

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

PUBLIC HEALTH SERVICE

CENTERS FOR DISEASE CONTROL AND PREVENTION

NATIONAL INSTITUTE FOR
OCCUPATIONAL SAFETY AND HEALTH

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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

+ + + + +

WORK GROUP ON TBD 6000/6001, APPENDIX BB

+ + + + +

MONDAY,
NOVEMBER 10, 2008

+ + + + +

The Work Group meeting convened at 9:30 a.m. in the Zurich Boardroom at the Cincinnati Airport Marriott Hotel, 2395 Progress Drive, Hebron, Kentucky, Paul Ziemer, Work Group Chair, presiding.

MEMBERS PRESENT:

PAUL ZIEMER, Chair
JOSIE BEACH
MARK GRIFFON
JOHN POSTON
WANDA MUNN, Alternate (via
teleconference)

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ALSO PRESENT:

TED KATZ, Designated Federal Official
DAVID ALLEN, OCAS
BOB ANIGSTEIN, SC&A
TERRI BARRIE (via teleconference)
JOHN G. DUTKO (via teleconference)
ZEDA E. HOMOKI-TITUS, HHS
EMILY HOWELL, HHS (via teleconference)
JEFF KOCH, DOL (via teleconference)
JOHN MAURO, SC&A
DAN McKEEL (via teleconference)
JIM NETON, OCAS
JOHN RAMSPOTT (via teleconference)

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

2 (9:31 a.m.)

3 MR. KATZ: So this is Ted Katz. I
4 am the designated federal official for the
5 Advisory Board on Radiation and Worker Health.
6 And we are about to begin the Work Group on
7 TBD 6000/6001, Appendix BB. And we will begin
8 with the roll call, starting with the Board
9 members in the room, please.

10 CHAIRMAN ZIEMER: Paul Ziemer,
11 Chair of the Work Group.

12 MEMBER BEACH: Josie Beach.

13 MEMBER POSTON: John Poston.

14 MEMBER GRIFFON: Mark Griffon,
15 Advisory Board.

16 MR. KATZ: And on the telephone?

17 MEMBER GRIFFON: No conflicts, by
18 the way. I guess we should say that.

19 CHAIRMAN ZIEMER: Yes. No
20 conflicts.

21 MEMBER BEACH: No conflicts. This
22 is Josie Beach.

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1 MEMBER POSTON: No conflicts.

2 MR. KATZ: The telephone?

3 MEMBER MUNN: Wanda Munn, Work
4 Group member, no conflicts.

5 CHAIRMAN ZIEMER: Any other Board
6 members?

7 MR. KATZ: Any other Board members
8 on the telephone?

9 (No response.)

10 CHAIRMAN ZIEMER: Good.

11 MR. KATZ: Okay. Great. So we do
12 not have a quorum. Then beginning with the
13 NIOSH team in the room?

14 DR. NETON: Jim Neton, OCAS.

15 MR. KATZ: No conflict?

16 DR. NETON: No conflict.

17 MR. ALLEN: Dave Allen, OCAS, no
18 conflicts.

19 MR. KATZ: And on the telephone,
20 any NIOSH or ORAU staff?

21 (No response.)

22 MR. KATZ: None noted. SC&A in the

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1 room?

2 DR. MAURO: John Mauro, no
3 conflict.

4 DR. ANIGSTEIN: Bob Anigstein, no
5 conflict.

6 MR. KATZ: And on the telephone,
7 any SC&A?

8 (No response.)

9 MR. KATZ: Okay. Then we go to the
10 members of -- oh, federal employees overall.
11 Any in the room?

12 MS. HOMOKI-TITUS: Liz Homoki-Titus
13 with HHS.

14 MR. KATZ: And on the telephone?

15 MR. KOTSCH: Jeff Kotsch with the
16 Department of Labor.

17 MR. KATZ: Anyone else from NIOSH
18 on the phone or HHS?

19 (No response.)

20 MR. KATZ: And now members of the
21 public and representatives of congressional
22 offices and petitioners, please? I guess

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1 begin with petitioners.

2 DR. McKEEL: Yes. This is Dan
3 McKeel. I'm a co-petitioner for GSI.

4 MR. RAMSPOTT: John Ramspott, an
5 adviser to GSI workers.

6 MR. DUTKO: John G. Dutko, Betatron
7 and Magnaflux operator.

8 MR. KATZ: I'm sorry. Could you
9 repeat that again, please?

10 MR. DUTKO: John G. Dutko, Betatron
11 and Magnaflux operator, General Steel.

12 MR. KATZ: Thank you.

13 Other members of the public who
14 want to identify themselves?

15 MS. BARRIE: This is Terri Barrie
16 with ANWAG.

17 MR. KATZ: Okay. That sounds like
18 that's it.

19 CHAIRMAN ZIEMER: Any
20 congressional?

21 MR. KATZ: And any congressional
22 staff?

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1 (No response.)

2 MR. KATZ: Okay. So that does it
3 for roll call. Then just a couple of other
4 things before Dr. Ziemer gets started here.
5 One, please, everyone who is listening on the
6 phone, please mute your phones unless you are
7 speaking. And if you don't have a mute
8 button, please use *6.

9 Please do not put the phone on hold
10 at any time but hang up and dial back in
11 because hold disrupts the call for everyone in
12 the room as well as on the phone.

13 And the last thing I just would
14 like to mention, there are a number of
15 documents that will be discussed in this
16 meeting. And not all of them have been
17 PA-cleared and are, hence, available to the
18 petitioner and the public.

19 There is an evaluation report that
20 is available to the public and the petitioners
21 as well as a review of that report by SC&A,
22 but there is a subsequent analysis by NIOSH

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1 that just has been PA-reviewed but too late to
2 be of use to the petitioners.

3 But I believe, Dan, it should have
4 been e-mailed to you this morning, just in the
5 last perhaps 10-15 minutes. So I realize you
6 don't have that in time to make use of it.

7 And there is also a response from
8 SC&A to that report that has also not been
9 Privacy Act reviewed and has not been
10 circulated. So I just wanted to make that
11 clear up front.

12 And, Dr. Ziemer, it's all yours.

13 CHAIRMAN ZIEMER: Okay. Thank you
14 very much. We will officially call the
15 meeting to order. I did late yesterday
16 distribute -- I thought I had distributed an
17 agenda, but it turns out I did not attach it.
18 But the members of the Work Group here
19 assembled have copies.

20 And, Dan, I just re-e-mailed you.
21 I hope you got the agenda, Dan McKeel.

22 DR. McKEEL: Yes, sir, I did.

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1 Thank you.

2 CHAIRMAN ZIEMER: And, Wanda Munn,
3 did you receive it as well? I re-e-mailed
4 you.

5 (No response.)

6 CHAIRMAN ZIEMER: In any event, we
7 will try to follow that agenda sequentially.
8 I just put a note in here for also the
9 approximate times for the comfort breaks
10 listed on the agenda as approximately 10:45
11 and 2:45, a lunch break at approximately
12 12:15.

13 I am going to try to adjourn around
14 3:30 if we're able to. So we'll see how
15 things go. If we get done sooner, fine. I
16 expect it will take at least that long to get
17 through everything here.

18 I want to take a few minutes here
19 at the front end of the agenda to give us kind
20 of an overview of what is ahead of us today
21 and also use this to kind of introduce us to
22 what has gone before with respect to the

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1 documents that we are reviewing.

2 MR. KATZ: I'm going to have to
3 disconnect --

4 CHAIRMAN ZIEMER: Okay. We're
5 going to have to disconnect from you.

6 MR. KATZ: -- and call back in.

7 MEMBER BEACH: I was wondering
8 because Wanda didn't acknowledge that you sent
9 her the e-mail. And that's not like Wanda.

10 CHAIRMAN ZIEMER: Okay. We're back
11 on the line. I guess we lost folks along the
12 way somewhere. Sorry. But I'll back up a
13 little bit. I had asked Wanda if you got a
14 copy of the agenda.

15 MR. KATZ: Can anyone on the line
16 hear us? Hello?

17 CHAIRMAN ZIEMER: Are we on mute?

18 MR. KATZ: We are not on mute.

19 MS. BURGOS: Ted?

20 MR. KATZ: Yes?

21 MS. BURGOS: Ted?

22 MR. KATZ: Yes. Who is speaking?

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1 MS. BURGOS: This is Zaida. Now we
2 can hear you.

3 MR. KATZ: Zaida. Now you can hear
4 us. Okay, but I don't hear anyone else on the
5 line. Wanda, are you?

6 MS. BURGOS: They were going to
7 call back because we got cut off.

8 MR. KATZ: Okay. We all had the
9 same problem.

10 MS. BURGOS: Okay.

11 MR. KATZ: Thank you.

12 MEMBER MUNN: I'm just now back in,
13 Ted. This is Wanda.

14 MR. KATZ: Welcome back, Wanda.

15 MEMBER MUNN: I know Emily and John
16 Ramspott also got cut off.

17 DR. McKEEL: This is Dan McKeel. I
18 am back on.

19 CHAIRMAN ZIEMER: Yes. We all got
20 cut off. We got cut off here also.

21 MEMBER MUNN: Okay.

22 MS. HOWELL: This is Emily. I am

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1 back on as well.

2 CHAIRMAN ZIEMER: Emily is back on.
3 Dan, you are on. John, are you on, John
4 Ramspott?

5 MR. RAMSPOTT: Yes, sir, I am.

6 CHAIRMAN ZIEMER: John Dutko, are
7 you back on?

8 MR. DUTKO: Yes, sir.

9 CHAIRMAN ZIEMER: Terri Barrie?

10 (No response.)

11 CHAIRMAN ZIEMER: Okay.

12 MR. KATZ: And, Wanda, did you
13 receive the agenda?

14 MEMBER MUNN: I have a copy of the
15 agenda that Paul sent out.

16 MR. KATZ: Okay. Great.

17 CHAIRMAN ZIEMER: Thank you. Okay.
18 Terri Barrie perhaps will call back in as
19 well. Okay. Just at the time we were getting
20 cut off, I indicated that we would follow the
21 agenda as distributed to the Work Group.

22 We have tentatively scheduled

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1 comfort breaks at 10:45 and 2:45 approximately
2 and a lunch break at 12:15 approximately. And
3 we'll see where we are at those times and try
4 to stick fairly close to that.

5 The agenda items, we'll go through
6 them in order. Also I would point out that I
7 am going to try to wrap up by about 3:30 today
8 if we are able to in order for folks -- some
9 of the folks have to catch planes and so on.
10 So I'm going to try to shoot for that. So
11 we'll see how well we do.

12 Here at the front end of the
13 agenda, I want to take a few minutes to give
14 us an overview of what we are going to cover
15 today. And also, since this is the first
16 meeting of this Work Group, a little bit of
17 background on where we have been and what has
18 preceded us in this endeavor. And I will just
19 kind of narrate this for everyone, just to
20 give us kind of an overview of what has
21 happened on TBD 6000/6001 and specifically on
22 appendix BB.

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1 I am not going to go all the way
2 back to sort of the beginning of the
3 preparation of the original TBDs, but I want
4 to pick it up in the middle of last summer,
5 where the Board actually tasked our contractor
6 to do the initial reviews.

7 And at the Richland meeting in July
8 of '07, SC&A was tasked to review TBD 6000 and
9 actually appendix BB as well. So we had that
10 official tasking at that time.

11 And in September, September 14th of
12 2007, SC&A delivered a draft report on TBD
13 6000. I believe they had four findings on
14 that. Was it seven findings? Okay. I didn't
15 go back and double-check that, but there were
16 several findings.

17 And in a few minutes I am going to
18 ask John to give us an update on that as well,
19 but just time-wise just to see where we have
20 been.

21 In April 21st of this year, 2008,
22 SC&A delivered the draft report on their

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1 review of appendix BB. And I think the matrix
2 now shows 13 findings, although the original
3 report had one or two additional ones, John, I
4 believe, or Bob, but, anyway, I think there
5 are 13 findings in the matrix that we need to
6 deal with.

7 DR. ANIGSTEIN: We actually had the
8 reviewed report to the Board and to NIOSH on
9 about March 20th.

10 CHAIRMAN ZIEMER: Right, but the
11 official date on the report as it was
12 delivered -- I checked the delivered copy to
13 Dave Staudt. It's dated April 21st.

14 DR. ANIGSTEIN: Well, we had two
15 versions: the original and the PA-cleared
16 one.

17 CHAIRMAN ZIEMER: Yes. The
18 PA-cleared one, right. Okay. But, anyway,
19 that is the correct time frame.

20 I wanted to insert in here that on
21 May 15th, GSI, the SEC petition from General
22 Steel Industries was qualified by NIOSH on May

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1 15th, 2008.

2 On May 20th, 2008, at the
3 Procedures Work Group, there was an initial
4 discussion of the Appendix BB findings. This
5 was just sort of to introduce the Work Group
6 to the findings. They didn't spend a lot of
7 time on that but just gave them an overview of
8 what the findings were on appendix BB.

9 And I think, Bob, you probably gave
10 that, as I recall, at the Work Group meeting.

11 DR. ANIGSTEIN: Yes.

12 CHAIRMAN ZIEMER: Then looking back
13 at the Procedures Work Group, which was
14 handling these items at that time, in their
15 meeting on June 24th, they reported that NIOSH
16 was still working on their response to the
17 SC&A findings, that it had been determined
18 that there were now film badge measurements
19 available for NIOSH review.

20 And I might note parenthetically
21 that the petitioners had indicated, previous
22 to that, that there were at least some film

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1 badge readings. I think Dr. McKeel had
2 indicated earlier that there apparently had
3 been some film badge readings that they knew
4 about. But, in any event, this was announced
5 to the Work Group at that meeting in June.

6 And also the Work Group had an
7 initial discussion on considering moving TBD
8 6000/6001 activities to a separate work group.
9 Since their hands were so full of all of the
10 procedures, then, they felt at that time that
11 some additional attention needed to be paid to
12 TBD 6000 and particularly Appendix BB.

