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

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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

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WORK GROUP ON TBD-6000

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WEDNESDAY
DECEMBER 14, 2016

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The Work Group convened via teleconference at 3:00 p.m. Eastern Standard Time, Paul L. Ziemer, Chairman, presiding.

PRESENT:

PAUL L. ZIEMER, Chair
JOSIE BEACH, Member
WANDA I. MUNN, Member
JOHN W. POSTON, SR., Member

ALSO PRESENT:

TED KATZ, Designated Federal Official
BOB ANIGSTEIN, SC&A
DAVE ALLEN, ORAU Team
BOB BARTON, SC&A
PATRICIA JESKE
JOHN MAURO, SC&A
DAN McKEEL
JIM NETON, ORAU Team
JOHN RAMSPOTT

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

(3:00 p.m.)

Welcome and Roll Call

MR. KATZ: So welcome everyone. This is the Advisory Board on Radiation and Worker Health, TBD-6000 Work Group. And the Work Group is addressing GSI only today.

MR. RAMSPOTT: Hey, Ted, is Dan McKeel on the line?

MR. KATZ: I'm going around, I doing roll call, John, so we'll get there.

MR. RAMSPOTT: Okay.

MR. KATZ: Yes, I imagine he will be. Anyhow, the meeting today, the materials for the meeting, most of the materials for the meeting and the agenda, they're posted on the NIOSH website, schedule of meetings, today's date. You can go there and pull those up and follow along with the documents that are being addressed.

One of the latest document from SC&A, which is a response to NIOSH's response

to SC&A's review, has not been posted yet. Although I did email it to John. And Dan and Patricia, I'll send it to you just as soon as I have my hands free so that you have too. So that's a memo from Bob Anigstein basically, from SC&A. So that covers that.

I have all the Chair, Dr. Ziemer and the Members, Josie Beach, Wanda Munn, and Dr. Poston, John Poston are all on. None of them have conflicts with this work site. But let me do roll call for NIOSH and SC&A, and cover that when you respond, starting with the NIOSH ORAU team.

(Roll Call)

MR. KATZ: Dr. McKeel, welcome. And I don't know if you heard earlier, Dan. I emailed you a document that you probably didn't receive, and it hasn't been posted yet. That came in on Friday.

DR. McKEEL: Okay.

MR. KATZ: And that is the SC&A memo from Dr. Anigstein responding to Dave Allen's

response to the SC&A review.

DR. McKEEL: Ah, okay.

MR. KATZ: The appendix, okay. And that should be in your emails. And I apologized about its late coming.

Okay, so I think that covers all the preliminaries. Everybody -- Bob, let me note that however you're speaking right now, you're very remote and hard to hear, so when you do speak, you'll need to either use your headset or some other arrangement.

But otherwise everyone, mute your phones except when you're speaking. Touch *6 if you don't have a mute button on your phone to mute your phone. You press *6 again, and that will take it off of mute. But that will help everyone.

And Paul, it's your agenda.

Agenda Discussion

CHAIR ZIEMER: Okay. I want to check first and see how my connection is. Am I clear, or am I echoing?

MR. KATZ: You're not echoing, there's a little bit but you're not bad. You're perfectly fine for listening to.

CHAIR ZIEMER: Okay. I was going to ask you, and I think you answered the question. The SC&A memorandum of December 9th, I had checked the website this morning, and it was not on. That's the one you were talking about, that --

MR. KATZ: Yes. That's your update, that's --

CHAIR ZIEMER: -- was not received. Yes, okay.

MR. KATZ: That's correct, Paul.

CHAIR ZIEMER: Okay. So, the other documents, we have the SC&A review of Appendix BB, Rev 2. And we have the NIOSH comments; those were dated November 4th. NIOSH response to the review of Appendix -- of Rev 2. And then we have this recent response by SC&A, response to NIOSH.

Now, so what we'll do, I don't

think we need to go through the Appendix BB, Rev 2 specifically. But I think Bob Anigstein, you may want to just highlight sort of the bottom line on your review. Particularly with respect to Issues 1 and 10.

DR. ANIGSTEIN: Okay. First of all I have the Live Meeting, does everyone have Live Meeting?

MEMBER MUNN: Yes.

DR. ANIGSTEIN: You can see my first page?

MEMBER MUNN: Yes.

