

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

+ + + + +

ADVISORY BOARD ON RADIATION AND  
WORKER HEALTH

+ + + + +

BROOKHAVEN NATIONAL LABORATORY WORK GROUP

+ + + + +

WEDNESDAY  
MARCH 6, 2013

+ + + + +

The Work Group convened telephonically at 2:30 p.m., Eastern Standard Time, Josie Beach, Chair, presiding.

PRESENT:

- JOSIE BEACH, Chair
- HENRY ANDERSON, Member
- BRADLEY P. CLAWSON, Member
- WANDA I. MUNN, Member
- GENEVIEVE S. ROESSLER, Member

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ALSO PRESENT:

TED KATZ, Designated Federal Official

RON BUCHANAN, SC&A

GRADY CALHOUN, DCAS

JOE FITZGERALD, SC&A

JENNY LIN, HHS

JAMES NETON, DCAS

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A-G-E-N-D-A

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- DCAS Dose Reconstruction Methods  
for Four Sample Cases

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

2:31 p.m.

MR. KATZ: Welcome, everyone. This is the Advisory Board on Radiation Worker Health. Let's get started. We have a fairly short time frame although we don't have a long agenda either. But let's get started with roll call. We're speaking about a specific site conflict of interest. How about we go through it. Board Members.

(Roll call.)

MR. KATZ: So, there's an agenda for the meeting that's posted on the NIOSH website under the Board section under meetings for today. There's no material posted and, Josie, it's your meeting.

CHAIR BEACH: Okay, thank you. So just to touch up on February 14. The Work Group has a phone conference call. We asked NIOSH, Grady, to go back and prepare some proposed approaches for dose reconstruction for four sample cases. He did deliver those

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1 last week for Case A, B, D and E.

2 On the agenda it talks about the  
3 four methods and then Work Group methods, a  
4 path forward recommendation and then March  
5 meeting plans. I also want to just real  
6 briefly touch on the Site Profile issues. I  
7 don't want to spend whole lot of time because  
8 I know our call is limited but I just want to  
9 go make sure we're moving forward with some of  
10 those also. So we'll touch on that before the  
11 end of the call.

12 And Grady, if you would like to go  
13 ahead and since you put out the cases for us,  
14 the history, if you just want to start with  
15 those.

16 MR. CALHOUN: Sure. I guess what  
17 I'll do is I'll just, I'll go Case A through  
18 E. And I'll stop after each one and then we  
19 can kind of discuss it and let me know.

20 CHAIR BEACH: Okay.

21 MR. CALHOUN: The first one I'll  
22 start out with is Case A. I hope everybody

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1 has a chance to look at this because I'd like  
2 to say that this was a really good exercise,  
3 actually, for me too because it kind of  
4 solidified my confidence in the records that  
5 we have by looking at things that really are a  
6 little bit above and beyond what records were  
7 but they were submitted at Brookhaven with our  
8 records request.

9 So case number A or letter A, the  
10 individual has verified employment from `56 to  
11 `95. Worked as a technician with  
12 accelerators, later transferred to cold  
13 neutron moderator facility. The records,  
14 dosimetry records that we have are external  
15 dosimetry records from 1956, `57, with a break  
16 in `58. Then we have `59 through `95.

17 We also have tritium urinalysis  
18 from October of `89 through October of `92.  
19 We have in vivo exams beginning in December  
20 `83 and they go into September of `95.

21 Okay, based on the latest SC&A --

22 MEMBER ANDERSON: This is Andy. I

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1 just want to let you know that I'm here.

2 CHAIR BEACH: Great. Thanks, Andy.

3 MR. CALHOUN: Based on the latest  
4 SC&A report the concerns seem to be that there  
5 were no bioassay records for '94 and '95. And  
6 he retired in '95.

7 Our conversation, the last -- or  
8 whenever we had it, awhile ago. Our last  
9 conversation I'll say. So we talked about --  
10 I put forth that I believed that it was quite  
11 possible that the individual wasn't monitored  
12 because he didn't need to be monitored. And  
13 at that time I had no -- that actually said  
14 that he didn't need to be monitored.

15 Now, keep in mind that such  
16 documentation is really rare to find at any  
17 site. But lo and behold I found it. And --  
18 that as Attachment A1. And in Attachment A1  
19 what we have is a HFBR bioassay program.

20 And just to remind everybody, these  
21 five cases were selected by SC&A because they  
22 had at least some employment at the HFBR, at

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1 the High Flux Beam Reactor Facility. So the  
2 review was done by SC&A to determine -- there  
3 was an assumption made that tritium monitoring  
4 -- that tritium monitoring would be required.

5 And then they looked -- monitoring records  
6 weren't there after the 1993 SEC period in  
7 particular.

8 COURT REPORTER: This is the court  
9 reporter. Is anybody else getting  
10 interference on the call?

11 CHAIR BEACH: Yes.

12 MR. KATZ: Yes. Let me just ask  
13 everybody except for Grady because Grady's  
14 speaking. Everybody else should mute your  
15 phone. And if you don't have a button press  
16 \*6. That will mute your phone. Press \*6  
17 again, it'll take you off mute. Because we  
18 have about 20 people on this call so not  
19 everybody's registered, listening to speak.  
20 Mute your phone. Thanks. \*6, okay.

21 MEMBER MUNN: Ted, this is Wanda.  
22 You may be getting some static from my

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1 feedback even when I'm on mute. I'm going to  
2 sign off for the moment. I'm only about 5  
3 minutes from home. I'll be back on. Thank  
4 you. Bye bye.

5 MR. KATZ: Okay. Okay, carry on.

6 MR. CALHOUN: I don't know, I'm  
7 still getting that chirp. But anyway I'm  
8 going to continue.

9 Basically where I left off is there  
10 was some discussion. I believe that it was  
11 possible that the individual was not monitored  
12 past 1992 for tritium that he didn't need to  
13 be monitored.

14 And I didn't have proof of that but  
15 actually when I looked through we found a  
16 document and I included that as Attachment A1.

17 And what that is, it is a 1992 document that  
18 explains what the monitoring requirements are  
19 and it includes a 6-month exposure and it  
20 gives a list of individuals. And it says, it  
21 gives their last 6 months of tritium dose and  
22 it states whether or not they need to be on

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1 routine tritium monitoring.