13 And in the July meeting of the
14 Procedures Work Group, they indicated that
15 they were ready to hand these off because a
16 new work group had been -- well, was being
17 recommended. And in August, it was reported
18 that the new work group had been formed by the
19 Board and was ready for the handoff.

20 Now, early in November, November
21 4th, the white paper from NIOSH evaluating the
22 film badge readings from Landauer, that was

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1 issued just basically a week ago and you have
2 all received copies of that. The petitioners
3 also received copies of that.

4 Also, subsequently within the last
5 couple of days, we have had some responses.
6 SC&A has had an initial review of that white
7 paper, and that was distributed to all the
8 Work Group members within the last couple of
9 days and I believe to the petitioners as well.
10 And that has been cleared.

11 MR. KATZ: Not to the petitioners.

12 CHAIRMAN ZIEMER: Oh, that wasn't
13 cleared. Okay.

14 DR. MAURO: I think you should have
15 received it on Saturday or Sunday.

16 DR. ANIGSTEIN: Yes, Saturday.

17 DR. MAURO: And there really was no
18 time for --

19 CHAIRMAN ZIEMER: Okay. That has
20 not yet been PA-cleared. But we will today at
21 least learn something of the responses to that
22 to the extent we are able to.

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1 Also, the petitioners have had a
2 chance to review the report from NIOSH. And I
3 believe Dan McKeel distributed over the
4 weekend to all the Board members his comments.
5 And I want us to at least take an initial look
6 at those as well today.

7 Many of those are actually directed
8 more toward NIOSH, but I want us to at least
9 be aware of what his comments are and the
10 technical comments that might be appropriate
11 for the Board to have under consideration as
12 well.

13 One other thing I should note. And
14 that is that the evaluation report from NIOSH
15 on the petition has now been issued. And that
16 has been within the last week or so. I don't
17 have the exact date on that. Yes, actually,
18 it's been -- I had meant to include that.

19 DR. ANIGSTEIN: October 3rd.

20 CHAIRMAN ZIEMER: October 3rd. So
21 I would just insert that in your sequence of
22 events, October 3rd, 2008. The NIOSH

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1 evaluation report of the petition was issued.

2 So that kind of gives you an
3 overview of what has occurred sequentially and
4 the various documents involved. And,
5 actually, as you will see on the agenda, what
6 I would like to do is take sort of a quick
7 look at TBD 6000 and see where we are on that.

8 Then I want to look at the TBD 6000
9 Appendix BB findings by SC&A and the responses
10 by NIOSH. And I might point out that, at
11 least in my files, I could not find a cleared
12 copy of that, even though it was dated. It
13 goes back to -- I'm looking for the date here.

14 I guess at that point I am going to
15 ask if there was a cleared copy. We have had
16 that for quite a while.

17 DR. MAURO: Which document?

18 CHAIRMAN ZIEMER: This is TBD 6000
19 Appendix BB, NIOSH responses. And I have an
20 uncleared copy of that. Most of the NIOSH
21 responses refer to the fact that film badge
22 readings are being evaluated.

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1 DR. MAURO: Was that done within
2 the context of the matrix?

3 CHAIRMAN ZIEMER: Yes, it was on
4 the matrix.

5 DR. MAURO: That's what I was
6 thinking. And was that matrix cleared? I
7 guess that is the question.

8 CHAIRMAN ZIEMER: That's what I was
9 -- no. You had a cleared version of the
10 matrix.

11 DR. MAURO: Of the matrix
12 initially.

13 CHAIRMAN ZIEMER: Initially.

14 DR. MAURO: Right.

15 CHAIRMAN ZIEMER: And we'll come
16 back to this, but we'll need to look at that.
17 In fact, I will ask Dan right now if he has
18 seen a cleared copy of the NIOSH responses to
19 the matrix.

20 DR. McKEEL: No, sir, I have not.
21 And nor have I seen the matrix.

22 CHAIRMAN ZIEMER: The matrix with

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1 the 13 issues, Dan, you have not seen?

2 DR. McKEEL: Oh, yes, I have. Yes,
3 the 13 issues --

4 CHAIRMAN ZIEMER: Right.

5 DR. McKEEL: -- is the document I
6 have, but not the responses.

7 CHAIRMAN ZIEMER: Yes, yes. The
8 initial matrix --

9 DR. NETON: That's the NIOSH
10 responses.

11 CHAIRMAN ZIEMER: Right. The
12 matrix itself, though, was dated May 2nd, but
13 the NIOSH responses had to have occurred after
14 that. And I don't see a different date. And
15 my copy is the same way, but we will come to
16 this.

17 If there's not a cleared copy, we
18 need to sort of find out why. And I think
19 most of the responses we will be able to share
20 because they basically say that the film badge
21 study is underway.

22 DR. MAURO: I would like to point

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1 out one of the areas of a bit of ambiguity
2 here, --

3 CHAIRMAN ZIEMER: Right.

4 DR. MAURO: -- especially if you go
5 back a few months, --

6 CHAIRMAN ZIEMER: Right.

7 DR. MAURO: -- is the matrices and
8 their clearance. Given that they are living
9 documents and they are always being revised,
10 at least at one time we were in a mode of on a
11 case-by-case basis to make the judgment
12 whether or not at what point should we clear
13 the matrix, --

14 CHAIRMAN ZIEMER: Right. And --

15 DR. MAURO: -- usually when its
16 interest is expressed.

17 CHAIRMAN ZIEMER: Right. And also
18 there may be an issue as to whether they have
19 actually -- what their status. See, they were
20 originally in the matrix of the other work
21 group --

22 DR. MAURO: That's correct.

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1 CHAIRMAN ZIEMER: -- and what their
2 status is in that matrix. And I don't know if
3 we can --

4 DR. MAURO: Steve Marschke?

5 CHAIRMAN ZIEMER: -- Steve is
6 available to tell us that or Nancy Adams
7 perhaps.

8 DR. MAURO: During the break, I
9 will give them a call.

10 CHAIRMAN ZIEMER: We will follow up
11 on that and make sure that we are all on the
12 same page because I discovered that over the
13 weekend, that I didn't seem to have a cleared
14 copy, and I wasn't sure why. So it may be
15 that it was never cleared.

16 Okay. So that is kind of the
17 overview. So that draft report of April was
18 followed by a matrix dated May 2nd. And I'm
19 not sure what the cleared date on that was,
20 but at least the original matrix was dated May
21 2nd in there.

22 At some date, which does not show

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1 on the copy, there were NIOSH responses
2 generated. So keep that in mind in the
3 sequence here.

4 DR. ANIGSTEIN: There may be a
5 little confusion over the fact that our
6 contact, our liaison with the HHS law office
7 decided or helped that. Even though our
8 matrix was cleared, she left on the notice
9 that is not cleared in anticipation that NIOSH
10 will insert information that will
11 automatically unclear it. So the footnote
12 remained. Even though it was cleared, the
13 footnote remained.

14 CHAIRMAN ZIEMER: Yes, I
15 understand.

16 MS. HOMOKI-TITUS: That's the
17 standing policy for all matrixes because they
18 are changed regularly because there is
19 clearance --

20 CHAIRMAN ZIEMER: Right. Now, when
21 we get to that point, let's see if we can
22 figure out what the real status of that is.

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1 DR. McKEEL: Dr. Ziemer?

2 CHAIRMAN ZIEMER: Yes, Dan?

3 DR. McKEEL: Dan McKeel. Can I
4 just reiterate for the record that I have not
5 seen either the matrix from SC&A or NIOSH's
6 responses? And, of course, that puts me at an
7 extreme disadvantage.

8 CHAIRMAN ZIEMER: Okay. So you
9 have seen the --

10 DR. McKEEL: The only thing I --

11 CHAIRMAN ZIEMER: -- report with
12 the 13 issues? You have seen --

13 DR. McKEEL: Yes, but --

14 CHAIRMAN ZIEMER: Yes.

15 DR. McKEEL: Yes, but the 13 issues
16 was issued as a cleared report.

17 CHAIRMAN ZIEMER: Right. Actually,
18 all of the matrix is, is a list of the 13
19 items. That's all it is.

20 DR. McKEEL: Right. But the matrix
21 also includes eventually NIOSH's responses,
22 right?

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1 CHAIRMAN ZIEMER: Right. And that
2 is the issue I am --

3 DR. McKEEL: And that I have not
4 seen. And, of course, that is the crucial
5 piece of information that I --

6 CHAIRMAN ZIEMER: Exactly. That is
7 what we are trying to track down here --

8 DR. McKEEL: Okay. All right.

9 CHAIRMAN ZIEMER: -- when we get to
10 that point. And I want to make sure you get
11 that as quickly as we are able to, even if we
12 -- and perhaps even today if we are able to do
13 that.

14 DR. McKEEL: Okay. Thank you.

15 CHAIRMAN ZIEMER: Yes. And, as I
16 say, I myself only discovered that I didn't
17 have a cleared copy just over the weekend. So
18 we will follow up on that shortly, Dan.
19 Thanks.

20 MEMBER MUNN: This is Wanda.

21 CHAIRMAN ZIEMER: Yes, Wanda?

22 MEMBER MUNN: There was one other

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1 fly in the ointment with respect to that first
2 matrix that was issued on May the 2nd this
3 year. And that is, mistakenly, the title
4 originally indicated the issue resolution
5 matrix for SC&A findings on Appendix BB to TBD
6 6001.

7 CHAIRMAN ZIEMER: Right. I have
8 the copy right here, and it is miss titled.

9 MEMBER MUNN: Yes. It was miss
10 titled.

11 CHAIRMAN ZIEMER: It says 6001. It
12 should say 6000.

13 MEMBER MUNN: Correct.

14 CHAIRMAN ZIEMER: Right there. So
15 I think SC&A may have to issue a corrected
16 copy.

17 DR. MAURO: I'm not sure if we did,
18 but --

19 DR. ANIGSTEIN: I believe we did,
20 but this is not it.

21 CHAIRMAN ZIEMER: But that is the
22 copy we --

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1 DR. MAURO: Yes, that's the --

2 MEMBER MUNN: We discussed it, but
3 this is the one I have in --

4 CHAIRMAN ZIEMER: Yes. Thank you.
5 Okay. So that's kind of the overview. Are
6 there sort of general questions or comments on
7 that?

8 (No response.)

9 CHAIRMAN ZIEMER: Okay. Let's,
10 then, move to the general findings on TBD
11 6000. Work Group Committee members, I am
12 assuming all of you have seen and read the
13 original TBD 6000, which is a generic
14 document. It's not specific to, for example,
15 General Steel Industries, but it is to cover a
16 number of AWE uranium facilities.

17 John, can you give us an update on
18 where we are on that status-wise?

19 DR. MAURO: I would be glad to. I
20 am reading from the executive summary of the
21 report dated September 14, 2007. There are
22 seven findings. And I will just go through in

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1 concept.

2 And I think that it is probably
3 important when I go through these to keep in
4 mind that their applicability and possible
5 relevance to GSI.

6 As you will see, probably a number
7 of them really are not. So these are just
8 universal. These are our findings, and I will
9 give you the brief description.

10 The first finding has to do with --
11 bear in mind that this particular TBD is for
12 uranium facilities that would handle, process,
13 machine uranium. And there is very little, if
14 no, data available for the facilities except
15 the knowledge that those facilities were
16 involved in uranium handling. And this
17 presents a matrix of assumptions that can be
18 used for different categories of facilities --

19 CHAIRMAN ZIEMER: Right.

20 DR. MAURO: -- and different
21 categories of workers on a way to do a
22 realistic dose reconstruction, external or

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1 internal, for those workers at those
2 facilities.

3 In going through that report, the
4 first finding you have --

5 CHAIRMAN ZIEMER: Let me just
6 interrupt very quickly before you give the
7 findings. Did the Procedures Work Group --
8 I'll ask you and Wanda both, did the
9 Procedures Work Group initially have these
10 findings in their matrix? Do you recall?

11 MEMBER MUNN: I would have to check
12 and see. I believe that we did, but I could
13 be quite incorrect in that. Let me see if I
14 can try to latch onto our --

15 DR. MAURO: Yes. We could check
16 with Steve. Wanda, this is John. And Steve,
17 of course, is not on the line. During the
18 break, I will give him a call. It sounds like
19 we have a number of questions for both Steve
20 and Nancy related to clearance matters and
21 matters such as this.

22 CHAIRMAN ZIEMER: Okay.

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1 DR. MAURO: We can get that cleared
2 up.

3 MEMBER MUNN: I will in the
4 meantime try to check it myself.

5 CHAIRMAN ZIEMER: Thank you.

6 DR. McKEEL: Dr. Ziemer and John
7 Mauro?

8 CHAIRMAN ZIEMER: Yes?

9 DR. McKEEL: Could you all please
10 comment on the fact that the title of this TBD
11 6000 is, Uranium and Thorium, and that the
12 thorium section 7.2 is not filled out?

13 CHAIRMAN ZIEMER: I can't comment
14 on it, but I think that would be NIOSH's role
15 to comment.

16 DR. McKEEL: Maybe they could
17 comment.

18 CHAIRMAN ZIEMER: Maybe Jim Neton.

19 DR. McKEEL: I mean, that is the
20 title of the document.

21 CHAIRMAN ZIEMER: There's a section
22 reserved for Dave Allen. Dave, do you have

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1 any comments on that right now?

2 MR. ALLEN: The title was made --
3 it was intended to be Uranium and Thorium.
4 And we end up issuing that without pulling it
5 apart and since then pretty much decided that
6 we were not likely to come up with a generic
7 thorium model for a lot of sites. So that
8 isn't going to be filled out.

9 CHAIRMAN ZIEMER: So you put a
10 placeholder in but have not used it and
11 probably it sounds like will not use that per
12 se.

13 MR. ALLEN: Right now we're not
14 thinking there is going to be a generic model
15 for thorium, no. It would be site-by-site.

