clarify -- clarify it some more. But -- but I think it's something -- it may be worth at least a short discussion at a -- a full workgroup meeting.

DR. ZIEMER: Yeah, and this is Ziemer. I agree with that, Jim, and I think you -- you kind of hit the nail on the head and maybe John Mauro did, too, in the sense that -- as for the site profile, we want to make sure that the information in there is the correct information. There are a lot of other procedures and SC&A's been reviewing some of them -- or all of them for us, ultimately, and we want to make sure that the procedures used in the dose reconstruction process properly make use of the information that's in the site profiles.

DR. MAURO: Yeah, I'd li-- and this is John. I'd like to add one last thing, and that is -- which is good news, is that in -- this is one of the older -- one of the first site profiles

we reviewed. In the work we're doing now, the -- the current mandate, when we review a site profile, embedded in that process is now not only the site profile but also all the old TIBs that go with it and all the workbooks. So what I think we have here is we're looking -- what we're doing now is that more integrated perspective of -- unfortunately though, on Hanford we were -- we're still really operating on the matrix that only reflects a one-dimensional perspective.

DR. ZIEMER: And not the workbooks.

DR. MAURO: And I think -- I think we have a manageable situation, once we understand that.

DR. BEHLING: This is Hans Behling. I just want to make a comment that I guess is pretty much in concern with what you said, John, and that is the TBDs are oftentimes written with an awful lot of background information that is there to educate the people but are not to be used for dose reconstruction. And unfortunately, many of the people now -- we've had a number of people working with Kathy and I to do an audit, and they repeatedly make the same mistake in assuming much of the

information that's presented in the TBD is there for guidance purposes when in fact it's there for background information only.

DR. ZIEMER: Right.

DR. BEHLING: And oftentimes the problem comes in that the actual directives and guidance for dose reconstructions are really not part of the major part of the document itself but is tucked into an attachment or an appendix that comes at the end of the TBD, and oftentimes the peo-- the people read the TBD, they get to the reference list and says well, I've read it, and they actually miss the guidance that they're supposed to be looking at for dose reconstruction because it follows the reference list. They never even see the actual guidance document. And I think it's really a question of packaging the TBD and saying this is for your information, as opposed to these are the actual guidance that you should follow in doing dose reconstruction. And I've observed this over and over and I'm guilty of it myself when I read the TBD and I looked at some of the comparative information for -- for TLDs and film dosimeters and -- and historic studies, I

said is this supposed -- something that I'm supposed to use, only to realize no, it's not. It's just information that's handed to you that has very little relevance to the actual dose reconstruction process.

MR. BUCHANAN: This is Ron again. I'd like to make one comment on page 85 of the revised TBD, Section A-4.2.2, it says adjustments to recorded penetrating dose, it says no adjustment in the recorded dose is recommended for multi-(unintelligible) thermoluminescent dosimeters (unintelligible) recorded penetrating or gamma doses -- and it goes on to explain except for the 20 percent for plutonium before '57. So -- so you know, that is where it's a little confusing if it's saying it's recommending no adjustment and it provides all these adjustment factors. So you know, indeed what you're saying is TBD is just there to present some information on the site, then I feel that this -- where it says recommend no adjustments be made except for that 20 percent is kind of confusing.

MR. FIX: Well, it is, I -- I agree with you and it -- this is Jack Fix again. I agree with

you, it is very confusing. And the reason the 20 percent is in there is that, based on the -- what we understand at Hanford, that they actually did make the corrections for the workers to assign a pene-- deep dose to plutonium workers, and the same procedure was used at both Hanford and -- and Savannah River Site. However, when we look at the Hanford record we can't validate that in fact they actually did that for all years. And this has to do with the fact that it's evident that the deep dose, if you use only the shielded portion of the film, is not ade-- is not adequate in a plutonium facility to estimate the deep dose from photons only. But the shallow dose with energy photons is likely very much -- with -- has to be properly calibrated and it -- or it tremendously overestimates the shallow dose and so we know that they undoubtedly had to make that correction, but we don't know that they took the -- the one-fifth and assigned it -- one-fifth of that response (unintelligible) deep zone, so it does get complicated and so if there's evidence in a claim that in fact that was done -- we haven't seen this so far -- so

we take the favorable to the claimant assumption -- the favorable to the claimant approach and assume that it was not done and so we assign it.

MR. BUCHANAN: Yeah, I understand that, Jack. I guess my comment was the wording at the beginning of the sentence --

MR. FIX: Yeah.

MR. BUCHANAN: -- no adjustment is recommended except, and I understand where you're coming from on the 20 percent. And so to me that means that the dose reconstructor is not supposed to use any of these things back here of geometry and -- and uncertainty and all that, the bias factors says no adjustment in the recorded photon dose is recommended --

MR. FIX: Uh-huh.

MR. BUCHANAN: -- except for the 20 percent, so that's where I'm coming from on the end result --

MR. FIX: Yeah.

MR. BUCHANAN: -- the overall.

MR. FIX: Well, I agree with you that it's -- it's not always prop-- clearly worded and -- and I agree that -- with John's earlier comment

that this is a multi-dimensional process. And as you know, since we do do the dose reconstructions, we do have to make decisions for each step, and those decisions are made and they're made in another environment than the one we're discussing.

MR. BUCHANAN: Okay.

MR. FIX: And there's very clear approaches used in the dose reconstruction.

INTERNAL DOSE ASSUMPTIONS

DR. MELIUS: I hope everyone agrees with me it's time to move on --

DR. ZIEMER: Yeah.

DR. MELIUS: -- next issue, which is number four, internal dose assumptions.

MR. NELSON: Let me back up -- this is Chuck Nelson again. I wasn't sure why we skipped comment five. I didn't really catch the reason of why we skipped it.