SC&A Review of Appendix BB, Rev 02

NIOSH Responses/SC&A Reply

DR. ANIGSTEIN: Okay, so I'll start with that. This is a brief summary. And by the way, I have -- there are two ways of doing this. There's only a couple of findings where we have some question about, actually just one. And I was wondering whether, should I go through all ten findings and then let Dave Allen respond? Or should I just go -- shall we handle the findings one at a time?

CHAIR ZIEMER: Well, I'll ask the Work Group this question, but Findings 2 through 9, basically you had indicated earlier, and we all saw that, that you were satisfied with the NIOSH response to those original findings.

So I wouldn't -- we may want to formally close those as the Work Group, and we do that. I would just as soon do it as a group unless somebody objected. But basically I think SC&A was satisfied with NIOSH's response to 2 through 9.

DR. ANIGSTEIN: Yes.

CHAIR ZIEMER: But let me ask the Work Group Members. Do you want to individually go through those?

MEMBER MUNN: No, I think it had been our expectation. We'd gone through them many times, and it was certainly my expectation that we would agree with the --

MEMBER BEACH: Wasn't there some question on 1 also, 1 and 10?

MEMBER MUNN: No, 1 and 10 were the two open ones.

CHAIR ZIEMER: Yes, 1 and 10. I'm just talking about 2 through 9 right now.

MEMBER BEACH: I'm sorry, I thought you said 1 too. Okay, I'm good.

CHAIR ZIEMER: I meant 2 through 9. I know that SC&A considered those closed, and if we want to formalize that, I guess we could ask the Work Group if we'd like to make a motion to agree with SC&A's recommendation that those be closed.

MEMBER MUNN: I would be pleased to accept SC&A's recommendations for Findings 2 through 9, that they now be closed.

CHAIR ZIEMER: Second.

MEMBER BEACH: I'll second that. This is Josie. I agree.

CHAIR ZIEMER: Discussion.

(No audible response)

CHAIR ZIEMER: Okay, all in favor, aye.

(Chorus of aye.)

CHAIR ZIEMER: Okay, ayes have it. So we're going to concentrate on 1 and 10 then, Bob.

DR. ANIGSTEIN: Okay. I'll skip over some of my slides.

MR. KATZ: And Bob.

DR. ANIGSTEIN: Yes.

MR. KATZ: This is Ted. Just please keep in mind that the Live Meeting is only available for Agency.

DR. ANIGSTEIN: I understand.

MR. KATZ: Okay, thanks.

DR. ANIGSTEIN: I understand, so I'll go over it unless, well I have an email if it would be deliverable. I didn't -- I knew it wouldn't be posted in time, so we didn't do anything with it.

MR. KATZ: Well, no, I mean Live Meeting is not like --

DR. ANIGSTEIN: Okay, I'll discuss it unless you want to take a minute out, I

could email it to you, and you could pass it on, if that's --

MR. KATZ: I'm happy to do that. I'm just, all I'm saying is please, just verbalize what you're discussing.

DR. ANIGSTEIN: Okay.

MR. KATZ: But please do send me the presentation so that I can also share it and we can have --

DR. ANIGSTEIN: Yes, afterward.

MR. KATZ: Yes.

DR. ANIGSTEIN: So we can share, okay, I'll do that.

Okay, well Finding 1 -- okay now this goes through two iterations here. So we start off with Finding 1, which was the original finding on the Appendix BB. And that is that in the Rev 2 -- Dave Allen has made a response, but I'm just, now, I'm speaking about the original document Appendix BB regulatory guidelines now.

That on the neutron dose rates, the

dosimetric quantity was not specified. There's more than one type of dose. However, the values that were posted correspond to the calculated values for the ambient dose equivalent, which is known as H*(10). So those are -- that just needs to be stated, but the numbers are okay. They are the ambient doses equivalents.

However, the more significant issue is that there's a recommendation or an instruction in -- I'm just going to say Appendix BB, you know I won't keep repeating Rev 2, but I'm referring to Rev 2. There is a recommendation in the Appendix that all the neutron doses be treated as if they had energies in the range of 0.1 to 2 MeV, 100 keV to 2 MeV. And that was something that was noticed late, I noticed when reviewing Rev 2, and I checked to see is this really claimant-favorable?

And so this is by the way, out of the memo that was sent in response Rev 2, so

that one is posted on the web. So this table that I'm going through that I'm discussing now is also in the memo for those people who don't have access to Live Meeting. And what I've listed here is, there are four energy ranges. There are really five energy ranges. There's one, a fifth one is above 20 MeV, but in these scenarios, there are no neutrons above 20 MeV.