2 And this individual, his name was  
3 [identifying information redacted] and he is  
4 not -- well, never mind. He does not need to  
5 be monitored. He was on that document, he's  
6 one, two, three, four people up. And it  
7 states that he does not need to be on his  
8 monitoring. And the previous 6 months of  
9 tritium monitoring was zero.

10 So I don't really think I need to  
11 go any further on this case because that  
12 pretty much nailed it. There is some other  
13 information that talks about him moving to a  
14 different facility where monitoring wouldn't  
15 be required but the key for this case is there  
16 was a documented formal evaluation as to  
17 whether or not routine monitoring was required  
18 and the determination was made that no, it  
19 does not. So I'm going to stop on that one.

20 CHAIR BEACH: This is Josie.  
21 Thanks, Grady. Any questions on Case A from  
22 Work Group Members or SC&A?

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1 MR. FITZGERALD: No. This is Joe.  
2 I think we found the documentation to be  
3 persuasive as well. I think that would be our  
4 comment.

5 CHAIR BEACH: Okay. So an overall  
6 comment. Okay. Yes, and Grady, I really  
7 appreciated the write-up that you did. It was  
8 very helpful. And I especially liked being  
9 able to have those attachments to reference  
10 back. So good job there.

11 MR. CALHOUN: You know what, it was  
12 very helpful for me too.

13 CHAIR BEACH: Good.

14 MR. CALHOUN: It helped me feel  
15 better about it, so.

16 MEMBER ROESSLER: It was what we  
17 were looking for.

18 MR. CALHOUN: Right.

19 CHAIR BEACH: Yes.

20 MR. CALHOUN: Okay, I'm going to  
21 move on to case B then if that's okay.

22 CHAIR BEACH: Okay.

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1 MR. CALHOUN: All right. Hold on,  
2 I'm going to delete something here because  
3 I've got so many files open it's driving me  
4 crazy.

5 Okay, case B. We have verified  
6 employment from [identifying information  
7 redacted] of `86 to present. Per the assisted  
8 telephone interview he worked as [identifying  
9 information redacted], and he worked at the  
10 HFBR and a medical research reactor.

11 The records that we have received  
12 from Brookhaven include external radiation --  
13 records from -- to 2009. Urinalysis from 2/87  
14 to 3/01, February 1987 to March 2001. We've  
15 got in vivo exams beginning in December of `86  
16 and going at least through October of `99.

17 Per the latest evaluation the main  
18 concern was that we were missing -- they  
19 thought that we were missing tritium  
20 monitoring for the month of June of 1994 and  
21 several months in 1995. The in vivo did not  
22 seem to be an issue with this case.

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1           So, what we have found, we've got  
2 more than 170 individual tritium samples taken  
3 for this guy, '94 through '01, and all of the  
4 months in question either have a monthly  
5 report or a summary of multi months or even an  
6 annual summary.

7           But one of the keys is Attachment  
8 B1. And this attachment is actually for 1995.

9           And in 1995 the concern was that there were  
10 one, two, three, four, five, six, seven, eight  
11 months missing. And what I found, that there  
12 actually were not eight months missing. What  
13 happened was he just wasn't monitored every  
14 single month.

15           And this Attachment B1 gives the  
16 date of the individual sample and the number  
17 of days in between those samples. So what's  
18 that telling us is there's not missing data.  
19 And so there's not missing data. And the  
20 concern was that there was missing data. And  
21 since there's not missing data we can do the  
22 dose reconstruction by assuming a missed dose

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1 or positive doses were there throughout the  
2 entire period of his monitoring.

3 And even if there was some months  
4 assumed to be missing we could still do that.

5 But this document clearly shows that there's  
6 no missing data in between those months as we  
7 had thought. And again, this is one of those  
8 pieces of information I hadn't seen before.  
9 It was provided to me by Brookhaven.

10 There are hundreds and hundreds of  
11 pages of documentation to go through. And so  
12 this is one of those pieces I didn't see until  
13 I started going through this. So we don't  
14 have anything past -- the concern was '94-'95  
15 and it looks like we've pretty much put those  
16 to bed with this in my opinion.

17 The guy did later transfer to the  
18 collider/accelerator department where  
19 monitoring would be required but the concern  
20 of these '94 and '95 is I think pretty much  
21 answered by Attachment B1.

22 Any questions on that or comments?

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1                   MR. FITZGERALD: Yes, Grady, Joe.  
2 I have one question. Would that be -- you  
3 talked about the hundreds of pages of  
4 documentation. We certainly saw the same  
5 thing. Is that body of records, is that going  
6 to be available in a form say a dose  
7 reconstructor could have ready access to and  
8 be able to make heads or tails of it? It  
9 sounds like the information may be there but  
10 I'm wondering how easily accessible it might  
11 be.

12                   MR. CALHOUN: Yes, I mean it's in  
13 the same exact form, they're just bigger  
14 records than any other response we received  
15 from a Department of Energy facility. And  
16 this isn't the only Department of Energy  
17 facility that may provide hundreds of pages of  
18 records.

19                   MR. FITZGERALD: Right. So the  
20 process would probably be the same.

21                   MR. CALHOUN: It would be exactly  
22 the same because it's listed as a DOE

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1 response.

2 MR. FITZGERALD: Right. Now, just  
3 this is for the Work Group. Now originally  
4 when we, you know, certainly when Ron proposed  
5 and we came up with this sample process the  
6 whole intent was to test, challenge if you may  
7 the completeness of the records past '93 in  
8 terms of being able to rationalize and support  
9 DR.

10 And I think this is exactly what we  
11 were hoping to see which is a demonstration  
12 that in this body of records, the additional  
13 records, there is some way to explain gaps and  
14 also to provide a basis for dose  
15 reconstruction. So this is all in keeping  
16 with what we were trying to do with these  
17 samples.

18 And Brookhaven is a difficult one  
19 to sample because of the -- just a lack of  
20 information sort of guiding who was routinely  
21 monitored and for what. I think using these  
22 five cases is a good way to go. So I think

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1 this one, again, we felt the challenge was met  
2 in terms of the records being available to  
3 rationalize the gaps. So again I think we're  
4 okay with this one.