16 CHAIRMAN ZIEMER: It would be
17 site-by-site. Dan, did you hear that?

18 DR. McKEEL: Yes, sir, I did.

19 CHAIRMAN ZIEMER: Okay.

20 DR. McKEEL: Thank you.

21 CHAIRMAN ZIEMER: Let's proceed,
22 then. John?

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1 DR. MAURO: The first comment has
2 to do with when a uranium ingot is first
3 formed. Now, one of the things we found in
4 the site literature is that in the bomb, so to
5 speak, the reduction process, is a lot of
6 literature that shows that, for some reason,
7 that thorium, the short-lived progeny of
8 uranium, floats right to the surface. And you
9 get a higher concentration of the thorium.
10 And it's short I think for protactinium, a
11 progeny of the uranium present right at the
12 surface.

13 And, as a result, the beta and the
14 gamma dose rate at the surface of these ingots
15 is as much as about a ten, perhaps even
16 higher-fold higher than the normal numbers you
17 normally see.

18 For example, the contact dose for
19 uranium, I think it's about 240 mr per hour.
20 That's contact beta-gamma. The one-foot dose
21 rate is about two mr per hour. And there is
22 literature that shows that when you have a

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1 newly formed ingot, the dose rates could be
2 about ten times higher. And it's in the
3 literature.

4 Now, we bring this up only from the
5 point of view of the TBD 6000 is silent
6 regarding this matter. And we're not quite
7 sure of its relevance. I am envisioning a
8 facility. A good example would be GSI.

9 Now, they might receive a slab, a
10 cut slab, for nondestructive testing with the
11 Betatron. Now, in theory, depending on the
12 age of that cut -- and please, you know --

13 DR. ANIGSTEIN: That's addressed in
14 the --

15 DR. MAURO: Okay. There you go.
16 So this is a subject that is not addressed,
17 and it does bear on the external dose, beta
18 and gamma, to people who come up close and
19 personal to a relatively newly formed ingot.

20 I think the half-life of 234 is --

21 DR. ANIGSTEIN: Okay. It's 24
22 days.

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1 DR. MAURO: Twenty-four days.

2 DR. ANIGSTEIN: And so it would be
3 decaying. And the thorium-234 throughout the
4 normal uniform distribution would be growing
5 in.

6 DR. MAURO: Right.

7 DR. ANIGSTEIN: So you could easily
8 say that during the first month or two, you
9 would have an elevated level.

10 DR. MAURO: And then after that,
11 it's unsupported.

12 DR. ANIGSTEIN: After that, it goes
13 back to uniform distribution. And, I can add
14 some other information on this.

15 CHAIRMAN ZIEMER: Well, I don't
16 want to get into all the details right now.

17 DR. MAURO: Yes, just on --

18 CHAIRMAN ZIEMER: But the finding
19 is that that issue was not addressed in the
20 TBD.

21 DR. MAURO: That's correct.

22 CHAIRMAN ZIEMER: So in the molten

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1 form, you're saying the thorium floats to the
2 top. It actually shows up in the ingots,
3 which are intended to be uranium ingots, but
4 they had, what, a surface coating, thorium?

5 DR. MAURO: Yes.

6 DR. NETON: I think that was a
7 process called a top crop on that though that
8 essentially cut off that top layer. They
9 wouldn't have been appropriated into the
10 product itself.

11 DR. MAURO: Okay. The answer --

12 CHAIRMAN ZIEMER: Okay. Let's just
13 get the issues before us here.

14 DR. MAURO: Right. That was the
15 issue.

16 CHAIRMAN ZIEMER: Okay.

17 DR. MAURO: Let's move --

18 MEMBER POSTON: But the point that
19 I heard John say is that he wasn't even sure
20 of its relevance.

21 CHAIRMAN ZIEMER: Yes. That's
22 right.

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1 DR. MAURO: That's correct.

2 MEMBER POSTON: So it needs to be
3 looked at.

4 CHAIRMAN ZIEMER: Yes, yes. I just
5 want to get the issue out before us.

6 DR. MAURO: It's broader than that.
7 As it applies to this TBD in general.

8 MEMBER POSTON: And the solution
9 may be the top crop.

10 DR. MAURO: If the top crop solves
11 the problem, that --

12 CHAIRMAN ZIEMER: That's the
13 answer.

14 DR. MAURO: But we don't have an
15 answer.

16 CHAIRMAN ZIEMER: But I don't want
17 to duplicate. If the other work group
18 actually looked at this already -- or maybe
19 they didn't.

20 DR. MAURO: I don't believe so.

21 CHAIRMAN ZIEMER: Okay.

22 MR. ALLEN: One side note on that

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1 one is TBD 6001 was intended for uranium
2 chemical compounds and 6000 for metal.

3 CHAIRMAN ZIEMER: For metals.

4 MR. ALLEN: There was a point where
5 it wasn't clear where you should split that.
6 And the recasting is what we're talking about,
7 not the reduction but the recasting itself.

8 CHAIRMAN ZIEMER: Right.

9 MR. ALLEN: And that's actually
10 covered in 6001.

11 CHAIRMAN ZIEMER: Yes.

12 MR. ALLEN: So it is probably a
13 legitimate finding to discuss, but it probably
14 ought to be in the 6001 document, rather than
15 the 6000.

16 CHAIRMAN ZIEMER: Yes. Okay.

17 DR. MAURO: I wasn't quite sure, in
18 other words, just for example, right here in
19 terms of Appendix BB, where they are only
20 dealing with the recast slices. And so the
21 degree to which it might have applicability
22 here is a subject of interest.

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1 The second item had to do with --
2 the TBD 6000 does a nice job in putting out
3 dose conversion factors. It's a generic
4 here's your millirem per hour, per picocurie,
5 per liter cubed in air, per unit activity on
6 surfaces.

7 One of the look-up tables that is
8 lacking is the external dose from beta, from
9 surfaces that are contaminated. And we
10 present some calculations that show that that
11 is not insignificant. That is, the beta dose
12 from surfaces with residual contamination of
13 uranium might very well have an important
14 contributor to dose over and above that which
15 is from photons. They do present the photon
16 fields per unit activity on surfaces but not
17 the beta.

18 Bob, in fact, did the calculations.
19 And we present, show some numbers. And then
20 they're something that probably needs to be
21 supplemented to the report.

22 The number three has to do with

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1 recycled uranium. Right now in TBD 6000, it's
2 assumed that if it is a facility that is
3 working with uranium and they are machining
4 it, if it's post-1953, there's a very real
5 possibility that it is working with recycled
6 uranium and as a generic assumption that is
7 sort of universal to be applied and that's
8 built into TBD 6000 is that the plutonium-239
9 concentration is 10 parts per billion.

10 Now, we reviewed that. And we
11 walked away with the sense that this seems to
12 be pretty claimant-favorable; that is, from
13 the literature we reviewed. And the only
14 thing is we had some wording concern here.
15 Let me explain what I mean by this.

16 It seems that if the site you are
17 looking at that has very little data where you
18 are going to be drawing upon TBD 6000, the way
19 it is written right now is that you don't
20 automatically assume 10 parts per billion.
21 You only assume 10 parts per billion if they
22 saw a positive indication that it was handling

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1 uranium. I would say it should go the other
2 way.

3 So that is really the item number
4 three. That is, what your default assumption
5 is going to be.

6 MEMBER POSTON: It's been a while
7 since I read this, but you're saying b,
8 billion?

9 DR. MAURO: Parts per billion. Let
10 me explain that.

11 MEMBER POSTON: I just want to --

12 DR. MAURO: I'm sorry. Parts per
13 billion. That's like 10 parts of
14 plutonium-239 per billion parts of uranium.

15 And, now, one thing, though,
16 there's a new item that we didn't talk about
17 before. And this only emerged as a result of
18 our Fernald work that dawned on me when I was
19 preparing this and for this meeting was that I
20 noticed that in Fernald, the default cutoff
21 value is 100 parts per billion.

22 Now, I'm going to --

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1 CHAIRMAN ZIEMER: For recycled?

2 DR. MAURO: For recycled uranium.
3 So, in other words, if you're at Fernald and
4 you're working with uranium, the automatic
5 assumption in this site profile is that
6 everyone, even starting from the '50s, is
7 handling recycled uranium and its at default
8 value. And it's at 100 parts per billion.

9 Here we're saying that everyone --
10 well, here we're saying the use is going to be
11 ten parts per billion. I suspect I know the
12 reason for that.

13 But I figured to build a bridge
14 between that apparent inconsistency, I thought
15 you saw the drop in the hands of Jim and you
16 folks explained why that's okay.

17 DR. NETON: Yes. I think the
18 difference is between the blended product
19 operations that went on at Fernald and the
20 recycled uranium blended into the product
21 stream and the final product itself, which I
22 think is going to be controlled for ten parts

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1 per billion, as opposed to the source term
2 that went into the uranium.

3 CHAIRMAN ZIEMER: That sort of
4 diluted it down.

5 DR. MAURO: So Fernald was dealing
6 with the higher levels that had to blend down.

7 DR. NETON: In fact, there were
8 much higher levels, 100 parts per billion at
9 Fernald, the way they controlled it. At least
10 our contention is that it was 100 parts per
11 billion.

12 DR. MAURO: And I remember one Work
13 Group meeting where we were discussing the
14 subject. It was actually a technical
15 specification on what can be sent out to these
16 AWE facilities. They would not be allowed to
17 accept anything more than ten parts per
18 billion.

19 DR. NETON: Ten parts per billion
20 was dosimetricly driven at one point. That
21 was where the plutonium became, at least in
22 that era, considered to be somewhat of a

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1 dosimetric concern. It started to add to the
2 dose.

3 CHAIRMAN ZIEMER: Okay.

4 DR. MAURO: Remember, the reason we
5 brought this was not where we were challenging
6 the ten.

7 CHAIRMAN ZIEMER: Right.

8 DR. MAURO: I just brought it up
9 now for the reasons --

10 CHAIRMAN ZIEMER: Right. It was
11 just the wording of the default.

12 DR. MAURO: The default.

13 CHAIRMAN ZIEMER: Okay. You got
14 it. Go ahead.

15 DR. MAURO: Okay. Number four has
16 to do -- now we're getting into the heart of
17 the -- in effect, there are a series of
18 default assumptions regarding dust loadings
19 and dust loadings by way of uranium, airborne
20 uranium, and max, you know, what the
21 concentration is.

22 They do a very thorough job in

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1 terms of creating a matrix of different types
2 of job categories, types of activities. So
3 there is an array.

4 And it draws heavily upon a very
5 highly regarded report by Harris and Kingsley.
6 And from the Harris and Kingsley data set,
7 they build a matrix.

8 And it is almost like one from
9 column A, two from column B. Depending on
10 your site and what you know about your site,
11 the user of TBD 6000 will pick the appropriate
12 strata within which to work.

13 Now, what we did is we didn't check
14 every strata. What we did is check the
15 highest strata and say, okay, which are the
16 four upper end? And, in fact, the report --
17 and I commend the report for this -- says if
18 there is any ambiguity at the site where you
19 are trying to do your dose reconstruction
20 regarding what strata to use, it recommends
21 defaulting to the worst case.

22 So we reviewed the worst case. And

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1 we found that an area of a possible
2 improvement on that approach is to not only
3 use Harris and Kingsley but also to take a
4 look at the Adley report. That's the 1949
5 report from the AEC, I guess was the health
6 and safety laboratory at the time, and also
7 Simon Saw.

8 We found that -- we did a lot of
9 review of the literature on uranium for a lot
10 of reasons. And we found that not only was
11 this Harris and Kingsley a very good source
12 document, but there is this other report that
13 we refer to as the Adley report. And there is
14 also the Simon Saw data that is out there,
15 which has abundant additional information.
16 And we looked at that information and found
17 that when you look at that data and you sort
18 of add it into the pot of the Harris and
19 Kingsley, the upper bound goes up.

20 In other words, if you were going
21 to say, listen, I'm looking for the worst
22 case, worst case scenario, it turns out the

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1 worst case scenario doesn't sit in Harris and
2 Kingsley, even at time-weighted average
3 numbers.

4 Harris and Kingsley does
5 time-weighted average. There is time-weighted
6 average information in Adley, for example,
7 that are about two to three times higher.

8 So one of our recommendations is
9 determine for yourself the degree to which you
10 feel the data in Adley might, in fact, enrich
11 the default values for the high-end scenario.
12 That's number four.

13 In a very similar way -- number
14 five is similar. Number four had to do with
15 the airborne dust loading and the default
16 values that are used. Number five we're
17 moving on to okay, what is on surfaces, again,
18 they go to Harris and Kingsley, use the
19 available data, and they come up with -- well,
20 no. It's more complicated than that. They
21 have a model that tries to -- here is how it
22 goes.

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1 You start off with the airborne
2 dust loading that is the upper bound from
3 Harris and Kingsley. You apply to it a
4 deposition velocity that allows this stuff to
5 fall down and settle on the ground.

6 CHAIRMAN ZIEMER: I think you may
7 assume a continuous concentration and --

8 DR. MAURO: Continuous, right. And
9 they allow that to go on for seven days.

10 CHAIRMAN ZIEMER: Right.

11 DR. MAURO: And then at the end of
12 the seven days, they assume that there is a
13 certain amount of housekeeping that holds it
14 at that Becquerel per meter squared forever.
15 And on that basis, you can derive your
16 external exposures, for example.

17 And we calculated what that number
18 is, how many Becquerels per meter squared do
19 you get. And we have notwithstanding -- now,
20 the way they did that, we have a problem with
21 it.

22 In other words, the idea of this

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1 deposition velocity, in fact, they are
2 assuming that whatever that air dust-loading
3 is. I believe they started with the
4 time-weighted average and from that applied a
5 deposition velocity for five-micron uranium
6 particles, which is fairly low deposition
7 velocity. It's .00075 meters per second.

8 We have sort of like a layered set
9 of concerns. One, if you are going to do
10 that, you wouldn't use a time-weighted
11 average, right? Because time-weighted average
12 deals with how much time a person is in the
13 room.