MR. BUCHANAN: Oh, comment five -- this is Ron Buchanan again -- comment five was on the shallow dose, and SC&A is satisfied with the answer on it.

MR. NELSON: Oh, very well, I like that. Thank you.

DR. ZIEMER: Yeah, I think he mentioned that at the front end.

MR. NELSON: I didn't understand what he said there, that's why I wanted to back up. I knew he wanted to move on, but I didn't really understand why. Thank you for that clarification.

DR. MELIUS: That's fine. Thanks. Comment four, internal dose assumptions, John, do you want to -- or whoever you're having --

DR. MAURO: We have a combination, I think. This is something for Joyce, but also the new item on sodium-24, something for Bob Alvarez. So I'd like to pass the baton over to those two individuals to take care of this.

DR. LIPSZTEIN: Okay, let me just start this 'cause it's very simple because most of this is referred to OTIB-039, which was formally reviewed by SC&A. We are in the process of reviewing OTIB-039 and since most of it referred to it, I think we have to wait till the review of OTIB-039.

DR. MELIUS: If I could ask you, what's the timing on -- on that?

MR. NELSON: OTIB-39 -- this is Chuck Nelson --

is on the same time line as the internal TBD. In my understanding, ORAU is -- they should be completed about the same time.

DR. MELIUS: Okay. Thanks, Chuck. Bob?

MR. ALVAREZ: I was asked to prepare a memo which I sent -- which was I guess sent out yesterday, and in our review of the site profile -- we became concerned after reviewing documents that there is a possibility that reactor workers may have been exposed to -- or have been chronically exposed to unmeasured neutrons. And -- and so the memo that I provide sort of lays some of this out, and pages 31 through 33-7 of my review lays out in greater detail, but the gist of what we are -- as I understand what the current situation is is that a -- that there -- at least I'm -- I'm -- my understanding is that workers who do file for compensation who worked as reactor workers who were -- did have positive measurements for sodium-24, that these assumptions -- the dose assumptions are basically derived from -- from the assumption that they adjusted this, and there -- I think that there is enough evidence right now in the historical record to raise

questions about that assumption, especially with respect to the early whole-body counting reports which effectively ruled out environmental factors for exposures for sodium-24 measured in the bodies of workers. And that -- I'm -- I'm unaware -- I have not seen the 1972 report which Jack has been referring to, but I'm curious whether that 1972 report addressed the potential exposure to neutrons for reactor workers, particular for the first five reactors. Did that 1972 report, Jack, address that issue?

MR. FIX: The 1972 investigation was for all -- any Hanford -- what -- very quickly, since not everybody on the phone probably understands the history, is basically in 1972 Hanford brought in a new type of dosimeter called a thermoluminescent dosimeter, and the thermoluminescent dosimeter had the advantage in that it responds to all energ-- all -- essentially all neutron energies, whereas the previous dosimeter that was available was the nuclear track emulsion dosimeter called the NTA dosimeter, all -- they really responded to higher energy neutrons. And when they brought

this dosimeter in to Hanford, all of a sudden there was a significant -- a noticeable increase in the recorded do-- neutron dose for the workers, and this resulted in an investigation out of AEC -- Atomic Energy Commission headquarters. And they came out and invited experts from other -- throughout the AEC complex at that time to evaluate what went on at Hanford. Their goal at that time was to see if there was any Hanford worker who could have exceeded the -- the AEC radiation safety guidelines, either in 1972 when the -- for that year, or historically in the context of their lifetime dose at Hanford. And the -- and it -- and the judgment at that time was that really the only serious -- the most ser-- I should say -- not the only serious, but the most serious situation for the workers who could have exceeded these limits was in the plutonium facility because that's where the majority of the neutron exposure at Hanford occurred. Now -- so the reactor workers were never identified as a significant -- at significant potential for unmonitored neutron exposure. I do want to say that -- very quickly that the

TBD does include guidance to assign a neutron dose to all reactor workers, so that is in the TBD and I know it's routinely applied in the dose reconstruction.

MR. ALVAREZ: Now Jack, if -- I'm sorry, if a worker or a claimant on behalf of a worker who had a positive reading for sodium-24 files a claim, is the a priori assumption that this is an ingestion exposure and not a neutron exposure?

MR. FIX: No, I don't think it's I don't think there is a judgment. We've used sodium-24 activation in the body for years in the context of assessing criticality exposures. Under no -- the dose -- you know -- by sodium --

MR. ALVAREZ: My specific question, Jack, is workers who are filing -- who have filed, who have -- have -- have measured sodium-24 body burdens, how does -- how is that dose estimated? Is it based on an ingestion assumption or a neutron exposure assumption?

MR. FIX: Well -- Liz, do you want to say --

MS. BRACKETT: Well, I know -- I can speak from the internal standpoint, and they -- the dose reconstructors do assign an ingestion dose from

the sodium-24, and that's not based on -- maybe -- maybe I misunderstood what was meant by an earlier comment, but the assumption is that that comes from drinking water inside the reactor building, with the assumption that the water contains sodium-24 as a result of the reactor. It's not --

MR. ALVAREZ: Okay. Well, this -- this is the point I'm getting to is that the -- we found -- at least the -- the early whole body reports became -- at least those people who were taking these measurements actually pulled the string a little bit and ruled out in several instances the possibility of ingesting contaminated water as a source. And I was curious whether -- what data and analysis have you been using to back that assumption. Were there samples taken of reactor-area drinking water?

MS. BRACKETT: I do not know that. I was actually looking for that information before this call and I -- I will -- I would have to look into that further. I don't if -- Jack, if you know anything about that.