5 CHAIR BEACH: Okay, this is Josie.  
6 Thanks, Joe. Any other Work Group Members,  
7 questions on Case B?

8 MEMBER ROESSLER: Joe, are you okay  
9 with Case A also?

10 MR. FITZGERALD: Well, Case C, and  
11 I let Ron --

12 MEMBER ROESSLER: Case A which we  
13 already covered. Are you --

14 MR. FITZGERALD: Yes, we already  
15 covered and I think that came out as being  
16 complete in terms of the records. You know,  
17 originally the May 22 memo authored by Ron --  
18 I should let Ron talk about this --  
19 identified, went through a process to identify  
20 five cases that involved individuals at  
21 Brookhaven during that time frame that should  
22 have been routinely monitored based on the

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1 location of their work and other information.

2 I think that one turned out to have a  
3 complete set of data in any case. Is that  
4 right, Ron?

5 DR. BUCHANAN: Yes. Case C had all  
6 12 months of tritium every year and whole body  
7 counts for every year. So Case C wasn't an  
8 issue.

9 CHAIR BEACH: I think Gen asked  
10 about Case A, the very first one, Joe.

11 MR. FITZGERALD: Oh, I'm sorry. I  
12 thought she said C.

13 MEMBER ROESSLER: I'm trying to --  
14 the line is bad.

15 MR. FITZGERALD: Yes.

16 MEMBER ROESSLER: I'm just trying  
17 to I guess establish are you okay with Case A,  
18 Case B and then also Case C at this point.

19 MR. FITZGERALD: Yes. Again, the  
20 supporting documentation, the additional  
21 records that Grady had cited last year seemed  
22 to be sufficient to answer the questions that

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1 we posed. You know, what are these gaps, why  
2 would they exist and are they real. And if  
3 they are in fact real can they be explained in  
4 terms of the assignment of the worker  
5 involved. And so far certainly on A, B and C  
6 we're satisfied.

7 MEMBER ROESSLER: Okay, thanks.

8 CHAIR BEACH: Okay, if there's no  
9 other questions, Grady, please carry on with  
10 Case D.

11 MR. CALHOUN: Okay, Case D. Let me  
12 close out real quick. All right.

13 Okay. Case D is kind of a  
14 different one. Case D, now remember that  
15 these five cases were selected because there  
16 was some inkling at least that there was --  
17 these individuals were assigned to or  
18 frequently worked at the High Flux Beam  
19 Reactor which is one of the main sources of  
20 tritium for that facility.

21 This individual did not. She  
22 mentions in her CATI that she actually was

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1 there, but when you look at her medical  
2 records and whatnot she was a scientist that  
3 worked in isotope separation and she primarily  
4 worked in the isotope separation lab.

5           However, there was monitoring  
6 records there and let me tell you some of the  
7 things here. She had verified employment from  
8 1989 through 2004. She worked as a scientist  
9 in various labs, accelerators and reactor  
10 areas.

11           One thing I forgot to put in here  
12 that I should have is that in her CATI there's  
13 a bunch of radioisotopes listed as to were you  
14 or were you not exposed to them. The tritium  
15 is marked no, she was not exposed to tritium.

16           However, here's what we've got.  
17 The dosimetry records that we see are -- we've  
18 got external radiation dose from 1989,  
19 November of `89 to -- of 2005. We only have  
20 tritium urinalysis from -- in one month and  
21 that was 1990, October. So she only had one  
22 or two samples.

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1           She had some other urinalysis for  
2 different radionuclides in 1990 as well and  
3 that involves a gamma scan because she was  
4 involved with some exotic type of  
5 radionuclides, things that weren't as typical  
6 as say -- and some of the other fission  
7 products that you might see at a reactor.

8           She had a multitude of in vivo  
9 exams but they appear to be very much incident  
10 driven. She had them in 1990, 1993, '95, '96,  
11 '99, '01, '02, '03 and '04. She has multiple  
12 contamination that are well documented. In -  
13 '93, '96, '99 and 2000.

14           We also have a calculation using  
15 the code for internal dosimetry lovingly known  
16 as CIND to us. And that was done in 1992.  
17 There was a thought that she had done a  
18 cobalt-57 uptake. And we also have like I  
19 said a gamma scan in October of '90.

20           Now, the latest Work Group SC&A  
21 review was concerned because tritium bioassay  
22 records do not exist through '94 through '99.

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1 In vivo records don't exist for '94, '97 and  
2 '98.

3 Now, I think that the tritium is  
4 not as significant of a deal because she  
5 didn't work at HFBR. That's not a place that  
6 she was routinely assigned to. She never  
7 shows up on any of the bioassay records of  
8 people that were working at that facility.  
9 And like I said, her medical records show that  
10 she was working at a different lab.

11 Okay. We've got the external  
12 records. We believe those are all complete.  
13 She worked primarily in the target processing  
14 lab where tritium monitoring would not be  
15 required.

16 We've got 14 different in vivo  
17 exams from '90 to 2000. And I didn't include  
18 a bunch of those but we've got -- you can see  
19 that there's notations. Let me pull one up to  
20 see what it says. There's notations and even  
21 reports that talk about incidents that she may  
22 have been involved in and how these incidents

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1 were followed up. Some of the incidents were  
2 identified because she was contaminated and  
3 she was walking out of the facility. And  
4 follow-up survey decided or found that she was  
5 contaminated and identified the contaminants  
6 and she had to end up multiple whole body  
7 counts and even gamma scans of urinalysis.

8 B1 that I show here is really an  
9 example of a whole body count but she was  
10 potentially involved in a scandium-47  
11 incident. And that's just, really just for  
12 your information. It shows that these really  
13 exotic nuclides were the reason that she was  
14 monitored and this was pretty much the result  
15 of an incident. And her monitoring, internal  
16 monitoring appears to be incident driven.

17 We've got some other dosimetry  
18 evaluations because somebody said, you might  
19 say, well, if she was contaminated do we need  
20 to -- were any follow-up bioassays required.  
21 And one of these events that I have that  
22 occurred in 1999 there's actually -- in the

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1 Contamination Report it -- what the  
2 contamination levels were, where they were on  
3 her body. And it says what is additional --  
4 is a bioassay required and if so what kind.  
5 And in this case it is checked no, but in  
6 other cases we actually did have a bioassay  
7 that was Attachment D2. And then I -- D3  
8 says. Okay?