14 You would deal with the average,
15 rather than time-weighted average. It is one
16 thing to use a time-weighted average to
17 estimate your inhalation exposure from the
18 airborne radioactivity. It's a different
19 question that asks, well, how much is on the
20 ground. You wouldn't do time-weighted. So
21 you work with the average.

22 But we have a more important

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1 problem than that. If you go to Simon Saw and
2 you go to the Adley report and you look at the
3 actual levels that are measured there and what
4 are the Becquerels per meter squared, you will
5 find that this approach underestimates the
6 residual activity in surfaces by two orders of
7 magnitude.

8 CHAIRMAN ZIEMER: In terms of the
9 actual ratios?

10 DR. MAURO: Well, in other words --

11 CHAIRMAN ZIEMER: Ratio of
12 air-to-surface contamination?

13 DR. MAURO: No. Just simply the
14 absolute level. In other words, this model
15 basically says we're going to predict what is
16 on surfaces. And then once you know what is
17 on surfaces, based on this deposition velocity
18 model, which will give you some number --

19 CHAIRMAN ZIEMER: Right.

20 DR. MAURO: -- in Becquerels per
21 meter squared, from there we can estimate what
22 the direct radiation exposure rate is. We

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1 could also estimate what the inhalation rate
2 is from resuspension. And we could also
3 estimate what the inadvertent ingestion rate
4 is by various types of hand-to-mouth
5 activities.

6 So this activity that is on
7 surfaces becomes the starting point for a
8 number of scenarios. So we look closely at
9 the default assumption for the upper bound,
10 the upper bound, not all the different cases,
11 but the upper bound. And we say, well, one
12 way to come at this from a completely
13 different approach is let's look at the
14 empirical data, what's really out there where
15 people measured it.

16 Now, a really nice program is run
17 in the Adley report, where they put out
18 settling dishes throughout the plant. This
19 was in the late '50s. And they measured the
20 rate at which this stuff was coming down.

21 And then there is also real-world
22 data at Simon Saw, which is 1949, Becquerels

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1 per meter squared. And we find that the real
2 numbers, the empirical numbers observed are
3 much higher, one to two orders of magnitude
4 higher than the derived values using the
5 deposition velocity approach.

6 So we suggest just taking a look at
7 it the way we looked at it, and make a
8 judgment on it as to whether or not it's
9 appropriate to use for bounding purposes: the
10 empirical value versus the modeling values.

11 CHAIRMAN ZIEMER: Okay.

12 DR. MAURO: Moving on to number
13 six, number six has to do with, once you have
14 the activity on the surface, however you get
15 it, then you have to say, well, what is in the
16 air. And that's a resuspension factor issue.

17 And, you know, we have been
18 knocking heads on resuspension factors for a
19 while.

20 The default value that is being
21 used in TBD 6000 and many, many other venues
22 is 10^{-6} per meter. And NIOSH has an abundant

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1 amount of literature that has been reviewed.
2 And it shows that certainly that is not an
3 unreasonable value when it's a quiescent
4 condition.

5 If you have an area where there are
6 people walking and working indoors, a number
7 on the order of 10^{-5} , maybe even 10^{-4} might be
8 even more important. Maybe a long-term
9 average, a resuspension may be on the order of
10 -- I know the number factor. Bob did a lot of
11 work on that for the Nuclear Regulatory
12 Commission. And you had to come up with a --

13 DR. ANIGSTEIN: No. 10^{-6} was for
14 decommissioned facilities where there is no
15 activity.

16 DR. MAURO: It was cleaned up.

17 DR. ANIGSTEIN: I mean, where there
18 was no -- when I say, activity, I don't mean
19 radioactivity. Where there was no industrial
20 activity.

21 DR. MAURO: No industrial activity.

22 DR. ANIGSTEIN: Yes. I mean, that

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1 was based on cases that were basically
2 warehoused. And they had a number of
3 facilities.

4 It was in NUREG-1420, is it? I'm
5 not sure if we've got the right number. And
6 they came up with the 95th percentile upper
7 bound of close to like 9 times 10⁻⁷. So we
8 can round it up to 10⁻⁶.

9 However, just coming into my work
10 at GSI, where you have people walking, where
11 you have vehicles, trucks coming into the
12 terminal, that would probably be inapplicable.
13 And while we take a time-weighted average, you
14 are interested in the time-weighted average of
15 a person's breathing zone, not of an empty
16 room. And so if that person is working and
17 moving around, he is kicking up dust.

18 DR. MAURO: What type of
19 resuspension factors, do you remember, they
20 were talking about?

21 DR. ANIGSTEIN: You will always be

22 --

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1 DR. MAURO: Do you remember the
2 number they were talking about?

3 DR. ANIGSTEIN: No, no. I am just
4 speaking from the basis of what I know about
5 the facility. It's common sense. But no, I
6 have not read.

7 DR. MAURO: What do you use in the
8 NUREG-1640? I thought it was 5 times 10-5.

9 DR. ANIGSTEIN: It didn't use
10 resuspension factor very much. Honestly --

11 DR. MAURO: Well, the point --

12 CHAIRMAN ZIEMER: I understand the
13 issue.

14 DR. MAURO: The point being that
15 you can get a lot higher than 10-6.

16 CHAIRMAN ZIEMER: Yes.

17 DR. MAURO: And the last one,
18 number seven, has to do with the ingestion
19 pathway. And I think this is an interesting
20 one. NIOSH has come up with a good approach
21 to doing ingestion. And they adopted it in
22 Bethlehem Steel. And we looked at it. And it

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1 seemed like it was a very, in other words,
2 from cradle to grave, the approach used.

3 Once you know the activity on the
4 surfaces, overall the bottom line goes like
5 this. Effectively, the ingestion pathway for
6 residual radioactivity effectively says that a
7 person's going to be ingesting about .5
8 milligrams per day of residue that's on
9 surfaces, .5 milligrams per day.

10 DR. ANIGSTEIN: That's maximum,
11 based on maximum concentrations. I mean,
12 that's the maximum. According to the NIOSH
13 model, that is the maximum that you would get.

14 DR. MAURO: Okay. From the
15 distribution.

16 DR. ANIGSTEIN: No, not from the
17 distribution. There's a whole calculation.
18 And depending on what assumptions are made
19 about -- I forget what they are now, but .5 is
20 the maximum. If you apply it to individual
21 cases, it could be less in some cases.

22 DR. MAURO: Well, I recall the

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1 source --

2 CHAIRMAN ZIEMER: It's the mass of
3 something that you --

4 DR. MAURO: Right. In other words,
5 no matter --

6 CHAIRMAN ZIEMER: Whatever it is.

7 DR. MAURO: If you are in a room
8 and you are just inadvertently ingesting,
9 whatever happens to be -- be it dust or
10 anything or it could be uranium, effectively
11 the amount that is taken in now is assumed to
12 be .5 milligrams per day. All right?

13 Now, in going back to the source
14 documents -- and Jim and I spoke about this on
15 a number of occasions -- it turns out when you
16 look at the source documents, you say one of
17 our original critiques was that the EPA uses
18 50 milligrams per day as their default value,
19 NCRP recommends 100 milligrams per day as a
20 default value -- in some cases, that would be
21 outdoors. We go back to the source documents.

22 And so all of a sudden -- and you

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1 go back even deeper, Calabresi's work. I
2 mean, you go back into the really original
3 guys who took the measurements.

4 Somebody went and took fecal
5 samples, measured the amount of silica, some
6 other residue, and saying how much is in there
7 because whatever is in the fecal sample, with
8 this material -- I'm thinking silicon -- it's
9 because he's eaten some dirt. You know, how
10 much is it?

11 And Jim correctly pointed out that
12 it turns out there is a bimodal distribution.
13 There is a population of people who are
14 exposed to levels which effectively mean they
15 were eating it perhaps on the order of .5
16 milligrams per day.

17 Then you get this other population
18 of people where it is closer to 50 milligrams
19 per day. And it's a judgment call regarding
20 which of those two different population groups
21 you think are the most applicable to the
22 problem at hand.

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1 EPA, of course, and NCRP, they
2 elected for their reasons to go at the
3 high-end values, where they were using the
4 effectively 50 to 100 milligrams per day,
5 NIOSH has elected to go with the .5, you know,
6 the lower-end distribution. And I think at
7 that point, we stop. I will just point that
8 out.

9 Now, I think you are going to find,
10 no matter what, the ingestion scenario
11 probably doesn't become a very important one
12 except that if that's all you've got,
13 especially if you're concerned with GI tract
14 dose, I think.

15 I don't know if you're saying --
16 no, that's not true? Okay. No.

17 DR. ANIGSTEIN: GI tract dose is
18 not very strong. It's counterintuitive, but
19 it passes through the GI tract so quickly.

20 DR. MAURO: Okay. Is that correct?
21 Okay.

22 DR. ANIGSTEIN: Yes according to

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1 the DCAL model, that it doesn't really --

2 DR. MAURO: Okay.

3 DR. ANIGSTEIN: So it is the
4 absorption from the GI tract into the body.
5 So in most cases since, in your opinion, John,
6 usually a factor of two you say is not --

7 DR. MAURO: Yes.

8 DR. ANIGSTEIN: I mean, the most
9 you would get is a factor of two because the
10 ingestion is related to inhalation. And if
11 you take the 50 milligrams a day and then you
12 compare it to maximum air loading -- and I
13 will say the two will go along there -- over
14 about 5 milligrams per cubic meter of the 1.2
15 cubic meters per hour multiplied by 8 hours,
16 you get 48 milligrams through inhalation. And
17 you might get 50 milligrams through ingestion.

18 For most nuclides, the inhalation
19 is the more effective.

20 DR. MAURO: The dose conversion
21 factor.

22 DR. ANIGSTEIN: Yes. The dose

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1 conversion factors are higher. So it --

2 MEMBER POSTON: It depends on the
3 solubility. Are we talking about metal here?

4 DR. MAURO: In the case of uranium,
5 I guess.

6 DR. ANIGSTEIN: Yes. Well, uranium
7 --

8 MEMBER POSTON: The
9 gastrointestinal tract, then, if --

10 DR. ANIGSTEIN: Yes, but the
11 reality is metals, unless you have a noble --
12 silver, gold noble metals don't remain metals.
13 Once they're in a very fine particulate state,
14 they usually become oxides.

15 So, for instance, if you are
16 working with steel and you are creating dust
17 in the air, you don't inhale iron dust. You
18 inhale iron oxide. And I think uranium is
19 more oxidizable than steel so that you would
20 basically be -- even if it's uranium metal you
21 are working with, what you are taking into the
22 body will be uranium oxide.

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1 DR. NETON: I think maybe Dr.
2 Poston's point is those oxides are typically
3 more insoluble forms.

4 MEMBER POSTON: Yes, right. And
5 you look at the model. Ninety-nine percent of
6 the stuff is up in the gastrointestinal tract
7 with only about a 42-hour half -- mean life in
8 the GI tract.

9 DR. MAURO: Well, I think the main
10 point -- this is certainly a -- my main
11 concern is --

12 CHAIRMAN ZIEMER: You're making the
13 issue of the --

14 DR. MAURO: -- the .5 versus the
15 50.

16 CHAIRMAN ZIEMER: Yes, right.

17 DR. MAURO: And that's it.

18 CHAIRMAN ZIEMER: That's it. Okay.

19 DR. MAURO: Now, the degree to
20 which this has applicability to GSI will
21 emerge as we discuss it.

22 CHAIRMAN ZIEMER: Right.

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1 DR. MAURO: I think as a first
2 blush, I think that these are less important
3 as some of the issues involved than some we
4 have been discussing.

5 CHAIRMAN ZIEMER: Right. Now, what
6 I want to ask now is, has NIOSH done any
7 official responses to these findings as far as
8 we know?

9 MR. ALLEN: No.

10 CHAIRMAN ZIEMER: We have not. So
11 until that occurs, I don't think we want to
12 debate the issues here. I wanted to know the
13 nature of them. And if there are some that
14 particularly would cause problems with our
15 evaluation of Appendix BB, then we want to
16 make sure those are handled early.

17 But in the meantime, I think it
18 would be appropriate for us to say, you know,
19 the next step here is for NIOSH to respond to
20 these so that we can -- in each of these
21 you've sort of indicated what the responses
22 might look like. But we don't have those,

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1 really, officially.

2 DR. NETON: I just have a question.
3 What working group is handling this?

4 CHAIRMAN ZIEMER: We have 6000. We
5 now have 6000. So I think one of our jobs as
6 a work group is to make sure that TBD 6000 is
7 closed out, in a sense.

8 DR. NETON: Yes. We will do that.

9 CHAIRMAN ZIEMER: See, what I don't
10 have a feel for -- and this may emerge as we
11 proceed -- is how critical it is to close 6000
12 out, for example, before we close out Appendix
13 BB or can we close out BB without having
14 closed these out or do we have to do both? It
15 would seem to me that we need to at least be
16 proceeding on responses on these. And some of
17 these may be fairly straightforward.

18 DR. MAURO: I mean, I have been
19 giving a lot of thought to that. So I don't
20 want to second-guess moving into GSI, but I
21 think as we move through the GSI, they should
22 not only be the issues related to the white

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1 paper, but I believe to a certain degree, the
2 extent to which you want to start to broach
3 the evaluation report, which we have also
4 reviewed, we've read but haven't critically
5 reviewed, I think it will become immediately
6 apparent which, if any, of these might have
7 play, which may not.

8 CHAIRMAN ZIEMER: Right.

9 DR. MAURO: My sense is very few of
10 them have play, but we will see.

11 DR. NETON: Yes. That's another
12 question I have. We are, I think, set to
13 present the evaluation report for GSI at the
14 next Board meeting.

15 DR. MAURO: Yes. So it's
16 premature.

17 DR. NETON: And so we're here today,
18 I think, just discussing the site profile and
19 the Appendix site profile. But then what
20 would happen if history repeats itself is we
21 will just morph those over into the SEC
22 evaluation report and have to make a

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1 determination of which ones are site profiles
2 versus --

3 CHAIRMAN ZIEMER: My sense of it is
4 that I don't feel at this point that this work
5 group will be in a position to make a
6 particular recommendation on the evaluation
7 report. We will have seen it, reviewed it,
8 but we need to go through a process on it as
9 well as on these other findings.