So there are four energy ranges. 0 to 10 keV, 10 to 100 keV, 100 keV to 2 MeV, and 2 to 20 MeV. And according to this, if you take the doses from the uranium radiography, and these are in millirem per shift, and they're listed here. I won't read all of them.

And then there's also the uranium handling, which could be added here, because these are both exposures to the betatron operator, and however many shifts per year, it's the same. There are a few doses, in each shift there is an exposure to uranium radiography when he's in the control room and the betatron is irradiating the uranium slice.

And then the handling of the uranium afterward, up for the next shot.

So these can be added together. And when you add them together for each energy range and then multiply by the dose conversion factor, for that energy range, for the lung. I'm just using the lung as an example. It's a very common, lung cancers are among the more common ones which are being, where dose reconstructions are made. So it just makes sense to use that as an example.

And if these are all added together, which you take the product of the uranium dose rate per -- uranium dose per shift and multiply by the dose conversion factor for that particular energy range. So under lung is the actual dose to the lung for those calculated in that manner.

So the total comes out to approximately 1.9 millirem per shift, dose to the lung. However, if you use the NIOSH method, where you simply add all of the doses,

regardless of the energy, with all of the H*(10) doses (They are the external doses not to the organ but to the body)_ and then multiply it by the dose conversion factor for the 0.1 to 2 MeV neutrons, you only get 1.3 millirem per shift.

So there is a difference of 45 percent. So doing it by breaking down, by taking the breakdown of each energy range and multiplying the appropriate dose conversion factor by the neutrons in that energy range, you end up with a 45 percent higher dose to the lung than if you use the NIOSH method of using only a single dose conversion factor, assuming everything is in one energy range.

And then something similar happens, but a bit different. The betatron operator doing steel radiography, where he gets exposure from the neutrons in the control room. Once the steel is radiated, it doesn't give off neutrons, at least not -- if it does, they're extremely short lived. And by the time the

operator gets there, they're all gone.

And there you get a 37 percent increase by doing it in the more detailed way, by breaking it down. And then finally, the layout man, who gets the stray radiation from the betatron when he's out there in Building 10, working on the next casting, there's a 20 percent difference. So, that's why we object to the NIOSH method.

And then, I don't know, shall we wait for Dave to make a response to that, or shall I just go on to the next Finding?

CHAIR ZIEMER: Let's stay with this Finding for now.

MEMBER POSTON: This is John. I have a question before you move on. Hello?

DR. ANIGSTEIN: Hello. What is it John?

MR. KATZ: John, we can hear you, go ahead.

MEMBER POSTON: Well, I wasn't sure. Would you give me those numbers again, just the

first set. I mean, I know you can ratio anything to anything, but I thought those were pretty low numbers regardless of what you --

DR. ANIGSTEIN: I'm, one second. I just switched phones and am having a little trouble hearing. Could you ask the question again?

MEMBER POSTON: Sorry.

DR. ANIGSTEIN: I could hardly -- I didn't hear the last question.

MEMBER POSTON: The question is, it's not a question, it's a request. Would you read the two numbers that you began with for the dose evaluation for the first worker, whenever he was in the control room?

DR. ANIGSTEIN: Okay the numbers for the betatron operator -- is this -- am I clear now?

MEMBER POSTON: No, you're pretty low. I can hardly hear you.

DR. ANIGSTEIN: I have a problem with either -- I have two phones and neither --

one, I don't hear one well, and the other one is both. Okay I'm going to go back to the phone where I'm more audible.

But you guys are going to have to speak up louder for me to hear you on this phone. Anyway, on the -- I'm not quite sure where I should start again. There four energy ranges. And I listed the lung dose conversion factor. Those are out of the document, IG-001, OCAS-IG-001. And each DCF, the 0 to 10 keV range, the 10 to 100 keV, 0.1 to 2 MeV, and 2 to 20 MeV.

So Ted, if you have the memo that was the original review memo from, I forget the date on it now, but it's definitely posted, the table is there. The table is taken right out of there.

MEMBER BEACH: Do you have that?

DR. ANIGSTEIN: And if you take for each of these energy ranges those conversion factors for the lung and multiply it by the total dose, the H*(10) dose, which is basically

the dose at the surface of the body, and you take each of those dose rates, which were calculated with our computer model, our MCNP Model, and you multiply it by the dose conversion factor, you end up with a total -- maybe this is what you're after -- with a total dose to the lung of 1.942 to be precise, millirem per shift.