9 D3 is a similar situation although  
10 it occurred in 2000. And again was bioassay  
11 required. In this case it was not. But this  
12 was a different -- it was a different  
13 contamination event. It talks about the  
14 contamination levels. And this one was  
15 actually on the skin and it wasn't on the  
16 clothing. I think the last one might have  
17 been just on the clothing.

18 And basically the way we will do  
19 dose reconstruction in this case, we would not  
20 assign tritium other than anything that might  
21 show up in ambient except for the year that  
22 she was monitored for tritium. Even though

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1 that is -- SEC period we would use that data.

2 And other radionuclides, the  
3 fission products and the exotics, we've got  
4 the MDA fission products, the minimum  
5 detectable activities, and we would assign  
6 those with the in vivo that we have. And we  
7 would assign either missed or positive doses  
8 based on the result of those.

9 In addition, we've got detailed  
10 analysis of radionuclides other than routine  
11 radionuclides that we would see. And we would  
12 and actually did include those in the dose  
13 reconstruction. This individual was actually  
14 I think comped through the SEC.

15 But that's all I have on -- let's  
16 see, make sure I got it right here. Multiple  
17 documents -- examinations were provided. Yes,  
18 we don't feel that there were any records  
19 missing for this individual. Because she was  
20 working in a different type of environment  
21 other than HFBR it appears here that she had  
22 significant and detailed bioassay, both

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1 urinalysis and in vivo counts. And those  
2 would certainly be sufficient for us to do  
3 dose reconstruction on this individual. I  
4 don't have anything else on that one.

5  
6 CHAIR BEACH: Okay. This is Josie  
7 again. Thanks, Grady. Any questions on Case  
8 D, Work Group Members or SC&A? Or comments?

9 MR. FITZGERALD: Yes, this is Joe  
10 again. Just one quick comment. You know,  
11 compared with the previous years going back  
12 into the eighties and nineties, and I spent  
13 some time at Brookhaven looking through these  
14 records. You know, I think this eventually is  
15 just a change in the nature of the records.

16 You can tie an individual to a  
17 location, to a time frame, to a source term  
18 which is something when we were going through  
19 the records in the eighties and nineties, or I  
20 should say the seventies and eighties, you  
21 just couldn't do it. The records wouldn't  
22 allow you to do it. So I think this is a

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1 significant shift in what we were looking for  
2 in terms of a post-SEC time frame. So again I  
3 think that's the lesson or the evidence to  
4 take from this.

5 CHAIR BEACH: Okay.

6 MR. CALHOUN: And I don't want to  
7 be here either, Joe, but if -- like I said,  
8 this has been really helpful to me too because  
9 I'm looking at more than just the dose. You  
10 know, I took the time to actually, you know,  
11 you look at the whole body count and you see  
12 the notations and you see where they worked,  
13 and you look at their medical records. And so  
14 it adds -- it's an eye opener for me.

15 MR. FITZGERALD: Yes. And just pre  
16 nineties period we were seeing whole chunks of  
17 data missing.

18 MR. CALHOUN: Right.

19 MR. FITZGERALD: A lot of it was  
20 disposed of or taken back by a researcher and  
21 it was just missing. So, you know, you might  
22 have somebody in a case they were at a

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1 facility but you could not tie any data to  
2 them. So again I think that's the contrast  
3 that we were looking for.

4 MR. CALHOUN: I will move on to E.

5 CHAIR BEACH: Okay.

6 MR. CALHOUN: You ready for that  
7 one? Just give me a second again. I've got  
8 to -- okay, there's that. I'm talking to  
9 myself but I do that a lot. Okay, E.

10 Case E, the verified employment  
11 individual is [identifying information  
12 redacted] of '61 through [identifying  
13 information redacted] of 2003. Per the  
14 computer-assisted telephone interview the E  
15 worked in chemical management with a fixed  
16 barcode. The chemicals and various labs and  
17 whatnot. He reported he did that from '92 to  
18 '94. Then he also -- in -- HFBR from '94 to  
19 2001 performing rad surveys. And he also --  
20 urine samples -- tritium analysis.

21 The records that we received, the  
22 external records go from '61 to '63. Then

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1 there's a gap and we go from '92 to 2003. We  
2 have tritium urinalysis beginning November of  
3 1995 and it goes through or into at least  
4 October of 2001.

5 We've got whole body or in vivo  
6 exams for '95, '97, '98, '99 and 2000. The  
7 latest concerns that we have about this  
8 individual is that we were missing tritium  
9 analysis for '94, for all of '94 and for  
10 January into December of '95. And that there  
11 are no records of in vivo monitoring for '94  
12 and '96.

13 Okay, this is another kind of a fun  
14 one that it took a little detective work. But  
15 we found out through his records and the --  
16 they complied with the dosimetry request.  
17 These aren't any funky records that we found  
18 on a capture. But he didn't really start  
19 working at the HFBR until October of '95.

20 And how we can find that is that I  
21 attached Attachment E1 is the first one. And  
22 these are visitor logs. And the individual

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1 was required, escorted into an area. And you  
2 have to sign in on these every day. And he  
3 had to be escorted into this area and he was  
4 on three separate occasions between September  
5 14, '95 and October 10 of 1995.

6 And then -- have is attachment E2  
7 is an indoctrination sheet. And what we found  
8 is that this indoctrination sheet is the  
9 training that allows the individual to begin  
10 working at a facility at the HFBR unescorted.

11 And so this individual signed off on this in  
12 October 10 of '95 and the estimated time  
13 working at this facility was described as  
14 indefinite after October 1995.

15 Now, very -- not really a  
16 coincidence. In vivo exams begin in November  
17 of 1995. And when you pull out that in vivo  
18 exam that happened in, you know, a month  
19 after, less than a month after he was  
20 indoctrinated to be allowed to work there  
21 unescorted the notation in there is that he  
22 was Reactor Division annual new HD transfer

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1 from the Department of Applied Technology. So  
2 he was working in an area of the Department of  
3 Applied Technology and he was transferred to  
4 the Reactor Division which would be the HFBR  
5 as notated on in vivo count in November of  
6 1995.