10 And I think also, from my
11 understanding, the petitioners would like to
12 have that additional time as well. Dan can
13 speak to that now or at some point. But I
14 think we need to be able to address that and
15 make sure that not only the ER is addressed
16 but these findings are as well.

17 MR. KATZ: Let me just make one
18 point from what Jim said just because it's a
19 concern to Dan. It's not absolutely set that
20 we are going to have this presentation of the
21 evaluation report at the December meeting.

22 That will depend in part on how

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1 this meeting goes because Dan has asked that,
2 possibly depending on how this progresses, he
3 may not want us to present the evaluation
4 report at the December meeting.

5 CHAIRMAN ZIEMER: Well, what I am
6 saying is, even if that occurs, I think all
7 that does is sort of puts the report out.
8 It's already out there, but it sort of makes
9 it public as to what the recommendation is.
10 But I don't anticipate this Work Group being
11 prepared by then to make a recommendation.

12 Dan, if you have any comments at
13 this point, please feel free to jump in.

14 DR. McKEEL: Yes, sir. Dr. Ziemer,
15 this is Dan McKeel.

16 Well, I very much appreciate in
17 this instance the need to go through these
18 documents really carefully because I think
19 there are some of those points in the findings
20 on TBD 6000, like the ingestion one, for
21 example, where the Betatron buildings were an
22 extremely dusty environment.

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1 And we have presented photographs
2 showing an inch or so of dust on the floor and
3 trucks moving through these huge castings and
4 so forth.

5 So I think the resuspension factor
6 should be considered at the very highest
7 levels to be truly claimant-favorable. So
8 there are TBD 6000 issues that impact on
9 Appendix BB. And I don't know any other way
10 to do this other than to go through them
11 carefully step by step.

12 And I do think -- I appreciate the
13 fact that my copies have to be PA-cleared.
14 That's fine. But there are just major, major
15 documents that I don't have right now and I
16 need to have.

17 And also I think for sure we need
18 to have all of NIOSH's complete responses.
19 And then I would think we would all be in a
20 position to have the Board vote and live with
21 the decision. That's the way I feel about it.

22 CHAIRMAN ZIEMER: Thank you.

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1 MEMBER MUNN: This is Wanda. May I
2 interject one small thing --?

3 CHAIRMAN ZIEMER: Certainly.

4 MEMBER MUNN: -- in reference to
5 your previous question? I've pulled up the
6 procedures tracking database and taken a look
7 at it. We did advance all 13 of the original
8 BB findings at one juncture or another.

9 The findings were reported on 4/21
10 of this year. Our Work Group meeting on 5/20
11 addressed them. Bob Anigstein presented
12 results at that time. And we had political
13 inquiries also that pushed us to identify
14 those topics as being first on our agenda for
15 the June 6th meeting of our Working Group. We
16 did address them then, discuss them.

17 We had NIOSH responses on June
18 19th. Many of those responses had to do with
19 the fact that the film badge results had been
20 then obtained. And no further work was going
21 to be done until those film results had been
22 evaluated to some extent.

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1 Then on July 21st, the decision was
2 made to request of the Board that they be
3 transferred to a separate working group. And
4 so yes, we do have several comments. And a
5 considerable amount of discussion was devoted
6 to this, in the Procedures Tracking Group
7 during the early part of this year.

8 CHAIRMAN ZIEMER: Thank you, Wanda.
9 I did note earlier that at the May 20th
10 meeting, the Appendix BB findings were
11 discussed. What I didn't know or didn't have
12 was I think you gave us the June 19th date
13 that the NIOSH responses were provided. That
14 was the date I was looking for --

15 MEMBER MUNN: Correct.

16 CHAIRMAN ZIEMER: -- to the Work
17 Group. Do you have any indication, however,
18 that any of the items were closed out?

19 MEMBER MUNN: I do not.

20 CHAIRMAN ZIEMER: I think on May
21 20th, we simply had the issues presented by
22 Bob.

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1 MEMBER MUNN: I think that's true
2 from what I can see.

3 CHAIRMAN ZIEMER: Right. And then
4 on June 19th, we received the others. But
5 that's as far as we got, the NIOSH responses.

6 MEMBER MUNN: Yes.

7 DR. MAURO: And if I recall
8 correctly, it was at about that time where we
9 were in a transition mode where you folks were
10 evaluating the external dosimetry data. And
11 it's bearing on Appendix BB and the
12 responses.

13 CHAIRMAN ZIEMER: Right because --

14 MEMBER MUNN: My record shows on
15 July 21st, a transfer of all 13 TBD BB issues.

16 CHAIRMAN ZIEMER: Right. That was
17 the official hand-off date that I showed as
18 well: July 21st.

19 MEMBER MUNN: Yes.

20 CHAIRMAN ZIEMER: In June, we
21 simply -- see, I show that on June 24th, at
22 that meeting, it was reported NIOSH was still

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1 working on the findings. But your record
2 shows that on June 19th, we already had the
3 responses.

4 MEMBER MUNN: I have, for example,
5 on the first item the response that I have
6 from NIOSH reads, the information was used in
7 the preparation of the Appendix. Though it
8 was, admittedly, not well-documented, the
9 presence of a second Betatron likely would not
10 change the modeled exposure since the worker
11 could be in proximity to only one at a time.
12 But information that has been refined since
13 the earliest discussions might effect the
14 modeled dose.

15 However, NIOSH has obtained film
16 badge results for the Betatron operators and
17 is in the process of comparing this data to
18 the model dose.

19 CHAIRMAN ZIEMER: Right. That's
20 exactly the response that I have in my copy
21 but was not able to determine exactly what
22 date that occurred on. It was either June

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1 19th or 24th or something like that, but --

2 MEMBER MUNN: It's shown on the
3 database as June 19th.

4 CHAIRMAN ZIEMER: June 19th. Okay.
5 Very good. Thank you.

6 MR. ALLEN: That might explain the
7 PA-cleared version of the responses to the
8 Procedures Group working a little differently
9 now off a database. I'm not sure there's
10 actually a document generated to be PA-cleared
11 sometimes off of that.

12 CHAIRMAN ZIEMER: Well, I think
13 they do have documents that they refer to in
14 there. And, Mark, you have been involved in
15 that some, too, but, in any way --

16 MEMBER GRIFFON: I am not sure in
17 this case I was --

18 CHAIRMAN ZIEMER: Yes, yes. Well,
19 but that is helpful. Thank you, Wanda.

20 In any event, we need to get the
21 responses to the TBD 6000 findings. We have
22 the responses to the 13 Appendix BB findings

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1 that have to be evaluated and reviewed by this
2 Work Group now as well.

3 Yes, Bob?

4 DR. ANIGSTEIN: Now, just looking
5 at this matrix, NIOSH response to our issue
6 number 12, which was specifically about the
7 residual surface contamination, and the NIOSH
8 response was, this finding indicates it is a
9 reiteration of a comment from the Battelle TBD
10 6000 review. Therefore, the finding should be
11 addressed in that review, rather than --

12 CHAIRMAN ZIEMER: Well, that points
13 back to the need for the 6000 review. So that
14 is exactly what we are looking for.

15 Okay. I think that sort of takes
16 care of our summary of the 6000 findings.
17 And, again, to reiterate that in order for us
18 to actually act on these, we will need the
19 NIOSH responses. And then we can look at
20 closing them out in the usual fashion.

21 MR. ALLEN: If we're looking for
22 initial response from NIOSH, can we get a

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1 matrix from SC&A on these first? I don't
2 think we have.

3 DR. MAURO: We have not put out a
4 matrix for TBD 6000 with the seven items. We
5 can very readily do that, it's simply the
6 executive summary.

7 DR. NETON: It's nice to work from
8 the --

9 DR. MAURO: Yes. It's a little
10 easier for you to work from.

11 CHAIRMAN ZIEMER: Yes. If you have
12 a matrix for those. John and I, we actually
13 exchanged e-mail on this. I said, John, do
14 you have a matrix for those?

15 And he said, well, there are just
16 six or seven findings. So do we need a
17 matrix?

18 Well, it's a list of the findings
19 and a list of the responses.

20 DR. NETON: For the record, to be
21 consistent --

22 CHAIRMAN ZIEMER: Let's call it a

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1 matrix and put it in the usual form and make
2 sure everybody gets a copy. And I think, I
3 guess, if that's a new document, Liz, it still
4 needs to be cleared, right, even though it's
5 just a reiteration of the seven points that
6 are in the report?

7 MS. HOMOKI-TITUS: Yes.

8 CHAIRMAN ZIEMER: But it shouldn't
9 take long to get that cleared, make sure the
10 petitioners get that.

11 MR. KATZ: Don't we want to get the
12 NIOSH responses in there before we clear it?

13 DR. MAURO: That would be great.

14 MR. KATZ: It's going to be more
15 useful.

16 CHAIRMAN ZIEMER: Well, if NIOSH is
17 ready with that. I mean, the matrix is simply
18 going to be these seven issues put in the
19 matrix format.

20 MS. HOMOKI-TITUS: If NIOSH wants
21 to clear their comments before they send it to
22 us for clearance, that's fine, too.

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1 DR. NETON: Yes. I think Ted's
2 right. I mean, if we get the matrix, we'll
3 just put our responses, insert our responses,
4 and forward it to OGC for clearance. Then we
5 won't have to be doing this the --

6 CHAIRMAN ZIEMER: SC&A will prepare
7 the matrix format and send it on to --

8 DR. MAURO: Okay. Okay. So we
9 won't try to clear that.

10 CHAIRMAN ZIEMER: We know what the
11 issues are.

12 DR. MAURO: Yes.

13 CHAIRMAN ZIEMER: You are just
14 reiterating what was in the review that you
15 produced anyway.

16 Now, the next -- let's see how we
17 are doing here on time. We're good, right?
18 Yes. Is it almost 10:45? Yes.

19 What we are going to do next is I
20 want to go to the TBD 6000 findings, the 13
21 items. I want to give us a head's up on this.
22 We would like to pin down this report, which I

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1 think was distributed to everybody, which
2 needs to be renamed and which Wanda was just
3 reading from and I think Bob was reading from
4 and get that cleared as quickly as we can for
5 the petitioners.

6 I don't know where that is in the
7 system or what is required. Maybe you can
8 help us on that during the break.

9 MS. HOMOKI-TITUS: Is that the one
10 she sent on Sunday?

11 CHAIRMAN ZIEMER: No. This was
12 distributed in June. This is the one that
13 Wanda was referring to that was distributed or
14 provided June 19th and apparently was never
15 sent for clearance. But we need to get that
16 done as soon as we can.

17 DR. MAURO: Again, this is a
18 matrix. And the matrix, unfortunately, we are
19 in this kind of limbo situation where --

20 MS. HOMOKI-TITUS: Yes.

21 DR. MAURO: -- we don't always
22 automatically clear it --

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1 DR. ANIGSTEIN: This one we did
2 before going to NIOSH.

3 DR. MAURO: Before it went to
4 NIOSH. But your visions may not be --

5 DR. MAURO: Just for the record,
6 there was --

7 MS. HOMOKI-TITUS: So that means --

8 CHAIRMAN ZIEMER: The original
9 matrix -- my understanding is clear. I have a
10 cleared copy of the items without NIOSH
11 responses.

12 DR. MAURO: Without. That's it.

13 CHAIRMAN ZIEMER: But the NIOSH
14 responses were not cleared. And to the extent
15 that we can discuss them today or at least get
16 them before us I think would be helpful.

17 This is kind of repeating what the
18 other work group did, but we've got to bring
19 our other new members up to speed anyway.
20 And, Liz, are we able to read verbatim the
21 responses?

22 MS. HOMOKI-TITUS: I don't know. I

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1 haven't seen them, sorry.

2 CHAIRMAN ZIEMER: Okay. So I guess
3 we perhaps can't.

4 MS. HOMOKI-TITUS: Well, I mean, I
5 trust we've got good judgment. If there's a
6 NIOSH claim number in there, don't read it
7 out. If there's personal information about
8 one particular person or some group less than
9 nine, don't read it out.

10 CHAIRMAN ZIEMER: I think the only
11 point at which names come up, they talk about
12 material furnished by a particular person,
13 which is one of the reference literature
14 sources.

15 MS. HOMOKI-TITUS: Is it a
16 literature source or was it --

17 CHAIRMAN ZIEMER: Yes.

18 MS. HOMOKI-TITUS: -- an interview
19 that was done by --

20 DR. ANIGSTEIN: No. It was
21 published literature sources.

22 MS. HOMOKI-TITUS: Well, that's

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1 fine.

2 CHAIRMAN ZIEMER: Okay.

3 DR. ANIGSTEIN: The one name is a
4 NIOSH contractor who --

5 MS. HOMOKI-TITUS: Fine.

6 DR. ANIGSTEIN: -- wrote a report
7 for NIOSH, and was paid for it.

8 CHAIRMAN ZIEMER: So as long as we
9 aren't calling out names or any interviewed
10 persons, --

11 MS. HOMOKI-TITUS: Right.

12 CHAIRMAN ZIEMER: -- we may be all
13 right in at least --

14 MS. HOMOKI-TITUS: If it's a
15 government employee or contractor, you can use
16 their name. If it's a published source, you
17 can use the name.

18 CHAIRMAN ZIEMER: Right. Okay.

19 MEMBER BEACH: Do you want a copy
20 of that?

21 MS. HOMOKI-TITUS: Yes. If you
22 have a copy, I can -- it doesn't look that

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1 long. I certainly can look at it right now.

2 CHAIRMAN ZIEMER: Yes. It actually
3 is only like six or seven pages long, seven
4 pages long. And all I'm asking is, as soon as
5 we can get something cleared, I would like to
6 get it out to petitioners.