MR. FIX: Well, I -- I'm sure there was monitoring data. That is, we know that sodium-

24 is very easy to detect, being an energetic gamma emitter. I guess what I was jumping to the fact is that there was always the assumption that neutron or radiation metal worker could in fact activate sodium-2-- sodium in the body, but it's a fairly insensitive method of estimating the dose and -- but also related to that is the fact that the activation of the sodium is dependent upon the spectra and the neutron, so I was just trying to say that we do -- we do take an approach to assign a dose we think -- from the neutrons which we think is probably the most significant source of exposure to the worker.

MR. ALVAREZ: Well, I guess our concern stems from -- at least the limited information that's provided in the TBD bases a lot of neutron exposure assumptions, if not all, on the Hanford N reactor. And the reliance on the shielding assumptions derived from the N reactor are not germane because -- relative to the -- at least -- at least the first five production reactors, which had bioshields made of a composite of cast iron and masonite -- laminated pressed wood. And there is well-

documented evidence that as they increased the power levels from these reactors, several things happened that -- that resulted in -- in at least engineering reports that documented an increase leakage rates that were measurable for neutrons and photons coming from the bioshield and from the penetrations in the bioshields, and this became a matter of great concern. However, we found no actual measurements of workers for neutrons, and I think that this is an issue that can't be ruled out out of hand, and I would just urge that NIOSH take a harder look at this problem.

MR. FIX: Well, it's not --

DR. MAURO: This is John Mauro. One -- one of the reasons this was triggered is when we -- this goes back a ways at one of the meetings where when we raised some of our current concerns regarding neutron dosimetry, one of the arguments that we made was that well, we noticed that some of the workers have elevated sodium-24 in their whole body counts, and the -- NIOSH's perspective on this was that well, that was due from drinking water that contained sodium-24 that was -- been discharged to the

Columbia River. The -- this analysis that we -- that -- that Bob just submitted basically says well, that -- that certainly might be true, but there's also a lot of evidence that -- there's a very good possibility that some of those sodium-24 readings are a result of neutron activation, completely different pathway, and as a result we could be missing some important neutron doses. And -- and I guess that's the issue. That is, is the sodium-24 whole body counts that we're seeing indicative that we might be missing some neutron exposures to some of the workers in the reactor area.

MR. FIX: Uh-huh. Well, John, this is Jack again. As you know, we just got this this morning --

DR. MAURO: Sure.

MR. FIX: -- and there's been a lot of work done at Hanford over the years on using activation of sodium in the body as part of the accident evaluation procedures at Hanford. And we have a lot of ev-- a lot of information on this topic, but we've not been able to gather it -- gather it -- you know, most of the people

who did this work have long retired from Hanford, and we -- I'm sure we can get informa- - on this particular topic fortunately there is a lot of information, and we can gather it and there should be information on whether or not it existed in drinking -- potentially existed in drinking water. And we just have to be given a little bit of time to -- to pull this information together.

DR. MELIUS: We -- we will -- certainly willing to give you time -- this is Jim Melius. I guess I would suggest we, you know, put this on the agenda for --

DR. ZIEMER: Uh-huh.

DR. MELIUS: -- you know, a workgroup meeting - -

DR. ZIEMER: Sure.

DR. MELIUS: -- in the future and you'll have some time to get your -- sounds like you're actively gathering information on it and let's discuss it at that point in time.

MR. CLAWSON: Dr. Melius, this is Brad. I just had one question. You know, I keep hearing them referred to as just the reactor operators, but what does that class incorporate? Does

that incorporate instrument techs, mechanics that may have been working on processes? Does it incorporate all of them or are they just looking at the reactor operators themselves?

MR. FIX: No, we classify all the -- all the workers at -- working say like at 100-B --

MR. CLAWSON: Uh-huh.

MR. FIX: -- be all those, it'd be everybody that worked at 100-B.

MR. CLAWSON: Okay, I just -- I just wanted to clarify that 'cause I didn't --

MR. FIX: Yeah, as you know, the idea -- the idea here is to -- typically we don't know exactly what a person did or where they worked, so we're trying to -- you know, we'd apply it for the whole faci-- a whole area.

MR. CLAWSON: Okay, I just --

MR. FIX: All the 100 -- all the 100 areas, but not 100-N since we have a lot more information for 100-N.

MR. CLAWSON: Okay.

MR. ALVAREZ: If I may just -- here -- here just a couple of quotes from the memo from the whole body reports. This is from Swanberg* in 1960. (Unintelligible) because of the

relatively short half-life of sodium-24 of 15 hours, it is generally observed in great -- greater quantities in subjects examined during the afternoon who have come to the whole-body counter directly from working in the reactor areas. Sodium-24 has been (unintelligible) only in reactor area employees. Fourteen of the 59 were assigned to reactor areas farthest upstream and therefore were not regularly exposed to drinking water which has been used as a reactor coolant.

Then in a whole body report from 1961 to '63 it states sodium-24 has been detected primarily in reactor area workers. Correlation of results to environmental parameters such as places of residence and work area was precluded by the relatively short half-life of the radionuclide and by the fact that many of the employees examined have been away from their location long enough for a significant fraction of sodium-24 to have decayed. Results from 1961-'63 indicate that 47 percent of reactor area employees examined had measurable body burdens of sodium-24 ranging up to 3.8 nanocuries.

MR. FIX: Well, Bob, I agree that was very

interesting what you presented to us, and just give us a chance to follow up to it because the people that made those measurements, such as Earl Palmer, are still here and I'm sure that they can provide some clarification as to what those use -- I've been involved myself on -- in -- in, you know, all weekend irradiations of -- of samples to detect the sodium content 'cause we were trying to evaluate the sensitivity for a criti-- to evaluate criticality accidents, so it's nice that you pose this particular question 'cause this is -- at least fortunately this is one issue we do have a lot of information for.