7 He also started, let's see. We  
8 also see that the -- the tritium urinalysis  
9 begins November of '95 as well. And -- very,  
10 very many tritium urinalysis after that point.

11 But the reason that we did not have that is  
12 because he wasn't working at the HFBR October  
13 of 1995.

14 We certainly have enough tritium  
15 results and in vivo counts to dose  
16 reconstruction. Basically what we would do is  
17 we would include -- we would reconstruct  
18 tritium using all of the tritium monitoring  
19 that we have and we would assign missed and  
20 positive based on those results. And we would  
21 do the same thing with the in vivo exam. And  
22 those would be based on missed and any

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1 positives although I don't believe he had any  
2 in vivo exams. And that's how we would do the  
3 dose reconstruction for internal at that  
4 point.

5 Now, there was one concern that  
6 between '95 and '97 -- we didn't find an in  
7 vivo result for 1996 but we do have one for  
8 '95 and we have one for '97. And the interval  
9 between those is 18 months. And you certainly  
10 can make assumptions with missed dose in  
11 between there. And that certainly is an  
12 acceptable way for us to do dose  
13 reconstruction, missed dose.

14 So, let's make sure I didn't miss  
15 anything else with that one. No, that's all I  
16 have with Case E as well now.

17 CHAIR BEACH: This one appeared to  
18 be the most challenging of the four to me.

19 MR. CALHOUN: I don't know, I  
20 thought it was pretty conclusive with the  
21 indoctrination sheet. Because the whole  
22 thing, HFBR employment and whether or not

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1 routine bioassay was required.

2 CHAIR BEACH: Right.

3 MR. CALHOUN: Didn't start working  
4 there until October. I mean, and internal --  
5 the in vivo and tritium both start in November  
6 of '95 and his indoctrination was October of  
7 '95.

8 MEMBER ROESSLER: That's pretty  
9 clear-cut.

10 CHAIR BEACH: Yes, any questions?  
11 Comments? Work Group Members or SC&A?

12 MEMBER ROESSLER: Josie, are you  
13 satisfied on this one?

14 CHAIR BEACH: Yes.

15 MEMBER ROESSLER: Now that he's  
16 gone through it.

17 CHAIR BEACH: Yes. I'm satisfied  
18 with all of them, actually. I thought that  
19 was a good exercise. I appreciate NIOSH for  
20 taking that extra step on all of these. It  
21 was helpful.

22 MEMBER ROESSLER: Yes, I appreciate

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1 it too. I know it was a lot of work and  
2 Grady, I know you had a busy schedule. But I  
3 think before we really didn't have what we  
4 needed to feel confident about this.

5 MR. CALHOUN: I feel better about  
6 it too. So, it was okay, you know. You know  
7 what's funny is Stu always says if it wasn't  
8 for the last minute nothing would ever get  
9 done. And boy, those 2 weeks, I had 2 full  
10 weeks of last minute, so.

11 CHAIR BEACH: You got a lot done.  
12 You even managed to answer my Site Profile  
13 question so that is awesome. Anything -- or I  
14 don't know if you're still with us, Andy.

15 MEMBER ANDERSON: Yes, my only  
16 question is that are this new set of records  
17 going to be easily searchable. It sounds like  
18 you put a tremendous amount of effort in it  
19 and if this now goes into being used how easy  
20 is it going to be to find these  
21 documentations?

22 MR. CALHOUN: I've got a thought on

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1 that. And first of all, like Joe said, they  
2 will all be in the same format as everything  
3 else. But what this exercise does is we don't  
4 have to go back and look for indoctrination  
5 sheet. This shows documentation that we have  
6 and that the dosimetry that was provided is  
7 good. We do have all that information to it,  
8 for it and they are required, we are required  
9 to look at the DOE information as provided to  
10 us before we do a dose reconstruction. So it  
11 is, it is all there in a normal format that  
12 any other -- providing information.

13 MEMBER ANDERSON: Okay, good.  
14 Thanks.

15 DR. BUCHANAN: Yes, this is Ron  
16 Buchanan with SC&A. What I did when I  
17 reviewed these cases originally was to say,  
18 okay, identify. It looked like there were  
19 some gaps there.

20 And then when Grady went through,  
21 and he used a material that the dose  
22 reconstructor would receive, do the dose

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1 reconstruction. So this material is  
2 available. This isn't something that Grady  
3 had to go out and search for individually.

4 And so what I did is I used the  
5 protocol that we used on Task 4 to audit the  
6 NIOSH dose reconstruction and say did it meet  
7 the standards of that protocol. And I found  
8 that it did, that when you go back and look  
9 through all the hundreds of pages and find  
10 out.

11 And the dose reconstructor will do  
12 this. He goes back and looks and see if  
13 there's gaps and see how it should be filled  
14 in or if it's justified or whatever. And so  
15 as far as my experience of doing the audits on  
16 the dose reconstruction I found that it did  
17 satisfy that protocol.

18 MEMBER ANDERSON: Okay.

19 CHAIR BEACH: Thanks, Ron.

20 MEMBER ROESSLER: Josie, you  
21 mentioned going on to the Site Profile issues  
22 but are we going to come up with

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1 recommendations for the meeting, the Board  
2 meeting?

3 CHAIR BEACH: Well, that's going to  
4 be a question that I was going to just ask Ted  
5 how to proceed. Because we still have SEC  
6 issues. And remember back in May, we divided  
7 them into the most relevant ones. I believe  
8 there was three, the remaining primary  
9 findings. And we tried to push ahead with the  
10 SEC issues. So, I guess we have to decide on  
11 the end date or agree with the end date but  
12 I'm not sure how to go forward with that, so.

13 MR. KATZ: Hi, Josie, can you hear  
14 me?

15 CHAIR BEACH: Yes.

16 MR. KATZ: So, this is Ted. So I  
17 mean, if this closes out the question of the  
18 '93 period, that is the question that was left  
19 open for the Work Group to report out to the  
20 Board on in terms of data accuracy. So I mean  
21 if you reached a conclusion and you all sound  
22 unanimous that these records seem good, then

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1 you would need to make a recommendation in  
2 line with that to the Board so that they can  
3 then close out the Board consideration of SEC  
4 Petition.