7 I don't know if it's even possible
8 today to do that, but I will simply point out,
9 Dan, I think to the extent we're able to,
10 we're at least going to verbally indicate what
11 the findings are or the responses from NIOSH
12 are.

13 DR. McKEEL: That would be fine,
14 Paul. I would like to ask for the record.
15 What I don't understand is it sounds to me
16 like certain things are cleared, certain
17 things are not cleared.

18 Perhaps it would be useful for
19 everybody to know why the process didn't go
20 forward on a report that was discussed on June
21 19th.

22 MS. HOMOKI-TITUS: The process did

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1 go forward. This is a matrix. They're not
2 regularly cleared. So, therefore, it would
3 have to be a special request.

4 So it's not that the process
5 failed. There was just no request.

6 DR. McKEEL: Well, I would like to
7 say that --

8 CHAIRMAN ZIEMER: Perhaps there
9 should have --

10 DR. McKEEL: -- I had no idea that
11 that was even a proper request to make, but I
12 certainly want to make that request this
13 morning.

14 MS. HOMOKI-TITUS: No. It's a
15 request that would come from NIOSH. It
16 wouldn't come from an individual Mr. McKeel.

17 CHAIRMAN ZIEMER: Well, in any
18 event, Dan, we want to correct that and make
19 sure you get a copy.

20 DR. McKEEL: Thank you.

21 CHAIRMAN ZIEMER: So we'll move
22 ahead on that as rapidly as we can.

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1 DR. McKEEL: Okay.

2 MEMBER MUNN: Well, again, this is
3 Wanda. I would like to point out that
4 although the electronic document that we have
5 been working with in procedures is not that
6 easily available, there is no problem at all
7 with respect to the transcript of those
8 meetings. All of those meetings are
9 transcribed, as each of our work groups is.

10 And those, although they are not
11 immediately available, I understand,
12 nevertheless, they do become available. And
13 any discussion that was had on any item in any
14 of the work groups is available in the
15 transcript.

16 CHAIRMAN ZIEMER: Although
17 sometimes there is a delay there, too, as
18 well.

19 MEMBER MUNN: That's true.

20 CHAIRMAN ZIEMER: But, in any
21 event, we will proceed on that basis. We are
22 going to take a 15-minute break at this point.

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1 And then when we return, we'll pick up with
2 Appendix BB findings and, to the extent
3 possible, the NIOSH responses.

4 So I guess we'll just --

5 MR. KATZ: Just put the phone on
6 mute.

7 CHAIRMAN ZIEMER: The phone will go
8 on mute here. And we'll plan to resume at
9 11:00 o'clock. Thank you.

10 (Whereupon, the above-entitled
11 matter went off the record at 10:46 a.m. and
12 resumed at 11:02 a.m.)

13 MR. KATZ: This is TBD 6000/6001
14 Work Group. And we're coming back online.
15 And, Dr. McKeel, I think Paul has e-mailed you
16 this June document, the matrix with the
17 responses from NIOSH. I don't know if you
18 have received it yet.

19 CHAIRMAN ZIEMER: I just now sent
20 it, Dan. We got it cleared during the break.

21 DR. McKEEL: Dr. Ziemer and Ted
22 Katz. This is Dan McKeel. It must have just

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1 come through because I just left the machine.

2 CHAIRMAN ZIEMER: Right.

3 DR. McKEEL: But during the break,
4 I did check on Wanda Munn's suggestion that
5 the contents of the Work Group discussion on
6 procedures would be in the transcripts posted
7 on OCAS.

8 And during the break, I checked and
9 found that neither transcript from the May
10 20th meeting of this year nor the June 24th
11 meeting of this year of the Procedures Work
12 Group has yet been posted on OCAS.

13 So I understand they will be coming
14 along sometime, but, you know, that's not
15 really a realistic possibility for me right
16 now.

17 CHAIRMAN ZIEMER: No. But check
18 again on your e-mail, Dan.

19 DR. McKEEL: I will.

20 CHAIRMAN ZIEMER: I just hit the
21 SEND button just as we came back online.

22 DR. McKEEL: Thank you very much.

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1 CHAIRMAN ZIEMER: So see if it's
2 there yet.

3 DR. McKEEL: Yes, sir. Thank you.

4 CHAIRMAN ZIEMER: Okay. So let's
5 go to that document, which actually was
6 distributed to the Board members on June 19th,
7 I guess it was. Yes.

8 What I would like to do is go
9 through each of the issues. Again, this is
10 not to resolve them at this point but to
11 identify the issue, identify NIOSH's response.

12 And I would point out that many of
13 the responses refer to the film badges. A
14 vast majority of them do, but not all of them
15 do. And at least we can have an initial
16 discussion on some of these as well.

17 If we think that there is some
18 obvious rapid closure, we can actually do
19 that. But my main purpose here is to identify
20 the issues, the SC&A issues, and look at the
21 NIOSH initial responses.

22 MEMBER GRIFFON: Paul, you said

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1 this came up June 19th?

2 CHAIRMAN ZIEMER: Yes. I found
3 that here's what it's called, Appendix BB
4 Draft. There's something. It looks like
5 draft.

6 MEMBER GRIFFON: Issues Matrix?

7 CHAIRMAN ZIEMER: Issues Matrix,
8 June 19th, '08. It was apparently distributed
9 by e-mail.

10 MEMBER GRIFFON: Yes.

11 CHAIRMAN ZIEMER: Well, I simply
12 saved the document into my General Steel file.
13 So that's where it is. I don't actually have
14 the actual e-mail here. So the e-mail could
15 have been a few days later, I suppose.

16 MR. ALLEN: I think that was
17 actually sent by Stu, and I'm not sure when it
18 was sent. He was the point of contact for the
19 percentage group.

20 CHAIRMAN ZIEMER: Right, right.

21 MR. ALLEN: I'm not even sure. I
22 guess he wasn't sent an e-mail.

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1 DR. NETON: What time frame do you
2 think that was?

3 MR. ALLEN: June 19th, give or
4 take.

5 CHAIRMAN ZIEMER: The actual
6 document has the June 19th date on the title
7 that was distributed by e-mail, the document
8 title.

9 MEMBER GRIFFON: I think I've got
10 it, yes. June 20th from Stu I see an e-mail
11 that looks like --

12 CHAIRMAN ZIEMER: Now, if you would
13 like, I will put it on my memory stick here
14 and you guys can transfer it onto --

15 DR. NETON: I think I probably have
16 it.

17 MEMBER GRIFFON: I think you've got
18 it.

19 CHAIRMAN ZIEMER: Okay. Let me
20 know if you want me to put it on the memory
21 stick.

22 DR. NETON: Yes. I have got it

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1 right here.

2 CHAIRMAN ZIEMER: Other members?
3 Well, Bob you have a copy. John, you have a
4 copy. Josie has her copy. John, do you have
5 a copy of that?

6 MEMBER POSTON: I do. My
7 recollection is I got it just recently.

8 CHAIRMAN ZIEMER: I know I sent you
9 several things.

10 MEMBER POSTON: Yes.

11 CHAIRMAN ZIEMER: It might have
12 been one of them.

13 MEMBER GRIFFON: June 20th from Stu
14 I saw it circulated. There are two documents
15 he has. It was for the Procedures Work Group,
16 I think.

17 DR. NETON: Our GSI findings matrix.

18 CHAIRMAN ZIEMER: Did you find
19 yours, Jim? And, Mark, you have a copy now?
20 Okay. Very good. That will help if we all
21 have copies.

22 Okay. Issue 1 is entitled

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1 Completeness of Data Sources, The SC&A
2 Findings, the authors of Appendix BB have not
3 utilized some key information on the GSI
4 Granite City site. For example, they failed
5 to note the presence of two Betatrons housed
6 in two different buildings, as indicated in
7 the reports by Murray and Uziel, 1992, and
8 Murray and Brown, 1994, and as was brought out
9 at the General Steel Industries worker
10 outreach meeting on August 21st, 2006. Other
11 examples of incomplete utilization of
12 available data are presented in the context of
13 other findings discussed below.

14 Okay. That is the item. I am just
15 going to insert here parenthetically for our
16 court reporter -- would you like to have a
17 copy of this at some point as well for that
18 because I am just reading verbatim. We will
19 get you a copy. Okay. Maybe we can Xerox one
20 during the break.

21 MR. KATZ: I'll give him mine.

22 CHAIRMAN ZIEMER: Yes. Okay.

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1 NIOSH response, the information was used in
2 the preparation of the Appendix , though it
3 was, admittedly, not well-documented.

4 The presence of a second Betatron
5 likely would not change the model with
6 exposure (since a worker could be in proximity
7 to only one at a time). But information that
8 has been refined since the earliest
9 discussions might affect the model dose.

10 However, NIOSH has obtained film
11 badge results for the Betatron operators and
12 is in the process of comparing this data to
13 the model doses. It should read these data,
14 but I will --

15 (Laughter.)

16 CHAIRMAN ZIEMER: Okay. So I think
17 on each of these, we can have kind of a
18 preliminary discussion. John or Bob, do you
19 want to make a comment and Jim or Dave to
20 comment?

21 DR. ANIGSTEIN: Well, I think that
22 this is -- I don't see any further -- I don't

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1 really have much of a further comment because
2 if it's going to be addressed, you know, they
3 said that they would be addressing it.

4 I should just say as a preface, the
5 findings perhaps somewhat I'm sure could have
6 been broken down. I think typically SC&A
7 separates findings and observations. And I
8 just rolled them together as issues. So this
9 is more of an observation how Appendix BB
10 could be improved.

11 CHAIRMAN ZIEMER: Yes.

12 DR. ANIGSTEIN: It doesn't
13 necessarily change the results.

14 CHAIRMAN ZIEMER: Okay. Dave, any
15 preliminary or additional comment on this one?
16 Obviously one of the questions will be at some
17 point, does the film badge data really answer
18 this?

19 If you end up modeling it in some
20 way -- and you might have to for some workers
21 still, as I understand it.

22 MR. ALLEN: Yes, might have to for

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1 some workers. So, if I remember, even Dr.
2 Anigstein mentioned in their report that the
3 buildings were quite a distance away, that the
4 effects from one do not affect both at the
5 other building.

6 DR. ANIGSTEIN: That is correct.
7 Actually, however, we never saw -- this may be
8 jumping ahead. We never saw the model that
9 was used for the previous Attila calculations.
10 And the two buildings were quite different in
11 that one, the old building was better shielded
12 than the new building. The new building had
13 an area where there was no shield wall.

14 And so we don't know which one was
15 actually used in the NIOSH filler runs. So
16 that was built into the --

17 CHAIRMAN ZIEMER: Well, I suppose
18 at some point and perhaps after the film badge
19 data is evaluated, we may have to come back
20 and say, are you going to have to model some
21 of the workers? And if so, is this an issue?

22 I think it was established that the

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1 outputs were different for the two.

2 MR. ALLEN: I think that is still

3 --

4 CHAIRMAN ZIEMER: Is that still in

5 --

6 MR. ALLEN: Yes.

7 DR. ANIGSTEIN: They were
8 definitely different.

9 DR. McKEEL: Dr. Ziemer, this is
10 Dan McKeel. May I make a comment, please?

11 CHAIRMAN ZIEMER: You certainly
12 may, Dan.

13 DR. McKEEL: On this finding number
14 one, just to add to the record, I understand
15 why SC&A may want to cite things they are
16 familiar with, but I do want to mention that,
17 as early as 2005, when John Ramspott and I
18 both started making public comments at Board
19 meetings about GSI, we pointed out many times
20 prior to the October meeting that is
21 referenced in finding one, that there were
22 multiple radiation source terms at GSI.

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1 We carefully delineated the fact
2 that there were two Betatrons in two different
3 buildings, that there were two cobalt-60 gamma
4 sources and iridium-192 gamma source and a 250
5 kVp portable X-ray source, all of which were
6 used in the nondestructive testing
7 applications.

8 So, you know, I think that's just
9 important to realize here that completeness of
10 data sources, the second Betatron should have
11 been mentioned in Appendix BB based on just
12 what we said.

13 That's my comment. Thank you.

14 CHAIRMAN ZIEMER: Okay. Thanks.

15 My recollection is that one of the
16 Betatrons operated at a slightly different
17 energy, --

18 DR. ANIGSTEIN: Yes.

19 CHAIRMAN ZIEMER: -- 25 or 24.

20 DR. ANIGSTEIN: Right.

21 CHAIRMAN ZIEMER: That is probably
22 not a significant issue.

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1 The output -- and I guess we don't
2 know the milli amperage, John, but the output,
3 the specified outputs, were different, both
4 compensated and uncompensated means. Is that
5 correct?

6 MR. ALLEN: I think that is where
7 we might have some --

8 CHAIRMAN ZIEMER: Well, okay. And
9 we may have to return to that, but that was
10 certainly one of the issues. I think that
11 NIOSH was saying that they felt they had a
12 bounding value that would cover both of them
13 versus if you had to reconstruct for a
14 particular individual that --

15 MR. ALLEN: At the time the
16 Appendix was written, yes, we thought we had
17 a bounding value that covered both. And since
18 then we got some more information where we
19 might --

20 CHAIRMAN ZIEMER: The bounding
21 value could change if you wanted to use the
22 worst case for one or the other and apply that

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1 as a --

2 MR. ALLEN: Right. And I think
3 we've got enough information to say that you
4 don't need one bounding value for both. You
5 can have two different values that for the
6 time frame when they are both in operation, we
7 would use a bounding value and then for a time
8 frame when only one was in operation --

9 CHAIRMAN ZIEMER: You would use one
10 or the other. Okay. Any questions, Board
11 members, on this?

12 (No response.)

13 CHAIRMAN ZIEMER: Shall we proceed
14 or do you want to delve into this in any more
15 detail right now? What I want to do is get
16 the total picture before us.

17 DR. ANIGSTEIN: I would suggest
18 that we can discuss this. This is part of the
19 discussion of the white paper.

20 CHAIRMAN ZIEMER: Right, right.
21 That's what it is called, yes. Okay. The
22 next issue, Period of Covered Employment, SC&A

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1 Finding: Appendix BB states that the covered
2 activities took place in 1953 to 1966.