MR. ALVAREZ: Well, good. Good.

ENVIRONMENTAL DOSE

DR. MELIUS: Thanks -- move on to -- it's item number five, environmental dose.

DR. MAURO: Yeah, I'll take the first part. I -- I -- in effect -- and I think we can cover this pretty quickly. In effect, the response that NIOSH provided in the matrix -- what we're dealing with is a concern that when the doses -- the environmental doses are being calculated for workers outdoors, the approach that's taken

uses -- takes the releases from the -- airborne releases from the plant, treats them as chronic atmospheric discharges, and then calculates the average annual atmospheric dispersion factor to the receptor locations. And this is conventional environmental transport modeling, and it's perfectly fine and the appropriate way to go when you do have circumstances where the releases are chronic -- or even if they're episodic but very frequent. And that approach, what I call the average annual chi over Q approach, works. And the an-- the response that NIOSH provided in -- in comment seven on the matrix is -- I have -- is -- I'm in complete agreement with.

But I think that the point I was trying to make is that I believe that there's a lot of evidence that there were some significant episodic releases that did not occur very often, with substantial amounts of radioactive material released into the atmosphere and -- one-time shots, or perhaps only a few times a year.

Under those circumstances, you really can't average -- use average annual atmospheric

dispersion factors. You can't assume that release occurred continuously over the course of a year. You've got to take into consideration that it occurred over a relatively short period of time and account for the meteorology that was actually in place at the time of the release. And I guess that -- and there -- and that's a pretty conceptually simple problem, and I -- I think that there might be some scenarios where workers could have been exposed to those kind of occasional episodic releases, especially ground level releases, that the current method in the TBD does not take into consideration. So that was the point that I was trying to make.

MR. NELSON: This is Chuck Nelson. Liz, are you prepared to elaborate on that at all?

MS. BRACKETT: No, I'm not.

MR. NELSON: Okay. Unfortunately, we don't have our environmental guy with us today. I don't know if there's anybody else from ORAU that's prepared to elaborate on that particular issue, but the individual responsible for the environmental group wasn't able to be with us.

DR. MELIUS: I think we can -- I -- we

understand -- scheduling. I think we -- again, you know, put that issue on the agenda for a workgroup meeting and -- I mean -- well, let's address it there. It may not take as much time, but let's say -- at least do it that way.

DR. ZIEMER: What about the large particle part of that?

DR. MELIUS: I was going to ask.

DR. MAURO: Yeah, Bob, I guess -- you know, you've been closer to that than I am -- Bob Alvarez, would you mind picking that up?

MR. ALVAREZ: Sure. In the reply by NIOSH about this, the -- the NIOSH or NIOSH/ORAU indicates that 99 -- there's a particle size distribution at 99.9 percent of the, quote, larger particles at physical and aerodynamic diameters greater than ten microns.

I'm not sure where that came from, but the particle size distribution really varied by episodic release, and then these particles are not respirable. That may be true, but they could be ingested. And at least looking at the 2002 Till report and going through that is that they -- you know, they came up with their own dose reconstruction model called the Hanford

calculator, which does estimate doses or provides a basis for estimating doses for both inhalation, ingestion and for skin exposures to these particles. So I'm not sure -- and I notice that in the response that the NIOSH/ORAU also notes that -- that the -- the method has been -- that Till's method has been added to appropriately account for T and B plant exposures.

It's not clear to me, I guess, in this approach how ratchet, for example, is being connected to a receptor on-site and whether ratchet is applicable to particles that are greater than 0.5 microns that were released episodically, as John describes. Now these are issues which Till, et al address in their 2002 report. However, the TBD basically discounts the -- the Till approach as being I guess overly conservative and biased towards large doses, and then proceeds to inform the reader that to use the ratchet code instead of a dispersion model, but it's not clear to me, as I said before, how the ratchet -- the ratchet is just a dispersion model. How does it connect to a receptor and, at least in my conversation I had

with Bruce Napier* about this, the ratchet code is not really applicable to these larger particles above 0.5 microns. So these are open questions.

DR. MELIUS: Chuck or -- something we want to leave...

MR. NELSON: Yeah, I believe that's one of those we need to save for that next working group.

TANK FARM AND WASTE MANAGEMENT OPERATIONS

DR. MELIUS: Okay, that's fine. Thanks. Tank farm and waste management operations.

DR. MAURO: I have to admit that I'm not quite sure who took the lead on this one.

MR. ALVAREZ: I'll discuss it a little bit. The -- our -- our reply to -- to the review of the site profile took issue with the limited number of radionuclides that Carball*, et al had sort of suggested should be used for dose reconstruction purposes at tank farms. And that's because these wastes were being generated in large volumes, that their radionuclide mix was highly dynamic in the beginning stages and there is a rather well-documented history of environmental releases on

site, particularly in the 200 areas, involving these tank farms, both in terms of transfer lines that failed or leaked and bumps and turnovers and steam explosions and things like that that resulted in environmental contamination. We felt that there needs to be a more comprehensive look at this particular source of potential exposure.

THE COURT REPORTER: Excuse me, who was speaking? Was that Mr. Nelson?

DR. MELIUS: That was Bob Alvarez.

THE COURT REPORTER: That was Alvarez, okay. Thank you.

MR. ALVAREZ: And in our -- in our review we do provide the current sort of inventory data that is in the tank farms and, you know, because wastes have been moving around, largely to stabilize tanks and prepare for the waste treatment plant, there are exposures going on to workers.

DR. MELIUS: Chuck?

MR. NELSON: Okay, Liz Brackett, can you comment on that, please?