5 CHAIR BEACH: Okay. So the  
6 question I have then is, we are considering  
7 the '94 to 2007 time period. We do have a  
8 couple of Site Profile issues that could have  
9 SEC implications but I'm not 100 percent sure.

10 I'm assuming, based on this, we can close out  
11 those years. But does that completely close  
12 out all SEC items?

13 MR. KATZ: Well, that would only --  
14 oh, go ahead.

15 MEMBER CLAWSON: This is Brad. I'm  
16 trying to remember what those other issues are  
17 that we had. They were outside the -- what  
18 were they dealing with?

19 CHAIR BEACH: Well, and Grady can  
20 talk. Grady went by and he sent me an email  
21 because I asked about the Site Profile issues.

22 And the three primary ones, he sent a report

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1 out answering those just real briefly.

2 MR. CALHOUN: Hold on. I'm going  
3 to try to see if I can find these. Let's see,  
4 hold on.

5 Well, I'm remembering while I'm  
6 looking through here. A couple of the ones --  
7 and I might have screwed this up a little bit  
8 because -- all of them. There were basically  
9 finding number, I think 1 and then --

10 CHAIR BEACH: Number 1, 2 and 13.

11 MR. CALHOUN: Yes. And number 13  
12 is primarily x-ray issues. And what you'll  
13 see is that actually changed our TBD. And the  
14 TBD was recently revised and approved. And we  
15 actually -- oh, here they are. Good. We did  
16 exactly what was recommended.

17 And there was, for example, Table  
18 3-1 has to do with default frequency of chest  
19 x-rays. So that's really, in my opinion  
20 that's not an SEC issue but it's a TBD issue.

21 And further, we actually did exactly what was  
22 recommended. It was unclear. You guys made

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1 some recommendations to clarify. We did  
2 exactly what you asked us to.

3 And now, although I did kind of  
4 throw it together and it would be prettier if  
5 it was on a piece of paper, discusses that.

6 And then there was one further  
7 issue that you guys might need to look at a  
8 little bit more. But you had asked for claim  
9 numbers to help, I don't know, verify some of  
10 the statements that were in the TBD. And I  
11 got those to you, but again that was only like  
12 yesterday. And there was probably, if I look  
13 here there's probably a good dozen of them  
14 that I gave. And those -- x-rays as well.

15 Finding number 1 and -- or finding  
16 number 1, let's see what that is.

17 MEMBER CLAWSON: I thought that was  
18 the x-ray one was finding 1.

19 MR. CALHOUN: No, those were 13.

20 MEMBER CLAWSON: Oh, was it?

21 MR. CALHOUN: Yes. Hold on, I'm  
22 getting there.

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1                   MEMBER CLAWSON:    Oh, finding 13,  
2                   number 1 which is past --

3                   MR. CALHOUN:    Right.

4                   MEMBER CLAWSON:    -- photographs  
5                   taken.

6                   MR. CALHOUN:    There were multiple  
7                   subs in 13.    Okay.    Finding 1 was bioassay  
8                   monitoring not adequately established.

9                   CHAIR BEACH:    And I think --

10                  MR. CALHOUN:    And you see, these  
11                  actually -- I think number 1 was answered by  
12                  our discussion here past -- 1993.

13                  CHAIR BEACH:    This is Josie.    It  
14                  was.    Grady, I think looking at number 4  
15                  possibly.    I guess what I'm going to suggest  
16                  is that we close out the end date.    I think we  
17                  can agree with that, that after `93 we have  
18                  the    records    available    to    do    dose  
19                  reconstruction.

20                  But then I'd like to go ahead and  
21                  ask, I know we had tasked SC&A to look at the  
22                  Site Profile issues early on.    But with the

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1 new Site Profile issue that was issued on  
2 February 7 of this year are we already tasked  
3 -- and I guess this is a question for you,  
4 Ted. Are we tasked for SC&A to go back and in  
5 light of the new Site Profile issue re-look at  
6 those 13 Site Profile issues and then report  
7 out to the Work Group on those at a later  
8 date?

9 MR. KATZ: So we're not, but we can  
10 task that right now. Because I mean, it's  
11 pretty normal to have SC&A, once these are  
12 updated, to address SC&A comments and Work  
13 Group comments. It's pretty normal to have  
14 SC&A then follow up and say okay, it's all  
15 there and it's been done as agreed to, or  
16 whatever. Whatever they find. But yes, I  
17 think that's fine. We can just consider that  
18 tasked today.

19 MR. FITZGERALD: Yes. Ted and  
20 Josie, this is Joe. I think we're just trying  
21 to make the distinction between what we're  
22 identifying. And go back to the May 22 memo

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1 that Ron sent forward. And I'll defer to Ron  
2 for the details.

3 But we made a split in that memo on  
4 what we thought were SEC questions, not  
5 necessarily issues, but questions that the  
6 Work Group ought to be clear on before  
7 proceeding. Of course the end date was the  
8 predominant one and has taken front and  
9 center. And the others were clearly in the  
10 Site Profile vein.

11 But you know, separating Site  
12 Profile ones out just for clarity's sake I  
13 thought we had Ron, and maybe you can finger  
14 those very specifically. Several loose ends,  
15 remaining questions that NIOSH may have  
16 responded but not completely. Am I right  
17 about that?

18 DR. BUCHANAN: This is Ron. Okay,  
19 now we had 13 SEC issues and 13 Site Profile  
20 issues. The Site Profile issues, and these  
21 were addressed in a May 22 email of 2012. And  
22 in that email we outlined the SEC issues and

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1 the Site Profile issues that NIOSH was  
2 responsible for.

3 Now, underlying that, the other  
4 side of the coin is that SC&A had not verified  
5 that the remaining Site Profile issues had  
6 been set aside with the revision in 2010. And  
7 that kind of got put on the back-burner.

8 So now we're faced with the fact  
9 that we have about six Site Profile issues.  
10 We need to go back to the 2013 TBD revision  
11 and see if they're satisfied.

12 I do not see any remaining Site  
13 Profile issue at this time that NIOSH is to  
14 address. And so that is kind of -- the ball  
15 is in our court on the Site Profile issues and  
16 seeing if they're satisfied by the 2013  
17 revision.