3 It is plausible and
4 claimant-favorable to assume that this work
5 began in 1952. We base this assumption on
6 Atomic Energy Commission correspondence
7 reference form, with a hand-corrected date of
8 December 5th, 1952 that has a summary titled
9 Regarding Ingots of Uranium Metal Furnished to
10 General Steel Castings Company for Betatron
11 Testing.

12 Since the Army installed the first
13 Betatron in Granite City in January 1952, an
14 event that was reported in the local
15 newspaper, it seems likely that Mallinckrodt
16 would have taken advantage of this facility at
17 an early date.

18 NIOSH response, NIOSH uses the
19 official covered period established by the
20 Department of Labor and does not have the
21 authority to amend that covered period.

22 It is our understanding that this

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1 information was available at the time the
2 period was established for GSI. However, we
3 will forward the information to the DOL for
4 their consideration.

5 I will add just as a personal
6 comment I think in general, the practice of
7 NIOSH has been where they discover information
8 like this that might change the period is to
9 ask DOL to look into it. But NIOSH
10 unilaterally is not in the position to make
11 that change.

12 Dave, do you have any other
13 comments on that or do we know whether that
14 has been looked at by DOL?

15 MR. ALLEN: The only other comment
16 is that it does appear that that is the
17 document that they used to make it 1953. So
18 we will forward that with the assertion from
19 the report that it looks like a hand-corrected
20 1952.

21 I mean, it's their call whatever
22 they decide to do with it. I did print out

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1 that page if you're interested. It's not as
2 clear-cut that it's a hand-corrected or a
3 stray mark or what the heck it is in my
4 opinion on that, but --

5 MEMBER BEACH: Has DOL received
6 this information yet? Has it been forwarded?

7 MR. ALLEN: Well, it came from
8 them, but we're going to forward it to them.
9 We have not forwarded to them --

10 MEMBER BEACH: Okay. You have not
11 yet?

12 MR. ALLEN: -- the objection that
13 it's potentially a hand-corrected date and it
14 should be '52. If you wanted to see that at
15 the top there?

16 It would be nice if they had
17 corrected it with a nice clear tube. Somebody
18 slashed a line across the bottom.

19 CHAIRMAN ZIEMER: Well, of course,
20 it's a little easier to think that could occur
21 in January of some year.

22 MR. ALLEN: Yes, that's the other

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1 thing, correcting it December.

2 CHAIRMAN ZIEMER: If you haven't
3 figured out what year it is by December, I
4 don't know unless they're anticipating a new
5 year, although it's possible that could have
6 happened.

7 I don't know. Dan or John, do we
8 have any other evidence that is --

9 DR. ANIGSTEIN: No. That's the
10 only piece of evidence, actually, that there
11 was any uranium work done prior to 1958, I
12 think, when we have copies of the -- no.
13 There are two indications. We have copies of
14 purchase requisitions, a continuous record
15 from about '58 on through '66.

16 Then there is one memo going back
17 and forth between what was then General Steel
18 Castings and Mallinckrodt saying we did some
19 work that was not covered by a purchase order,
20 Could you please pay us?

21 And then there is a response
22 saying, yes. Go ahead and pay them. That's

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1 reasonable. And that was done --

2 MR. ALLEN: February of '58.

3 DR. ANIGSTEIN: Yes, right.

4 MR. ALLEN: And then the purchase
5 orders actually went into place March of '58,
6 --

7 DR. ANIGSTEIN: Right.

8 MR. ALLEN: -- which almost looks
9 like this was a task that will work, we'll put
10 a purchase order in place. But then you have
11 this, which clearly says they did a test or
12 something, in '53 or '52.

13 DR. ANIGSTEIN: Right, right.

14 MR. ALLEN: So something happened
15 before the purchase orders.

16 DR. McKEEL: This is Dan McKeel. I
17 have one more comment.

18 There is one other bit of
19 documentation possibly of the start date of
20 the old Betatron operations. And that is that
21 John Ramspott guided me, and we both went and
22 examined the minutes of the General Steel

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1 Industries board, which is over at the
2 Missouri Historical Society on Lindell
3 Boulevard.

4 And in there they clearly describe
5 that there was a contract from the government
6 to build the old Betatron building in 1951.
7 And then there was a little dispute that went
8 on where the government wanted GSI to actually
9 purchase that building, but GSI, their board,
10 decided not to do that.

11 So the machine itself was in place
12 and ready to go in 1952. And this paper
13 indicates possibly that Mallinckrodt actually
14 had contracted to do the work in 1952.

15 But those historical documents from
16 the board meetings are available.

17 MR. RAMSPOTT: Dr. Ziemer, this is
18 John Ramspott. If I may?

19 CHAIRMAN ZIEMER: Yes, John? Go
20 ahead.

21 MR. RAMSPOTT: There is clear,
22 clear evidence of Mallinckrodt sending uranium

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1 to General Steel that was actually made
2 available during the Mallinckrodt SEC petition
3 meetings. And that document is actually
4 included in my critique to the original
5 Appendix BB. And I will be able to get you
6 that exact document.

7 The reason most of the purchase
8 orders start at 1958 is because that is when
9 the uranium work began at Weldon Spring. No
10 one apparently looked back for the purchase
11 orders, for all the work that was taking place
12 at Mallinckrodt Destrehan.

13 There is a whole window from at
14 least 1953, which is, again, documented in the
15 Mallinckrodt verbiage that was used in the SEC
16 petition. That work started, it actually
17 mentions sending uranium to General Steel in
18 this Mallinckrodt AEC document.

19 I think the reason or, actually, I
20 would imagine and would bet money on the fact
21 that no one looked for purchase orders prior
22 to '58. If you go back to '53, Mallinckrodt,

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1 if someone were to pull those purchase orders,
2 I am sure they are there.

3 CHAIRMAN ZIEMER: Thank you, John.
4 There are on the website, on the GSI website,
5 some comments. I don't think they're
6 identified by individual on Appendix BB that
7 have similar statements in them I think there
8 were comments by two individuals --

9 DR. McKEEL: Dr. Ziemer, those
10 critiques on the OCAS Web site were by John
11 Ramspott and myself.

12 MR. RAMSPOTT: That's correct.

13 DR. McKEEL: And we specifically
14 vigorously protested having our names removed
15 from those documents and redacted. And I at
16 least offered, I think John did, too, but I
17 know that I offered to sign a waiver so that
18 my name could be used and those critiques be
19 attributed.

20 But, in any case, I was assured
21 several times that Board members had the
22 unredacted copies of those critiques. And our

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1 names were all over those critiques.

2 CHAIRMAN ZIEMER: Yes.

3 DR. McKEEL: Make no mistake that
4 the --

5 CHAIRMAN ZIEMER: I believe we have
6 those copies. I was simply pointing out that
7 --

8 DR. McKEEL: Right.

9 CHAIRMAN ZIEMER: -- the
10 information that John just identified, that
11 information, is on the website as well.

12 DR. McKEEL: Right. Yes, sir, I
13 think it is.

14 CHAIRMAN ZIEMER: And, actually,
15 there is also a response from NIOSH to both
16 your comments.

17 DR. McKEEL: Correct.

18 CHAIRMAN ZIEMER: I don't recall
19 off the top of my head what they said about
20 searching for the Destrehan site purchase
21 orders. Well, in any event --

22 DR. McKEEL: I don't remember them

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1 ever mentioning that they did search for
2 those, but this would be a great time this
3 morning to ask the NIOSH people on the line
4 did they look for those purchase orders.

5 MR. ALLEN: We have --

6 CHAIRMAN ZIEMER: This is Dave
7 Allen responding here.

8 MR. ALLEN: Yes. Under the
9 Mallinckrodt, all the reviews that were done
10 with that, we searched for lots of documents,
11 you know, two years, three years ago, whenever
12 that was.

13 But that is my recollection. There
14 was no good file of purchase orders that we
15 uncovered as far as any kind of systematic way
16 of searching through that. We dug through the
17 information we had collected. And we didn't
18 see anything in particular on that.

19 CHAIRMAN ZIEMER: It's sort of
20 inconclusive in the sense that there weren't
21 any found, but you can't rule out that they
22 might have been there.

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1 MR. ALLEN: There was tons of data
2 on Mallinckrodt. We collected some of it. I
3 think there's tons more out there somewhere.
4 But to sort through all that for these is
5 almost an insurmountable task.

6 CHAIRMAN ZIEMER: Okay, but --

7 MR. RAMSPOTT: Dr. Ziemer, John
8 Ramspott again. If I may?

9 CHAIRMAN ZIEMER: Yes, John?

10 MR. RAMSPOTT: The importance of
11 those purchase orders is going to really be
12 crucial because if there definitely was
13 uranium in '53 through '58, which everybody
14 seems to agree. The amount would definitely
15 be important for any badging information.

16 Badging, trying to use badges is an
17 example from '64 to '66, when there was very
18 little uranium going to General Steel, as
19 pointed out in Appendix BB, really makes a
20 difference when it comes to badge readings.

21 So knowing exactly how much uranium
22 was going to General Steel from '53 to '58

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1 would be very important. Then from '58 to '64
2 would also be very important. Trying to use
3 any badge information from '64 forward makes
4 assumptions prior time is totally and
5 scientifically inaccurate.

6 We are missing all of the uranium
7 that was over there except, as pointed out in
8 Appendix BB, only \$500 worth of work done.
9 Well, prior to that, it was as high as \$7,200
10 worth of work done. That's a big difference
11 in uranium exposure by itself. That's if
12 you're hitting it with a Betatron causing
13 fission, if I'm understanding correctly.

14 But thank you.

15 CHAIRMAN ZIEMER: Okay. Thanks.

16 Again, on this particular one, I
17 simply observe that there would have to be
18 evidence uncovered that would cause the
19 Department of Labor to change the designation.
20 And we'll have to keep that in the back of our
21 mind as we proceed that this still could be an
22 issue.

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1 Let's move on to the other items
2 here. Issue 3 titled Underestimate of
3 Betatron Beam Intensity. The SC&A finding,
4 the authors assume a Betatron beam intensity
5 of 100 hour per minute without the aluminum
6 beam-flattening compensator and a distance of
7 3 feet from the target.

8 They cite an interview with
9 Schuetz, S-c-h-u-e-t-z, as the source of
10 information that the Betatron beam had a
11 design maximum output of 100 r per minute.

12 This value is inconsistent with the
13 material furnished by Schuetz (2007), which
14 lists outputs of up to 282 r per minute. It
15 is also inconsistent with the Allis-Chalmers
16 acceptance criteria for the Betatron tubes,
17 which required a minimum output of 220 r per
18 minute at 25 MeV. We find that assigning an
19 uncompensated intensity of 250 r per minute at
20 3 feet is reasonable and claimant-favorable.

21 And the NIOSH response says, to be
22 clear, Mr. Schuetz indicated, quote, tubes

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1 manufactured in the early 1950s produced
2 outputs between 125 and 150 r per minute, the
3 1960s between 200 and 275 r per minute, and by
4 the late 1970s between 300 and 375 r per
5 minute at 25 MeV. It says MV. It's the same
6 thing, really.

7 These levels were only obtainable
8 in my laboratory machine with varying percent
9 reductions depending on individual field
10 locations and whether in-house personnel or my
11 trained service engineers installed the tubes.
12 End of quote.

13 Mr. Schuetz then went on to list
14 the last seven tubes purchased by GSI in a
15 table. The shipping dates range from
16 12/29/1969 to 5/31/1973. The output at 25 MV
17 ranged from 260 to 282.

18 At the 8/11/2006 worker outreach
19 meeting, operators recalled values from 100 r
20 per minute from the old Betatron and 250 r per
21 minute from the new Betatron.

22 Based on worker accounts, NIOSH

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1 concluded that the old Betatron, which dated
2 from the early 1950s, could only develop 100 r
3 per minute in use at GSI while the new
4 Betatron could develop 250 r per minute.

5 This information along with other
6 refined information and possible issues with
7 uranium activation could affect the model
8 dose, but NIOSH has obtained film badge
9 results for the Betatron operators and is in
10 the process of comparing this data to the
11 modeled doses.

12 However, as indicated in the SC&A
13 review, NIOSH has obtained film badge results
14 for beta operators. We are in the process of
15 comparing this data to the modeled estimates
16 provided by both the Appendix and SC&A.

17 Now, again, this although it
18 discusses those different outputs, it goes
19 back to an indication that the film badge
20 results may help to resolve the issue.

21 Dave, any additional comments on
22 this at the moment?

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1 MR. ALLEN: No. Like Dr. Anigstein
2 said, some of that information is included in
3 that white paper. I don't know if you want to
4 discuss that stuff now or --

5 CHAIRMAN ZIEMER: No, no. We'll
6 come to that, but I just wanted to see if you
7 had anything to add right now. And we sort of
8 talked about the outputs in the previous one
9 as well.

10 Work Group members, any questions
11 or comments on this particular issue?

12 DR. McKEEL: Dr. Ziemer, may I make
13 a comment?

14 CHAIRMAN ZIEMER: Yes, you may.
15 Dan McKeel.

16 DR. McKEEL: I just want to comment
17 that John Ramspott and I also interviewed Jack
18 Schuetz when we visited the West Allis
19 operating 24 MeV Betatron, actually before the
20 interview with and the contract with NIOSH by
21 Mr. Schuetz.

22 And one of the things that was

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1 revealed in that situation was that
2 Allis-Chalmers as a routine procedure surveyed
3 facilities in which they had placed one of
4 their Betatrons.

5 All of those facilities were
6 surveyed. And, of course, we were very
7 interested because if those reports and
8 particularly the one at General Steel or the
9 ones at Eddystone, Pennsylvania, where the
10 second new Betatron came from in '63 to GSI,
11 then we might have some real data on
12 Betatron-generated fluxes of both gamma and
13 electrons and maybe even neutrons at real
14 Betatron facilities.