MS. BRACKETT: Well, there is a document -- I don't know if this would address it completely,

but as the response notes, we do have a document in development to address mixtures of radionuclides where either a growth type of measurement is done or there's some indicator nuclide that the rest of them aren't measured, and so this OTIB will give a matrix of additional radionuclides based on a -- basically a tracer nuclide that would be added in to account for the things that were not necessarily monitored.

DR. ZIEMER: What's the status of that, Liz? This is Ziemer.

MS. BRACKETT: It's in internal review. We're -- we're kind of in the final stages of it. We're working on it this morning, passing comments back and forth, but it -- it's pretty close to being ready to go to OCAS for review.

DR. MELIUS: So -- so I think that's something we could put on our --

DR. ZIEMER: Uh-huh.

DR. MELIUS: -- This -- maybe not the next workgroup meeting, but at some point we can -- when that's ready we can better address this comment.

DR. POSTON: Dr. Melius?

DR. MELIUS: Yes.

DR. POSTON: This is John Poston. I'm sorry I'm going to have to withdraw from the conversation. I have another commitment.

DR. MELIUS: Okay, I understand.

DR. POSTON: It's the last week of the semester.

DR. MELIUS: I understand.

DR. POSTON: (Unintelligible)

DR. MELIUS: We'll see you in Chicago.

DR. POSTON: Okay.

DR. ZIEMER: Okay, it sounds like that document will be available fairly soon, though. Right, Liz?

DR. MELIUS: I think -- again, I think with all these documents, Chuck or somebody can take responsibility for just letting us know when they are approved and can be ready for discussion.

MR. NELSON: I will do that.

DECONTAMINATION AND DECOMMISSIONING

DR. MELIUS: Appreciate that. I think we're -- decontamination and decommissioning?

DR. MAURO: I think Joe Fitzgerald was point man on that, but I -- I can certainly -- this

is John Mauro. I could certainly kick it off and anyone else at SC&A would like to, you know, embellish on it a bit. This goes to a comment that's very much like the D&D issue that we're talking about on Rocky, namely that subject area is typically not fully engaged in many of the site profiles that we review, and it's also the case for -- for Hanford. And -- and by the response to comment number ten in the matrix, it -- you know, it basically appears that NIOSH's position is that, you know, there is a comprehensive monitoring program and that -- that there will be I guess a revision to the TBD that will go into some detail on how dose reconstructions for D&D workers will be performed. And I guess that, as in the case of Rocky Flats, that protocol, the data upon which those dose reconstructions were performed, is something that is going to be assembled and be available for review at some time in the future.

MR. NELSON: This is Chuck Nelson. That is correct.

DR. MAURO: Okay.

MS. ROBERTSON-DEMERS: John, I have a couple of

questions for the NIOSH team. You said that you talked to individuals and determined that they were doing DAC hour tracking in your response, and that this could be used to supplement bioassay data. And my question is, who was it that you interviewed?

MR. NELSON: This is Chuck Nelson. Don Biehl* I think was the individual involved with that. He's also not on this conference call. Now Liz may be able to elaborate on that, I'm not sure of that, though --

MS. BRACKETT: No, I don't know --

MR. NELSON: -- (unintelligible) specific person.

MS. BRACKETT: -- I don't know who he would have talked to. I can check into that, but I don't have that information right now.

MS. ROBERTSON-DEMERS: Okay. Have you looked at how lapel monitoring was implemented for the different contractors across the Hanford site?

MS. BRACKETT: Again, I'd have to go back and check with Don Biehl on that to get the details.

MS. ROBERTSON-DEMERS: Okay. We can send you a couple of questions.

MS. BRACKETT: Okay, that would be great.

DR. MELIUS: Any other comments or questions on that?

(No responses)

Again, I think it's something we -- we need more information, maybe we discuss it -- next workgroup meeting as a way of sort of figuring out what our status is and -- just to get an up-- update on it.

INCIDENTS AND ACCIDENTS

Item number eight is incidents and accidents.

DR. MAURO: Yeah, this is John Mauro. I guess, again, I'll kick it off. I may want to impose upon Hans to help out a bit here. In general, site profiles -- including Hanford -- does not provide any guidance or information related to incidents. And the strategy that -- very often the records, information regarding incidents are in different databases. And in general, as I understand it, when a dose reconstruction is performed part of the work-- worker's -- worker's record includes any incident reports that apply to him. And as a result, the -- there really -- I guess the position, as I understand it, that NIOSH takes on this is that

really there's no real need to include information related to incidents in the site profile because there's another vehicle used in order to reconstruct doses to workers who may have been involved in incidents, and that information is revealed as part of the data capture from DOE on a case-by-case basis. And of course there's a CATI report where the worker may reveal it, so I guess on that basis -- and please, Hans, you help me out if I'm leaping to a conclusion too quickly --

DR. BEHLING: Yeah --

DR. MAURO: Go ahead.

DR. BEHLING: -- okay.

DR. MAURO: Go ahead.

DR. BEHLING: I -- I think I -- I'll talk from my experience with the dose reconstruction reports. It's clear that NIOSH does make a request to DOE at the time of records request that includes not only external exposures, bioassay data, but also radiological incidence data. And so every claim has that request associated with it, and so oftentimes you will in fact see DOE records that talk about the radiological incidents such as a skin

contamination where the records clearly reveal the amount of activity that was deposited or contaminated a particular individual's hands or wherever. And then there are other incidents where the response from DOE says no records found, and yet the CATI report does in fact make specific reference to specific radiological incidents. And oftentimes -- and again, it's dependent on whether or not a claim is a best estimate versus a maximized dose -- the failure to resolve the issue between a claim made in a CATI report versus the absence of information in -- from -- received from the DOE is dismissed as well, if there was such an incidence, which we don't have any records of, we took care of it by virtue of maximizing the dose, by giving generous dose assignments involving internal exposure using hypothetical 12 or 28 radionuclide or any of those other issues, and therefore they dismiss it. On the other hand, if the issue is one of a dose reconstruction that involves a best estimate, I'm not sure if there's always an effort made to identify whether or not a radiological incidence as claimed by the claimant himself in

the CATI report, for which there is no record, is properly resolved. I think that's really the issue that needs to be looked at.