18 Now, the SEC issues, I'd like to  
19 remind everyone that we had 13 of those and  
20 most of those were answered. However, number  
21 4, number 11 and number 12 were not answered,  
22 have not been answered to date. And so we

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1 still have those even though the question of  
2 the `93 end date has been settled. We still  
3 have some pending SEC issues which we put  
4 again on the back-burner because we were  
5 interested in this end date.

6 And these had to do mainly with the  
7 accuracy of the various neutron dosimeters and  
8 the transfer of data, of the external data  
9 from one database to another. And the  
10 question of whether there was a need for  
11 internal coworker models. Now, those three  
12 are still hanging out there as far as the SEC  
13 goes.

14 CHAIR BEACH: And Ron, this is  
15 Josie. Would -- on those three, the SEC ones,  
16 do we need a NIOSH answer on those?

17 DR. BUCHANAN: Yes, because --

18 CHAIR BEACH: To move forward.  
19 Okay.

20 DR. BUCHANAN: Yes, on number 4,  
21 number 11 and number 12.

22 CHAIR BEACH: Okay.

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1 DR. BUCHANAN: And these were in  
2 the May 22, 2012 email that SC&A sent out.  
3 This was an attached document to it.

4 CHAIR BEACH: Okay.

5 MR. KATZ: Okay. This is Ted,  
6 then. I mean given what Ron just said then,  
7 we can't close out the SEC at this meeting.  
8 We can close out the question of the end date  
9 and you can report out on that. And I guess  
10 we'll keep -- we can keep the session as is  
11 but it won't be a possibly vote session  
12 because we can't vote until we close out all  
13 the SEC issues.

14 But you can report out on this and  
15 the Board can ask you questions about this  
16 issue. You know, Grady can give a  
17 presentation on this, the whole nine yards on  
18 this one issue. And then you won't expect the  
19 Board to act on closing out the rest of the  
20 SEC until we hear what comes of these last  
21 three issues, assuming as Ron is sort of  
22 implying that those all apply to this late

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1 period as well. Because we already have an  
2 SEC before that.

3 CHAIR BEACH: Right.

4 MR. CALHOUN: This is Grady. I  
5 mean, isn't it -- to me it seems like we've  
6 got the records past 1993. And you know, if  
7 there is some massaging that needs to be done  
8 of the neutrons or whatever, I know that we  
9 have written some responses back to that. I  
10 don't think that that's necessarily an SEC  
11 issue. I think that that's a TBD dose  
12 reconstruction issue.

13 And, I don't know. It would be --  
14 I'd like to see this SEC issue closed if  
15 possible and continue on with TBD issues.  
16 Because if I knew that there was some  
17 outstanding SEC issues before this meeting, I  
18 would have been working on those because that  
19 was my top priority.

20 MR. KATZ: Well, Ron, do you want  
21 to just respond to that? Because that's  
22 something I think everybody needs to

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1 understand, what the TBD potential is or  
2 isn't.

3 DR. BUCHANAN: Yes. These were  
4 listed as SEC issues originally. And I feel  
5 that they should remain SEC issues until we  
6 resolve them.

7 Now, these involved the assignment  
8 of neutron dose. And Grady has responded to  
9 some of that in that the highest of the three  
10 readings were recorded and used for dose  
11 reconstruction. And our question is how do we  
12 know that that highest was correct. And also  
13 the verification of the data transfer between  
14 the many records system for external dose,  
15 that was number 11, which I think is a  
16 question of accuracy of the data. And then  
17 about the internal dosimetry, number 12, as  
18 far as a coworker model goes. So I think  
19 these have to be responded to before we can --  
20 I don't know that we can just shift those, the  
21 Site Profile issues.

22 CHAIR BEACH: No, I think we need a

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1 response from NIOSH before we do that because  
2 that's where we left it.

3 MEMBER MUNN: This is Wanda. I  
4 would request that whatever we do, someone  
5 take the responsibility for making a very  
6 clear distinction between what we need to  
7 complete for our current problem and what we  
8 need to complete in terms of what we view as  
9 TBD issues.

10 If we don't have that clearly and  
11 if we don't agree on it then we're going to  
12 encounter this situation repeatedly where we  
13 think we've done something and we end up with  
14 the discovery that we have a dangling  
15 participle somewhere. So if we could get a  
16 very clear decision of what we are going to  
17 call an SEC issue and which are remaining  
18 outstanding, it would really be helpful for me  
19 rather than going back and sorting through all  
20 of our past transcripts to try to identify  
21 exactly what we had said earlier. Can we do  
22 that?

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1 CHAIR BEACH: Wanda, this is Josie.

2 I can take the task of sending out the latest  
3 memo that we've been talking about today, the  
4 May 22, 2012. And the latest Site Profile  
5 issue because those are very clear in what the  
6 step forward or the process forward.

7 The biggest problem here is it's been a  
8 year since we had a work call. Until we  
9 decided to separate these out and then --  
10 you're right, these three kind of got lost  
11 when we started thinking about the end date,  
12 '93, and that got pushed forward. So.

13 MEMBER CLAWSON: I don't think they  
14 got lost, Josie. I think what the thing was  
15 is we were focusing in on the end date.

16 CHAIR BEACH: Right, right.

17 MEMBER CLAWSON: The issue with  
18 that.

19 MEMBER ANDERSON: Yes, if the data  
20 would have been complete then the other issues  
21 weren't as critical for SEC.

22 MR. KATZ: Let me just suggest. I

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1 mean, Grady, if as you -- we have, you know,  
2 not much time between now and the March Board  
3 meeting. But Grady, if you want to just  
4 consider these three issues that Ron has  
5 highlighted here that are remaining, if you  
6 want to consider in your presentation to the  
7 Board addressing why those may not be SEC  
8 issues, I think that's fair game. And folks  
9 can respond to that in the Board meeting.

10 So if you want to address that  
11 that's fine and the Board can consider whether  
12 -- your arguments and then whatever people's  
13 responses are to that, whether those -- what  
14 governs here as to whether they're still SEC  
15 issues or they're not. But that'll be fine.