MEMBER POSTON: It's too precise by the way.

DR. ANIGSTEIN: This is of course multiplied by the number of shifts spent on uranium handling, which differs year by year during the covered period. That's why we do it per shift. Then it's easy to do it per year by just multiplying the number of years in all the shifts.

Whereas, the NIOSH method that assigns all of the neutron energies to the 0.1 to 2 MeV range gives you 1.343 millirem per shift. So the difference between the two is 45 percent. In other words the, doing the

breakdown by individual energies gives you a 45 percent higher dose than by assigning all of them to this 0.1 to 2 MeV energy range.

And so jumping ahead, the explanation would be that if you inspect the dose conversion factors for the different energies, for the lung, the 0.1 to 2 MeV is actually the lowest of the four. Of the dose conversion factor for each energy range, 0 to 10 keV, 10 to 100 keV, 0.1 to 2 MeV, and 2 to 20.

So the 0.1 to 2 is actually the lowest, so it's not too surprising that if the doses are spread out among those four energies, that assigning all of them to the 0.1 to 2 can't help but be claimant-unfavorable.

Does that clarify?

CHAIR ZIEMER: John, are still on? So John had the question.

MEMBER MUNN: We're not hearing you, John. You must be on mute.

MEMBER POSTON: Okay, sorry. Well,

I mean from a dosimetric standpoint, whether it's 1.9 or 1.3, they're still very low doses. And probably the errors associated with those are pretty high.

DR. ANIGSTEIN: Well --

MEMBER POSTON: So they would probably be in the same cohort or whatever you want to call them. I mean to say that, to start quoting 45 percent difference in tiny little numbers is just, I don't think it's appropriate in these kinds of situations. But the errors in some of these calculations are 25 to 50 percent themselves.

DR. ANIGSTEIN: Well, no, the error in the calculation, I mean if you accept the model, the error in the calculation is only the Monte Carlo statistics.

MEMBER POSTON: No, that's not true. That is not true, Bob.

DR. ANIGSTEIN: No, now wait a second, I respectfully disagree. John, I'm being, possibly we're talking about two

different things. I'm saying the error in the calculations, per se, because we have a model where we have the model of the betatron, the model of the radiation coming out of the betatron. We have the model of the human body, but that's already in, that's built into the -- this is basically, the dose conversion factors are basically based on the MCNP method of translating the neutron fluence into this quantity H*(10). The ambient dose equivalent.

That's straight out of ICRP 74. Now again, there may be some approximations there, but that's the official guidance that was being used.

MEMBER POSTON: Yes, well, that's not what I'm talking about, Bob. What I'm saying is you're trying to make a significant difference between two very small numbers. And I know from -- a fact from running Monte Carlo codes all my damn life, that the error in some of these Monte Carlo codes, because we don't the cross sections precisely -- in some cases,

we don't know the cross sections at all. The error can approach 50 percent or even more. So I just don't --

DR. ANIGSTEIN: I see. So you're saying that there is a, that the data that goes into the calculations has errors, and I can't speak to that. I'm simply accepting --

MEMBER POSTON: Well, see the people typically run these codes, and what they use as the error associated with the calculation is based on the number of histories. That has nothing to do with the errors that are in the process --

DR. ANIGSTEIN: I understand.

MEMBER POSTON: -- and all the other things.

DR. ANIGSTEIN: Right. I understand. By the way, however to keep -- this is per shift. Now the shift, this gets then multiplied by the shifts per year. So we have as many as 50 per year. For instance, during the -- I'm just looking. During the

first five years, there's 437 work hours assumed to be spent on uranium. So you divide that by 8, and you get approximately 50, a little over. You get a little over 50 shifts. So even though 1.9 may be a small number, that comes out to 50 shifts. So let's call it 2 rounded up. So that's about a hundred millirem per year.

MEMBER POSTON: Yes, and so what?

DR. ANIGSTEIN: And for the neutrons, that's more significant.

MEMBER MUNN: Which is still a very small number.

CHAIR ZIEMER: Yes, I see that.

DR. ANIGSTEIN: A couple hundred but -- all right, I won't dispute that, these are --

MEMBER POSTON: I don't think we ought to make such a big deal out of it because it's a small dose. And you could take, you could round it to 2 if you want, and that's a hundred millirem per year. That's well, well,

well if you have a good radiation safety program, I would say.

DR. ANIGSTEIN: Yes.