DR. MAURO: I'd like to add also that --

DR. ZIEMER: So that -- that's a generic issue, is it not, for all sites?

DR. BEHLING: Yes, yes, it is.

DR. MELIUS: I mean actually I think it's a one -- 'nother one of these sort of systemic issues. I mean I -- it's -- it's -- it's sort of -- and we've talked about it in Advisory Board meetings and I know I've -- you know, I've asked many questions for Jim and -- Neton and -- and Larry about it, it -- I think sort of the -- the question is there are lists of incidents and that -- there's different information available on different sites and different time periods and so forth, so it's very site-specific. But sort -- sort of the question how do we make sure that -- that there's some sort of cross-referencing of -- of this information that -- in a way that, again, where you have a -- a widow of a -- of a, you know, a former worker and -- and they may not be obviously very familiar with their spouse's,

you know, work history, you know, how does that information become available. I -- I guess -- I think -- I think we became convinced that site profile wasn't necessarily the right place for it, but it's still an issue of -- of how do we make sure it gets addressed in individual site -- in individual dose reconstruction. And then -- then it does become an issue of well, we have some sort of general correction factors probably should take that into account and it -- no easy answer to it.

DR. ZIEMER: And there are some approaches that are used, or can be used, for certain kinds of affidavit approaches, for example.

DR. MELIUS: Right.

DR. ZIEMER: If -- if groups of workers can establish that something occurred.

DR. MELIUS: Yeah, I need to --

MR. ELLIOTT: This is Larry Elliott. I'd like to speak to -- to Jim's point a moment ago -- Dr. Melius's point. I think -- you know, certainly we've heard this and we've thought long and hard among ourselves here at NIOSH on -- on what we can do better in this regard. I think one of the things that we might take up

here is that we could modify the site profile to say that if a best estimate dose reconstruction is being done that incident data needs to be fully considered; that even in fact maybe we need to put in a section that talks about the type of incidents that we are aware of that should be factored into a best estimate. Something of that nature I think is certainly something we all should think through and perhaps utilize. But I'm interested in hearing thoughts and recommendations on what we can do in addition to that.

DR. BEHLING: Let me just make a comment to what you just said, Larry -- this is Hans. I think one of the ones that we have seen on occasion involves, for instance, a claimant who's not the worker himself. And that may involve, for instance, a statement by a -- by a wife or -- or a member of the family saying that the worker would come home and he would be asked -- or he would ask his wife to wash his clothing because it was contaminated, and -- and there are no incidence reports to that effect that would support the notion that skin contamination, clothing contamination were in

fact an issue that is on record. And yet the dose reconstructor is sort of at odds how -- as to how to deal with that.

MR. ELLIOTT: I -- thank you, Hans. I certainly hear that. I -- I understand the predicament that -- that presents there. You know, I would -- I would offer that we -- you know, we ought to be doing a good job in identifying those situations and maybe we're not doing such a good job in providing direction on how we handle those and -- and so that's the kind of interest I have in hearing your comments and your thoughts and -- and giving full consideration to the recommendations that's coming forward out of this discussion..

MS. ROBERTSON-DEMERS: This is Kathy DeMers. There is a little bit of a twist to this, also. And that's the question of whether the sites have done the research to know all of the incident databases, all the incidents that are out there, and whether they're providing it. The case in point where they are not is Los Alamos National Lab. And we are not aware of any efforts by NIOSH to go back and do sort of

a quality assurance check of what they're getting from the sites, and we have some concerns over the quality assurance area.

DR. MELIUS: This is Jim Melius. Let me lay out what I think are sort of two options I -- 'cause -- 'cause we haven't discussed this in a while on the Ad-- Advisory Board and I know Larry and staff have made some efforts in this way. But I think one is we could sort of -- and discuss it again as a generic issue, but it may be also something to consider -- or work for everybody is -- is look at it on a -- on a Han-- on a Hanford, you know, site-specific issue. You know, maybe it's not in the site profile, but -- but, you know, look at where else this is addressed and -- and how comprehensive that -- and appropriate, you know, that information is for use at this site.

DR. ZIEMER: This is Ziemer. I think it certainly has to be addressed on a -- on a system-wide basis, certainly not -- I mean we certainly don't want to overlook Hanford, but it's a bigger question than Hanford. And also recognize that if you go back quite a ways in -- in the history of the Labs, there -- there

was a period of time where contamination incidents were fairly routine, but they -- they would not have been labeled as an incident in the way that they are in more recent years where you're -- you're tending to indicate any situation -- I mean when I worked at Oak Ridge I can tell you it was fairly common for workers to have contaminated shoes and so on that they would have to leave at the Lab, or to have contaminated skin and they'd do scrub-downs, and -- and nobody labeled that -- I mean you might have logged it in on your health physics logbook, but it wasn't something that would be labeled as an incident that would appear on any laboratory database.

MR. CLAWSON: Well, Dr. Melius, this is Brad. I guess one of the concerns that I'm kind of getting into is looking at some of these TDBs (sic) that when we have an accident like this, they -- I've read several of them, they say there was no contamination to the outside area so this wasn't an issue. But I know in my case and in my facilities it doesn't take into account that for three and a half months the whole facility was a respirator facility; six

and a half months later you were in zone one clothing to be able to even go into these areas. And I -- I think that this is complex-wide and I think that these are one of the ones we really need to look in depth with and I -- I understand with NIOSH this is -- you know, this is a -- this is a tough issue, but I think this is one that we really need to look in depth to because there's a lot of instances that may not have hit the record books but it would have affected a lot of people, too.