16 MR. CALHOUN: I'd really like to  
17 get the exact issues. I'm sure I've got them  
18 here in all this stuff. But since I obviously  
19 got confused and I thought that this was the  
20 evaluation of the end date, I'd really like to  
21 get those three objectives and I'll see what I  
22 can do by then.

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1                   MEMBER MUNN:     Yes, I'd agree it  
2 would be helpful.

3                   MR. KATZ:     I'm not putting it on  
4 you to have to do that. I'm just saying that  
5 that's an option.

6                   CHAIR BEACH:    So again, this is  
7 Josie. I'll go ahead and forward that, the  
8 May 22 memo out which has those four  
9 highlighted.

10                  MR. CALHOUN:    I've got the May 22  
11 one and it only has -- I think it's only got  
12 number 1 and number 13.

13                  CHAIR BEACH:    The one I have goes  
14 through all 11 and it highlights all the  
15 answers that are given to that date.

16                  MR. KATZ:     Ron, wait. Ron is on  
17 the line. Ron, we just need you to send Grady  
18 the SEC issues you identified.

19                  DR. BUCHANAN:   Yes, this is Ron. I  
20 forwarded Josie a copy of the May 22 email and  
21 also the Site Profile Matrix. And I updated  
22 that to the current yesterday and highlighted

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1 the action items for SC&A and for NIOSH. And  
2 so, Josie, if you would forward that to Grady  
3 then he would have a current copy to work from  
4 that you and I, Joe, have been working from.

5 CHAIR BEACH: Yes, I will do that.

6 And I will also forward it to the Work Group  
7 Members.

8 DR. BUCHANAN: And so, Grady, you  
9 would have what we're looking at in front of  
10 you there. And I highlighted in yellow the  
11 areas that need to be addressed either by  
12 NIOSH or by SC&A.

13 CHAIR BEACH: Actually, Ted, if it  
14 works for you, I'll send it to you and then if  
15 you could forward that to all the pertinent  
16 parties.

17 MR. KATZ: Yes, I'll send it to the  
18 whole Work Group and staff, right.

19 CHAIR BEACH: Okay.

20 MR. KATZ: And so then, I mean  
21 Josie, it sounds like if it's okay with you  
22 then I'll leave this, it's a possible vote.

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1 But it would only be a vote if we somehow put  
2 to bed sufficiently with respect to as being  
3 SEC issues, these three items that Ron has  
4 highlighted as well. And if we don't then  
5 there won't be a vote but there can be  
6 whatever discussion is needed.

7 CHAIR BEACH: A discussion.

8 MR. FITZGERALD: I might add --  
9 this is Joe. We're talking number 4, number  
10 11, number 12 in that May 22 piece. Just not  
11 to confuse it with the other issues that are  
12 more of a Site Profile nature.

13 And all we had at the time, you'll  
14 see this in the note. We posed the original  
15 issue. We got a NIOSH response. Then SC&A  
16 provided a response to that response. And  
17 that's where it has been since the Work Group  
18 has focused on the end date.

19 And these three issues aren't  
20 necessarily of the same ilk where one has to  
21 spend a lot of time doing analysis. I think  
22 it was asking for answers as far as what NIOSH

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1 would in fact do on that particular point and  
2 why. And I think in those -- in some of these  
3 cases, the response wasn't deemed complete or  
4 adequate at the time. So that's kind of where  
5 it was left.

6 That's not to say that a lot of  
7 analysis per se, just sort of a complete  
8 answer as to what the path forward is going to  
9 be on that particular point, whether it's  
10 neutron dosimetry or on some other matter.

11 And these are issues, by the way,  
12 that were originally SEC issues pre '90, you  
13 know, in the SEC period that was voted by the  
14 Board last time. And they were carried  
15 forward as relevant issues past the current  
16 SEC period, is why they're here.

17 MEMBER MUNN: Yes, but the NIOSH  
18 memo that went out with the same cover letter  
19 at the May 22 Work Group. I think one of the  
20 things that's confusing is that that's the  
21 latest information that I have in my file.  
22 And it's the format, in written format the way

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1 it is, it is kind of cumbersome to try to  
2 identify what is still considered outstanding  
3 and what isn't. I think, if we can helpful  
4 something. Perhaps what Ron is going to be  
5 sending out already has so that it stands out.

6 CHAIR BEACH: This is Josie. I  
7 just sent that to Ted so you have it, Ted.

8 MR. KATZ: Great. I'll get it to  
9 everybody right after this call.

10 CHAIR BEACH: Okay. So to wrap up  
11 or to try to wrap up, we have a couple of  
12 action items. SC&A is going to be tasked with  
13 evaluating the latest version of the Site  
14 Profile issue and marry it with the Site  
15 Profile issues that we currently have, the 13.

16 And NIOSH will look at those three  
17 items of the SEC relevant from the May 22 time  
18 frame.

19 MEMBER ROESSLER: Josie, this is  
20 Gen. I've been listening to this May 22  
21 information. And the email I got is not -- I  
22 just really don't know what to make out of it.

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1       So when this is sent around again, I think I  
2       need to see some pretty clear conclusions that  
3       come along with it.

4               MR. KATZ:     So Gen, Ron says he  
5       highlighted the three issues, the 4, 11 and  
6       12.     We'll send those around.     He -- not  
7       necessarily responded to those yet.     He may  
8       respond to those at the Board meeting.

9               MEMBER ROESSLER:   Okay, okay.

10              MR. KATZ:    Okay?

11              CHAIR BEACH:   Okay.   This is Josie  
12       again.   Thank you for your patience.   When we  
13       don't meet for over a year and we had two  
14       lists going it does really get complicated  
15       when you try to reconcile it and then vote on  
16       something.     So I appreciate everybody's  
17       patience here as we sort this all out again.

18              MR. KATZ:    Yes, it's okay.   And we  
19       have an hour set aside for the BNL discussion.

20       So, you know, there's gracious amount of time  
21       to at least get things clear at the Board  
22       meeting, if not resolve them.

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1 CHAIR BEACH: Okay. So I have  
2 nothing else unless anybody else does.

3 MEMBER MUNN: Not me.

4 MEMBER ROESSLER: I'm done.

5 CHAIR BEACH: Then I'd say we can  
6 adjourn this meeting. Thank you.

7 (Whereupon, the above-entitled  
8 matter went off the record at 3:36 p.m.)

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