CHAIR ZIEMER: Well, let's hear what NIOSH's response involves.

DR. ANIGSTEIN: Again, it's a jump ahead. NIOSH has accepted this and made a change.

MEMBER POSTON: Well, that's fine for them to accept it because it's not worth arguing about. I mean, I'm trying to do --

DR. ANIGSTEIN: I --

CHAIR ZIEMER: John, Dave, what's NIOSH's bottom line on this?

MR. ALLEN: Well, in our response dated November 4th, we said we agreed that was, that should not have been the energy range that we used. And we recommended 2 to 20 MeV range as a favorable assumption and just still using everything as one energy category, not breaking it down into four separate numbers for IREP.

Since then, in that new response,

Bob pointed out that that energy range for a few organs still isn't favorable, and he recommended essentially the less than 10 keV range, and we're willing to accept that too. We just want to use a single number and not use four different numbers for each year because it's such a small piece of the total dose.

CHAIR ZIEMER: Right, and the 0 to 10, as I understood it had a lot more impact into the, I guess in this case you'd call it the most claimant-favorable number. Is that correct?

MR. ALLEN: Yes, that ends up being the most favorable. I wasn't interested in getting the most favorable, just one that would be favorable from the four categories added. And I thought I had that.

But Bob pointed out there was a few organs it wasn't favorable for. So that's why I'd just as soon take Bob's thought on that last memo and use the total neutron number. And use the less than 10 keV DCF on that

number.

CHAIR ZIEMER: And that should take care of it, right?

MR. ALLEN: Right, that should be favorable to all organs.

DR. ANIGSTEIN: All right, use which one? Which DCF?

MR. ALLEN: The less than 10 keV.

DR. ANIGSTEIN: Right, right. Yes, that would be -- that would absolutely take care of every organ because that's the highest. That's simply the highest of the four dose conversion factors for the lung. And probably for the other organs also. So as long as that's agreed, then the issue can be, we would recommend the issue be closed.

CHAIR ZIEMER: And that's, Dave, that's what you're planning to do then? Is that correct, so we understand it?

MR. ALLEN: Yes, that's what I'm planning to do.

CHAIR ZIEMER: Done. And I think,

Bob, from the modeling point of view, that takes care of the issue you had. I think, John, either way, you're talking about the actual practical error, but it's a very, very small number in either case. Are you willing to accept the NIOSH proposal to use this one that is sort of the higher of the model numbers?

MEMBER POSTON: Yes, I'm willing to accept it, but I just think we need to, you know, we keep talking about favorable --

CHAIR ZIEMER: I doubt you'd see the difference in probably any of the cases, in essence.

MEMBER POSTON: So what does favorable mean? Does that mean the highest dose? Is that what we're trying to get at? Or are we trying to get a realistic estimate, you know? What does favorable really mean in this context where we have differences of opinion?

CHAIR ZIEMER: Yes, well they're recommend -- they're using this particular

model, so given the fact that in the real world, the model is still an approximation, I think the proposal to use the model that gives the highest of the approximations, rather than going through the detail on every one and using all the four energy bands, and looking at them individually, since --

MEMBER POSTON: I understand, and I agree.

CHAIR ZIEMER: Yes.

MEMBER POSTON: I just had to get my thoughts in there because it's always bothered me about some of these things.

CHAIR ZIEMER: Yes. I want to, before we actually take action, I do want to give the petitioners, and I'm going to call on Dan McKeel, a chance to have input. I don't want to close everything because -- if the petitioners have input. So Dan do you have comments on this particular issue?

DR. McKEEL: Sorry, Paul. This is Dan. No issues on Issue 1. I have no

questions, no problems.

CHAIR ZIEMER: Thank you. So can I hear a motion on this? Do you accept the final agreed to position of NIOSH and close?

MEMBER MUNN: Yes, so moved.

CHAIR ZIEMER: And seconded?

MEMBER BEACH: I'll second it, Paul.

CHAIR ZIEMER: Yes. Okay, any further discussions?

(No audible response)

CHAIR ZIEMER: All in favor, aye.

(Chorus of aye.)

CHAIR ZIEMER: Closed -- or noes, let's see. Okay, that one's closed, I think. Now let's move to Issue 10. And I think this one is ready to close also. This was pretty minor. Bob, what comments do you have on Issue 10?