DR. MELIUS: I just think -- this is Jim -- is that my only concern is that if you -- we look at it sort of system-wide and it, you know, is sort of systemic type of issue, is that then we miss the -- it -- it's hard to do sometimes and -- 'cause really what we want is -- is how does it work at a specific site. We might be able to better touch that looking at a specific site or something, but maybe a compromise way to approach it is let's first address -- address it as an Advisory Board issue. You know, Larry, you and your staff could sort of update us on -- on where you are with your -- your efforts in a general way.

DR. ZIEMER: And we could think about, you know, how -- how would you approach the issue.
DR. MELIUS: And -- and -- yeah, and then let's -- then let's talk about --
DR. ZIEMER: Then you can talk about specifics.
DR. MELIUS: Yeah.
DR. ZIEMER: Right.
DR. MELIUS: Exactly, that's what I was thinking, rather than try to do it -- start specifically. Let's start with a general -- does that make sense to you, Larry?
MR. ELLIOTT: Yes, I appreciate that. That does make sense and I know the staff around the phone are already writing notes on this.
DR. MELIUS: Okay, 'cause --
DR. ZIEMER: They -- they're looking for work to do, I know.
MR. ELLIOTT: Yeah.
MR. ALVAREZ: I think Dr. Ziemer is -- is on the mark there because the one database where they have rolled up (unintelligible) incidents, which I'm hoping that NIOSH (unintelligible) the so-called waste management fault tree data bank, and the iteration that we reviewed in the 1980s clearly showed that the frequency of

reporting was substantially greater as the years went on, especially from the 1960s onward, and that things that were not considered important in the '50s and '60s were considered important and reportable later.

DR. ZIEMER: Well, and I think even as you move to the later '80s there was a -- a threshold of what was called -- was labeled a, quote, incident certainly moved way down.

DR. ULSH: This is Brant Ulsh. Bob, could you say the name of that databank that you just mentioned that --

MR. ALVAREZ: Certainly -- well, it used to be called the 200 Area Fault Tree Databank and now it's called the 200 Area Waste Management Fault Tree Databank at Savannah River. It's just a very unique set of data because, you know, DuPont, which was there until 1989, was the sole contractor and maintained a fairly consistent and uniform record-keeping system. And what it is is essentially a base derived from -- I've sent NIOSH a description of the data and what data -- what sets of -- what other reports it was derived from, but it's a chronological listing essentially of various

incidents -- you know, radiological, engineering, et cetera -- that happened in the -- the tank farms, the F and H canyons and the 200 -- 232-H separations facility. And it's got tens of thousands of entries.

DR. ZIEMER: And information might -- like that might be useful also in helping people think about how to go about this whole issue.

DR. MELIUS: Yeah, that's a good point.

MR. FIX: This is Jack Fix speaking. I just wanted to make a point. I think this will always be a confusing issue because I've also looked at that database from Savannah River Site and I would just make the point that I think clarity will not be achieved until you start looking at the individual claims and looking at the circumstances of exposure to the workers in the individual claims, just so it's not -- for example, at Hanford if anybody that has a potential to be significantly radiologically exposed and has no monitoring records, you know, that would be a substantial issue unto itself.

DR. ZIEMER: Right.

MR. FIX: And that's true of many of these

sites, and I think that when you get to the level of detail of the individual claims -- and I know it's very difficult to do, it takes a lot of energy to get down to that level -- that's where I think -- I think we'll find clarity to some of these issues because at a site level or at a national level it's very confusing 'cause there's lots of possibilities.

DR. ZIEMER: Uh-huh.

MS. ROBERTSON-DEMERS: And this is why it is so important to make sure that what NIOSH has provided from the site is complete with respect to incidents.

UNIDENTIFIED: Jack, have you just reviewed these data recently, 'cause when we last had the conference call --

MR. FIX: Yes, I did --

UNIDENTIFIED: -- on Savannah River --

MR. FIX: -- yeah, 'cause you -- we -- we received the structure -- I received the structure, you know, it's about a -- I don't know, I don't remember, it's 150 pages or something.

UNIDENTIFIED: It's a 1995 report?

MR. FIX: Yeah.

UNIDENTIFIED: That's what I sent you guys.
MR. FIX: Yeah, I have that. And you know, there's no radiation -- there's very few radiation -- I didn't find any radiation (unintelligible) even in that structure --
UNIDENTIFIED: Oh, there are quite a few. I think you need to look at that more carefully.
MR. FIX: Well, I'll go back and look at it again.
UNIDENTIFIED: Yeah, absolutely. They've got the radiological incidence reporting in there, and the health physics reporting in there.
MR. FIX: Well, maybe --
UNIDENTIFIED: I mean I'm happy to resend it to you if you --
MR. FIX: No, I have it. I've got it. I got it twice, and I went through it and -- I went through it when we talked about it. But I guess the important point is that the -- if there's any radiological exposure that's significant to the worker, the evidence is that that's already included in the dose of record.
DR. MAURO: Yeah, Jack, I -- I think I hear -- we have an interesting -- in other words, there are really two different strategies to deal

with this problem and I guess it needs to be explored. One is I call the top down and the other is a bottom up. Jack, what you're saying is really to -- to try -- to come at this from the top down is not going to work.

MR. FIX: I don't think it will.

DR. MAURO: You've got to work from the worker, look at his records and do your homework on that case to make sure you didn't miss any incidents.

MR. FIX: Yes.