DR. ANIGSTEIN: Okay. Issue 10 was just a matter of wording. The BB was -- the Appendix was not clear. It did say that we agreed that the dose was 10.225 rads per day --

year, sorry. And that number was agreed on, but the wording did not clarify what that was. That could be, again, more than one dosimetric quantity.

And we agreed, and that was the agreed upon value for the air kerma. But it was not identified as air kerma. And then the other thing was that the energy was given as the range less than 30 keV. When actually in our hypothetical model, we were trying to find a way to explain why it is that the -- very few of the badge readings were over 10 mR per week.

And yet, there was this report by this former employee of one firm that the betatron continued to give off radiation after it's shut down. So we simply hypothesized the worst situation. And that would be that the radiation is exactly 30 keV, and then this is the end, and then it comes from the back, and this is the amount that will be absorbed by the body and would not cause, it would be the lowest limit of detection, of 10 millirem per

week.

So anyway this is how this number got derived, it was discussed at another Work Group, several Work Group meetings, you know, but I won't go into the details. So the hypothesis is that it's not less than 30 keV; it's exactly 30 keV taken into that. And so the DCF value should be specified.

Then I believe that if I can jump ahead, my last slide, if it's okay by Dave, the response paper, NIOSH response paper resolved this. So this is now basically, it's a matter of text revisions.

CHAIR ZIEMER: Right. And I think NIOSH has agreed that textual -- or change in the text can clarify that issue, correct? Dave, that's correct, right?

MR. ALLEN: I think so. You're a little bit gullible, but I think said it. It's just a text change, and yes, that's correct.

CHAIR ZIEMER: So, and you agree to that, and NIOSH is recommending closure on this

one. Correct?

MR. ALLEN: Correct.

CHAIR ZIEMER: So, Work Group are you ready to close this?

MEMBER MUNN: Yes.

CHAIR ZIEMER: And then I wanted to ask if the petitioners have any questions on this item?

DR. McKEEL: Thank you, Dr. Ziemer. This is Dan McKeel. No, I have no questions.

CHAIR ZIEMER: Good, thank you. Then motion to close.

MEMBER MUNN: So moved.

CHAIR ZIEMER: Second?

MEMBER BEACH: Second.

CHAIR ZIEMER: All in favor, aye.

(Chorus of aye.)

CHAIR ZIEMER: Okay, thank you. Then we've closed the Issues on Rev 2. I guess Dave, this means that there will be a Rev 3 with these minor changes in it?

MR. ALLEN: Yes, and I, in my

original response to this, I think it's the last page shows where it's essentially three changes. They are already the same, with the exception that the neutron range at the end there will now change from what I'd recommended in that paper.

CHAIR ZIEMER: Right.

MR. ALLEN: And it's a small change, but we do have a review cycle, and it is a holiday type of season. So we'll get it as soon as we can.

CHAIR ZIEMER: Three, and then we'll have to take a look at them, is that how it goes?

MR. ALLEN: Yes.

DR. McKEEL: Dr. Ziemer, this is Dan McKeel.

CHAIR ZIEMER: Sure Dan, go ahead.

DR. McKEEL: I may have misunderstood you, but I do have three brief comments to make about --

CHAIR ZIEMER: What in the --

DR. McKEEL: -- Appendix BB, Rev 2.

CHAIR ZIEMER: Sure.

DR. McKEEL: Is it possible for me to make those? They're not about Findings 1 or 10?

CHAIR ZIEMER: No, that's quite all right. Go ahead.

Other Comments

DR. McKEEL: All right. The first one maybe Dave Allen could answer for me quickly. In the section of the version description boxes, which seems to me is a very useful area of the Site Profile documents, because it tells what are the changes from Rev -- in this case, Rev 2 to Rev 1.

And the way it's worded is that the version is simply a response to issues raised by the Work Group, and that is not very helpful. What doses increased; what doses decreased? So my question is can Dave Allen or Dr. Neton please identify that for me, unless it's very complicated. In Rev 2 of Appendix

BB, what doses will increase, and what doses will decrease?

And I cite the relevance of this in that, I have previously gotten the developmental dose reconstruction reports for all 196 GSI cases under PER-057. And when I plotted those out, and I have in those reports the pre and post PER total doses, photon doses in millirems -- in rems, sorry. And then the pre and post PER Probability of Causation.

And it was interesting to me that of the 196 cases, you know 100 were flagged as being probably compensable.

But of the people who were not compensable, the other 96 on that list, twelve of them fell between POCs of 40 and 44 percent. Five more were between 44 and 47 percent. And another five fell between 47 and 49.9 percent. So there are, you know, 10 to 22 cases that are very close to the lines that might be affected by the new PER, or -- and the new PER would be calculated based on Rev 2 of the Appendix.

So my question for today is, is it possible to even modify that section and update it? Because that doesn't usually happen until the next appendix rev comes out. Or just somehow put on the record today, from Appendix BB, what's been agreed to and these ten Findings and so forth, from BB Rev 2, what doses will change compared to Rev 1?

MR. ALLEN: Well, this is Dave. That section of the -- it's a standard template section on essentially why we created a revision. And it is nice if we can put in what the changes are in that, in the document. But once they get beyond just a few pages, we generally don't try to spell it all out there, or you end up with the whole appendix in one little box of the table.

So what I did there was simply put down, incorporated resolutions from the Advisory Board, which if you really want to see those, then that points you to our -- that can take you to our website with all the

discussions and different reviews and responses and transcripts to see what all the different changes might have been.

This is intended just to be a small summary, and once it gets too big, all I can do is point you to where all the discussions are.

DR. McKEEL: Yes, for example, you know, all I can tell you is I think I'm pretty familiar with all those Site Profile documents, and the changes and so forth. And it was difficult, it is difficult for me to identify what changes, the big changes I'm talking about, the major changes that will increase dose. And possibly push those 22 people above the 50 percent compensation mark.

And I have looked at lots of other documents of this type for other sites, and I can just say that that table is often expanded to include four or five or six specific things that have changed. And so I hear what you said, but for example, I think one new part is the betatron operators are given credit for the

gamma radiography that they also performed and so forth, so anyway.

Then I wanted, the main comment I wanted to make today though is about the use and the handling of the 1952 data. And this applies to all three documents: Rev 2, SC&A's review of it, and NIOSH's comments about it. There are many tables in all those documents that include the year 1952.

And as far as I can tell, in every single case, the 1952 data, as recorded by NIOSH, is a simple back-extrapolation from 1953 and later dates. But as Dave Allen and Dr. Neton know, they contributed to the operational reports, the AEC operational reports. And I have one of them from December '52 that described the work that went on at GSI in 1952, under contract with the AEC and Mallinckrodt.

And work is described as experimental research and development work with the betatron to improve image quality using a proprietary uranium shield that was fabricated

at Mallinckrodt. And so I don't think it's appropriate to simply back-extrapolate from the scale and scope of production, non-destructive testing inspection work, back to experimental research and development work.

And so, my simple comment, which I have expanded upon a lot in the paper I just wrote, my critique of Appendix BB, Rev 2, and said that I really think it's incumbent on NIOSH to calculate a dose that's specific for that 1952 period.

I think it's going to be very difficult because you don't really know the source term. You don't know exactly what was done. You don't know how many shots were fired. They used billets instead of ingots, dingots, and slices. And we really don't know what was done exactly for that experimental work.

But in any case, I wanted to point that out. I think that's an error that occurs throughout the tables in those documents. And

anyway, I just wanted to leave it at that.

Otherwise, I've tried to be fairly specific about this. Comments I made about Appendix BB, Rev 2, there are some substantial comments. I'm sure a lot of them will be thought of as editorial. But I think they're substantive, and I encourage and hope you all will read that paper. And at least consider it for inclusion in Appendix BB, Rev 3. And possibly if any of those ideas make any sense to you, bring it up in the subsequent TBD-6000 Work Group meetings.

And I guess with that, this may be the last time that I talk to this Work Group before the new administration, and many changes could take place by that time. I would like to say that I am quite concerned for the GSI workers who now are -- have been waiting since 2007 to resolve all the issues for Appendix BB.

It seems like all the issues that SC&A and NIOSH and the Work Group can -- believe are important have been resolved by

today. Now the full Board meets to sign off. You will see from my paper, 58 errors that I cite there, I don't think they've all been resolved.

But anyway, it concerns me greatly that we've gone on so many years without resolving these issues. And I remember distinctly that several people on the Board, and Mr. Allen told the full Board back in December of 2011 -- 2012, pardon me -- when the GSI SEC was denied by a 9 to 8 vote, that basically all the Site Profile dose reconstruction issues were solved. And those numbers would be plugged in, and everything would be fine.

And here we are many years later, about four to be exact. And all the issues have just gotten solved today by the Work Group. So I'm concerned about that, and I'm doubly concerned because the jury is still out.