DR. MAURO: But at the same -- you know, but -- and what we hear from Hans, though, we find out that well, that's not so easy to do, to make sure you didn't miss anything important.

Now coming from the top down if you start to access, as Larry indicated that yes, there are all these resources available to us such as the database, then it becomes a matter of how do you marry the two. So I'm -- I think that this is a -- an interesting challenge and two different ways of coming at it. Maybe a combination of both is the way you come at this problem.

MR. FIX: Yeah, I think something -- 'cause the

thing that I find frustrating -- I just pulled this document of keywords up on this Savannah River Site document. And you know, it's unfortunate to have these type of issues come up in front of the Advisory Board because it's obviously very simple to determine is there data of interest to us in this document or not, and it probably should be somehow worked before it ever gets to the level of the -- of an Advisory Board working group because all we're talking about is is there something of value in a document or not, and I -- I have it here in front of me right now and we've looked at it because, you know, we want to follow through on these action items and, quite frankly, I -- I mean maybe there's some way of working these issues. I see tritium here, but there's -- you know, like neutron or something (unintelligible) --

MR. ALVAREZ: Jack, did you look at the -- the -- the dataset -- the various reports upon which this databank is based as opposed to doing just a --an Adobe PDF word search? Because what's important about that description of that database is the source documents from

which it comes from. And if you were -- and I actually provided a listing of those in our comments on Savannah River which clearly indicated a significant number of health physics radiological incidence reports.

MR. FIX: Uh-huh, well, you know what I think would be attractive for the Advis-- for the working group and the Advisory is that we should find some mechanism to work these issues, and I know that that's what you're doing, so that it's not a issue -- you know, whether the information exists or doesn't exist is not a -- if we don't try to resolve it during these teleconferences, we can work --

DR. ZIEMER: Well --

MR. FIX: -- (unintelligible) together to resolve --

DR. ZIEMER: -- yeah, let me -- now, Jack, this is Ziemer. Let me respond to that just a moment, and you don't need to feel guilty about that. I think one of the things that's become clear over the last few years is that a lot of -- lot of times these issues actually emerge in the process of our working some other issues, and you know, there's a vast forest of

information out there and I -- I don't -- I don't think we necessarily expect that everybody's thought of every possible tree in the forest along the way in advance. And as these issues emerge, I think it's great and you can go back and work them. But don't feel bad that they, you know, kind of surface during these kinds of conversations. That's partially why we want to be working on it, so we can surface issues that perhaps, in the synergy of working on this, things we might not have thought of even.

DR. MELIUS: If -- if I understand -- 'cause we've run through the agenda. If I understood where everything was correctly, I think for our next -- let me see what I see as sort of (unintelligible). You know, the Advisory Board is meeting in a coup-- less than a couple of weeks now, about ten days and -- or so in lovely Chicago area. We'll have a chance there to just talk among ourselves, but what we will -- we would be doing -- scheduling another workgroup meeting, which I think would probably be a -- you know, I suspect a full day meeting, something on that order, to these issues. That

would -- and I think it would be an in-person meeting as opposed to a conference call. And I think that the main issue that will need to be discussed is the neutron issues would be the one that appears to be, you know, sort of ready and people have -- you know, there's some significant comments and I think -- think we'd all benefit from spending a fair amount of time on that issue.

I think there are some other issues that we may need to get sort of updated on at that meeting, the -- not sure I'm doing these in order, but certainly the environmental dose issue and some of the tank farm decontamination, those issues where, you know, people weren't able to be here and -- and we just -- at least leave -- need time to be updated on.

And then there are a number of -- some of the other issues you're awaiting some -- you know, the approval or completion of some up -- technical documents and I think we'll just have to see how long that takes. But I suspect that we could spend a fair amount of time on the neutron issue, from the nature of the discussion that went on, and I think its

importance at Hanford. Is that a fair summary?
DR. ZIEMER: Sounds good.
DR. WADE: Sounds good.
MR. ALVAREZ: Just -- just one final thing with respect to this document that Jack was referring to, I -- Jack, I would refer you to Table 3, page 16, which lists the datasets and perhaps you may find this to be useful. Anyway, that's all I have to say.
DR. MELIUS: I would certainly like to thank everybody from NIOSH, ORAU, SC&A and everybody for spending the time and your participation and everyone's patience with going -- going through these issues and willingness to share information. I think it's been -- been helpful and hopefully it's -- will help us in doing this going forward.
But I think, just back to the issue of the next meeting, I think we -- I was hoping maybe at the -- obviously at our Advisory Board meeting we'll work on -- on the scheduling, but I suspect it would be sometime in January that we would try to pull the workgroup together.
DR. WADE: Okay. We have time on the agenda to talk about scheduling of workgroup meetings, so

that would be the appropriate time.

DR. ZIEMER: Very good.

DR. MELIUS: And Lew, thank you. I -- you had disappeared for so long that --

DR. WADE: Well, I was listening intently.

DR. MELIUS: I know.

DR. WADE: Thank you -- thank you, Jim.

DR. MELIUS: And thank everybody. And again, for those steelworkers and the other people, if I -- we will certainly let everybody know about the next meeting and notify people ahead of time -- of this and whatever documenta-- new documentation there is, we will get out to everybody ahead of time.

DR. ZIEMER: Very good.

DR. WADE: You all be safe in the weather.

DR. MELIUS: Okay, thank you.

DR. ZIEMER: Thank you.

(Whereupon, the meeting was concluded at 3:30 p.m.)

CERTIFICATE OF COURT REPORTER

STATE OF GEORGIA

COUNTY OF FULTON

I, Steven Ray Green, Certified Merit Court Reporter, do hereby certify that I reported the above and foregoing on the day of December 1, 2006; 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 31st day of January, 2007.

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STEVEN RAY GREEN, CCR

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