One jury is still out on the accuracy and the appropriateness and so forth

of lots of issues that I raised in my comments about the appendices, and that takes the form of the administrative appeal that Petitioner Jeske and I sent to HHS in April, April 17th of 2013.

That was accepted by HHS in May of 2013 and has been under review constantly by an independent three-member HHS panel since that time. And again, now this will make GSI the longest running SEC that's ever considered by a review panel. Even Hooker took less time than this.

But that review panel, I'm assuming, of three senior HHS scientists is having a problem dealing with all of the 44 errors that we mentioned in our administrative review application. So we'll have to see how that all turns out. But the time that this is taking is really unbelievable to me. And I just, I feel quite sorry and badly for the GSI workers.

And I would just add the other feature that I'm very concerned and unhappy

about, and that is, so we're talking about will another PER be issued for Rev 3? And I would comment that the PER-057 based on Rev 1 has not been resolved yet or reviewed by SC&A.

It's in that process, and it's still before Wanda Munn's Procedures Review Subcommittee. They'll meet January the 10th, and hopefully some of that review will take place. But it concerns me again that that PER was issued on March the 11th, 2015 by NIOSH, who identified 100 compensable cases based on their recalculated POCs based on Appendix BB, Rev 1.

At this point, 90 people have been paid, but there's still a number of cases that were flagged by the Department of Labor as being deceased, no survivors. And as having the wrong employment, never been employed at an eligible site. So there seemed to have been major errors in selecting cases for that PER as well.

So all those things add up to

serious concern on my part. I don't really feel that you're making much progress on solving any of those things. We just have to wait and see how it works out in time. But I urge everybody to increase their sense of urgency in getting all this stuff resolved in any way that we can. Realizing that the full Board has to take the most responsibility, as well as NIOSH.

So anyway, I do thank you all very much for, and Dr. Ziemer, for giving me so much opportunity for input. I appreciate it. I've enjoyed the back and the forth. It's a very interesting site. I agree with that. And I appreciate all the work you've done on it, and for letting me be part of the decisions, inputting, tremendously public. Thank you, very much.

MR. KATZ: Paul and other Board Members, are you there? Dan, thank you.

CHAIR ZIEMER: I wanted to ask you, Dan -- yes, thanks for your time. Is there a

new set of comments this year issued, or are you referring to your previous --

COURT REPORTER: Dr. Ziemer, I'm sorry, this is the Court Reporter. Can you switch phones again?

MR. KATZ: Right, Paul asked -- while he's switching phones -- Paul asked if there's a new set of comments or we'll use older comments? And Dr. McKeel was referring to and then had submitted new comments. I think we received them today. And they should have been sent to Board Members but I don't think Board Members have had a chance to review them yet, but we'll do that right?

CHAIR ZIEMER: I wasn't sure if I sent them. I'll have it sent.

DR. McKEEL: I'm sorry, Dr. Ziemer, this is a full-scale review --

CHAIR ZIEMER: Okay, got you --

DR. McKEEL: -- of Appendix BB and the SC&A review and the DCAS response to SC&A. It's a 21-page paper, so --

CHAIR ZIEMER: Okay.

DR. McKEEL: So, and I understand that nobody will have a chance to read it, but I hope you will read it. That's the point.

CHAIR ZIEMER: I will read the review, thank you, Dan.

DR. McKEEL: Thank you, very much.

Path Forward/Plans for March Board Meeting

CHAIR ZIEMER: Okay. Path forward, Ted, do we -- we need full Board action on this, right? Or do we?

MR. KATZ: I think we do need, yes, we need to close the loop with the full Board --

CHAIR ZIEMER: Okay.

MR. KATZ: -- on this review.

CHAIR ZIEMER: Okay, so that we've scheduled for the next, the March Board meeting then, right?

MR. KATZ: Yes, right. And also Paul if you want, if you want to do your own preparation, if you want any support from SC&A

or Dave --

CHAIR ZIEMER: Yes, I think what I'll do is I'll prepare a summary. And I'll have both Dave and Bob take a look at it and give input. Also, we'll make sure that Dan's comments get distributed to the Board as well.

DR. McKEEL: Sure. I would appreciate that.

CHAIR ZIEMER: Okay. Any other items to come before us today, anyone?

MR. KATZ: No, I think that takes care of it for today.

Adjourn

CHAIR ZIEMER: Okay. Thank you all very much. We stand adjourned.

(Whereupon, the above-entitled matter went off the record at 3:54 p.m.)