15 And, unfortunately, Mr. Schuetz
16 said that when he left Allis-Chalmers and
17 started his own company in 1990, that he made
18 a corporate decision not to maintain those
19 records. And all of them were destroyed.

20 And I remember we spent five
21 minutes exploring whether any of those things
22 could have survived. And the answer was not

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1 at his place, but a copy of those was provided
2 to all of the installations. And so there was
3 a possibility that they might have survived.

4 We never were able to retrieve the
5 one for General Steel, but I found that very
6 interesting. So, anyway, that's my comment.

7 CHAIRMAN ZIEMER: Okay. Thank you.

8 MR. RAMSPOTT: Dr. Ziemer?

9 CHAIRMAN ZIEMER: Yes?

10 MR. RAMSPOTT: John Ramspott.

11 CHAIRMAN ZIEMER: Yes, John?

12 MR. RAMSPOTT: While we are talking
13 about the output of the machine, I would like
14 to point out something and believe Dr.
15 Anigstein did talk with Mr. Schuetz as well.

16 Betatron is a set power, 24-25
17 million volts. The fact that can change the
18 output that is stated in this white paper,
19 actually, and in Dr. Anigstein's report, the
20 SC&A report, is the tubes make a difference,
21 apparently. They are actually explained from
22 1950. There is one power. Nineteen sixty,

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1 there is another power.

2 Betatron itself, machine, the
3 device, I would compare it and liken it -- and
4 this is something experts can verify -- to a
5 light fixture.

6 If I screw in a 50-watt light bulb,
7 then a week later change the 50-watt light
8 bulb to a 100-watt light bulb, which is what
9 they essentially did at the Betatron sites,
10 they changed those tubes regularly, the
11 output, the amount of light from a 50-watt
12 light bulb would be different and when I
13 screwed in a 100-watt light bulb.

14 So the machine itself, 24 or 25
15 MeV, when you put in a different tube, you get
16 a totally different result. So trying to
17 compare the tube that was in a 1951-installed
18 machine to the tube that was installed in a
19 1964 or '65, whatever, I think there would be
20 a difference.

21 But, you know, Dr. Anigstein had
22 that conversation with Mr. Schuetz about the

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1 difference of the tubes. And the difference
2 in the tubes I think was confirmed through
3 some patents through the company that made the
4 tubes. That would be a pretty big factor.

5 Now, the other thing about output.
6 you've got to remember you're putting out 100
7 roentgen or you're putting out 262 roentgens,
8 the only thing that changes, if I'm
9 understanding correctly, or not the only thing
10 but one of the things that changes, is the
11 amount of time you have to do the shot for.

12 If you're going through 20 inches
13 of steel, it is going to take longer with 100
14 roentgen Betatron than it does with a 262
15 roentgen Betatron. Well, really, what that
16 equates to unless I'm wrong is more exposures.
17 The longer the machine is running, the more
18 radiation that is created.

19 So, actually, 100 roentgens in my
20 estimation would be more dangerous because it
21 means more exposure. It also, if I am
22 understanding correctly, I have been told that

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1 neutrons are created only when the machine is
2 running. The longer the machine runs, the
3 more neutrons you get unless I'm missing the
4 point.

5 So I would just like to add that,
6 if I may.

7 CHAIRMAN ZIEMER: Okay. Thank you,
8 John.

9 Comments? Bob?

10 DR. ANIGSTEIN: Yes. I would like
11 to make a couple of comments of a didactic
12 measure, as a former physics professor. John,
13 I would say that your analogy is good up to a
14 point.

15 I wouldn't liken the Betatron -- I
16 agree with you about the Betatron tube -- I
17 wouldn't like the Betatron machine to the
18 light fixture. I would go a little further
19 and say you have your own home generator, and
20 you use that to power your light bulbs.

21 Well, the output of the generator
22 also will affect the amount of light coming

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1 out of the light bulb. If the volt of the
2 generator changes, the output of the light
3 bulb changes.

4 What happened, my understanding
5 with the old Betatron is it was originally --
6 when it was first installed, it was a 22 MeV
7 machine because that is what Allis-Chalmers
8 was making at the time. And sometime later,
9 perhaps at the time that the new Betatron was
10 called the new Betatron -- actually, it is an
11 older manufacturer -- was brought in from
12 Eddystone, that one was refurbished and
13 brought up to 25 MeV. And somewhere -- and I
14 am not sure of the time frame -- the old,
15 quote unquote, Betatron was brought up from 22
16 to 24 MeV. So it was a little lower voltage.

17 So the same tube will produce a
18 different output depending on which machine it
19 is, just the same way if you changed the
20 voltage from the light bulb, it will change
21 the light output.

22 In terms of the exposure, no,

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1 because it's longer duration. But the reason
2 it is a longer duration is because you have to
3 give the same dose to the film.

4 You typically go from one to two,
5 from one to four rads, which is similar to a
6 roentgen, to the film to get a good exposure.
7 So you don't increase exposure by running
8 longer and the same way with the neutron
9 generation.

10 The neutron generation would depend
11 on the tube current, so if you have a the
12 lower current, you have fewer neutrons per
13 minute but more -- a longer running time.

14 MR. RAMSPOTT: Doctor, I totally
15 agree, the running time actually adds to
16 radiation as well as a power. Pointing out
17 the power, that extra million is a very good
18 point. I stand in agreement on that one.
19 That is a very valid point.

20 CHAIRMAN ZIEMER: Well, actually,
21 we don't know the current. You might raise
22 the power, but if the current is lowered, your

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1 wattage would go down, actually.

2 DR. ANIGSTEIN: Yes. We don't
3 know. And maybe I'll just jump ahead to my
4 response to the white paper. We don't know
5 the current involvement. And, therefore, we
6 just made, we SC&A made, the conservative
7 timetable assumption.

8 Let's assume that the tube current,
9 the micro amps, in both were the same. Then
10 you will get a somewhat lower X-ray production
11 because X-ray production, at least in lower
12 energies, machines, is proportional to the
13 square of the voltage.

14 So if you go from 25 down to 24
15 MeV, you get maybe ten percent less output
16 just on that basis. The other factors in the
17 machine are as the machine gets old, what
18 happens is the insulation -- the magnet is
19 composed of many thin layers of iron.

20 And there is insulation, not
21 electrical insulation but magnet insulation
22 between them to prevent eddy currents, which

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1 would go to act to lower the field.

2 As this insulation breaks down, you
3 start getting current in the magnet, which
4 counteracts the field and you get a reduction
5 of the magnetic field, which is why the
6 machine deteriorates. But then how often was
7 it refurbished, how often was it maintained,
8 you know, that is unknown.

9 MR. RAMSPOTT: Actually, Doctor,
10 this is John Ramspott again. There are in the
11 operations manual that we retrieved from the
12 West Allis site. They, actually, in the back
13 of that manual show that the insulation
14 waivers, was what they called them --

15 DR. ANIGSTEIN: Yes.

16 MR. RAMSPOTT: -- were replaced
17 during normal preventive maintenance. So it
18 would maintain power. It is kind of like
19 preventive maintenance on a car or a copier or
20 whatever. They replace certain things in
21 order to keep the power.

22 So it might lose it during a

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1 three-month cycle, but then it would be
2 rejuvenated again. And those records are in
3 the back of that instruction manual on the
4 West Allis site, which would be typical, I
5 would think, of the GSI and the other sites.

6 Actually, Mr. Schuetz was the head
7 of that preventive maintenance department, as
8 he explained to us. I am familiar with that
9 because I likened him to my service managers
10 in my old job.

11 And he said he definitely -- that
12 was his whole department's function, was to
13 keep -- they had to guarantee a certain output
14 in their maintenance contract.

15 Thank you.

16 CHAIRMAN ZIEMER: John Poston?

17 MEMBER POSTON: This was an
18 interesting discussion, but it seems to me
19 that it is all moot as to what the output of
20 the machine was because what we ought to be
21 relying on is the dosimetry data, which we
22 have and we haven't finished analyzing. So it

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1 doesn't make any difference what the output of
2 the machine was. We have the data, and we
3 ought to be analyzing that.

4 DR. ANIGSTEIN: But it goes back.
5 There was a period of time from, let's say,
6 forgetting the '52-'53 issue, from 1952 until
7 through 1963, where only the old Betatron was
8 operating and there was no dosimetry data.

9 CHAIRMAN ZIEMER: So there may be a
10 question of whether they have a model --

11 MEMBER POSTON: There may be a
12 question, but at this point it seems to be we
13 need to wait.

14 CHAIRMAN ZIEMER: To see how they
15 are prepared.

16 MEMBER POSTON: It's nice,
17 interesting physics. And I remember it from
18 graduate school myself, you know.

19 CHAIRMAN ZIEMER: But they may end
20 up having to model some of this. We will have
21 to wait and see.

22 MR. RAMSPOTT: Dr. Ziemer, this is

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1 John Ramspott again.

2 CHAIRMAN ZIEMER: Yes, John?

3 MR. RAMSPOTT: Dr. Poston, I agree
4 with you 100 percent, but there's one little
5 catch. The dosimetry data, it's only good if
6 it's accurate.

7 And there are some other factors
8 that enter into the dosimetry data that were
9 totally overlooked in the white paper. And
10 one of those I made public on the 24th in my
11 public comment along with an actual worker,
12 Mr. Terry Dutko. It's really critical.

13 If you only wear the badges part of
14 the time, you only get part of an accumulated
15 dose if you're in a radiologically
16 contaminated area, which is definitely the
17 case because some areas have been identified
18 actually by the Appendix BB and by the SC&A
19 report, example being 10 building at GSI,
20 which was connected right to the new Betatron,
21 which is the more powerful of the Betatrons as
22 data only if it's accurate. Uranium is

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1 missing. People are wearing badges part-time.

2 You know, I don't want to jump
3 ahead to the white --

4 CHAIRMAN ZIEMER: Yes. We'll
5 discuss that in more detail, John.

6 MR. RAMSPOTT: That would be great.
7 Thank you.

8 CHAIRMAN ZIEMER: Yes. Thanks for
9 noting that, however.

10 Let's see. Let's go on, then, to
11 issue 4, which is called Underestimate of
12 Stray Radiation from Betatron, SC&A Finding:
13 Appendix BB underestimates the stray
14 radiation during the operation of the
15 Betatrons. Our calculations show higher dose
16 rates in the control rooms than the .72
17 millirem per hour cited in the Appendix .

18 We calculated effective dose rates
19 of 208 millirem per hour on the roof, which
20 was occasionally occupied by maintenance
21 workers, 22 millirem per hour in a restroom
22 and up to 51 millirem per hour in other areas

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1 accessible to workers while the Betatron was
2 in operation.

3 The Appendix ignores neutrons
4 generated in Betatron target, which make a
5 minor but potentially significant contribution
6 to the effective doses.

7 MEMBER POSTON: John, one thing I
8 noticed in this finding, you don't tell us
9 what you calculated. You just said it was
10 higher, but you didn't tell us how much
11 higher. We have no order of magnitude. Was
12 it .73 or .75 or what was it?

13 DR. ANIGSTEIN: I'm sorry. It's in
14 the --

15 CHAIRMAN ZIEMER: It's in the
16 report.

17 DR. ANIGSTEIN: It's in the report.

18 MEMBER POSTON: But if you
19 calculated it, shouldn't it be in the finding?
20 I mean, you gave us the other data. Why
21 didn't you give us that data?

22 DR. ANIGSTEIN: I completely agree.

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1 CHAIRMAN ZIEMER: Yes. And we can
2 get those numbers. Let me give the NIOSH
3 response. And then we will discuss it
4 further. As indicated in the SC&A review,
5 NIOSH has obtained film badge results for
6 Betatron operators. We are in the process of
7 comparing this data to the modeled estimate
8 provided by both the Appendix and SC&A. The
9 data includes an area dosimeter from the
10 Betatron control room.

11 Yes. And, Bob, do you know what
12 those values were off the top of your head?

13 DR. ANIGSTEIN: In the control
14 room?

15 CHAIRMAN ZIEMER: The neutron
16 values that John was asking about.

17 MEMBER POSTON: No, not the neutron
18 values, just the calculated values that they
19 --

20 CHAIRMAN ZIEMER: Oh, the
21 calculated values?

22 MR. ALLEN: From the --

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1 MEMBER POSTON: I'm trying to get
2 an order of magnitude, John. That's all I'm
3 asking. What is the order of magnitude?

4 DR. ANIGSTEIN: In the control
5 room, we have doses, total doses, photon and
6 neutron, of 2.6 mr per hour, millirem per
7 hour, --

8 MEMBER POSTON: Thank you.

9 DR. ANIGSTEIN: -- both of .72.

10 DR. NETON: But we do have badges
11 that were in the Betatron control room.

12 CHAIRMAN ZIEMER: So this is
13 another one that we'll --

14 DR. MAURO: Yes. I think the
15 essence of the point is that the .72 is
16 juxtaposed to the 2.6. But then we have these
17 other locations.

18 I don't know if you folks
19 explicitly addressed in your original Appendix
20 BB where the dose rates could have been
21 substantially higher in uncontrolled areas, I
22 presume, but we are going to get into all of

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1 that.

2 DR. NETON: I think some of that is
3 covered in the white paper.

4 DR. MAURO: Occupancy factors
5 certainly apply.

6 CHAIRMAN ZIEMER: You know, there
7 was the issue that the people on the roof were
8 changing the klystron tubes or something that
9 required the --

10 DR. ANIGSTEIN: Servicing the
11 ventilators.

12 CHAIRMAN ZIEMER: Oh, okay. I
13 thought they were doing something that
14 required the Betatron to be shut down so that
15 they didn't get electrical shocks. That was
16 something on the roof.

17 DR. ANIGSTEIN: Maybe there was
18 something else, but at the outreach meeting,
19 the meeting that we sponsored, the site
20 experts meetings, one worker testified that he
21 would go up on the roof to service the plant.

22 CHAIRMAN ZIEMER: Oh, yes.

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1 DR. ANIGSTEIN: And I asked him if
2 he would communicate with the Betatron
3 operator to shut it off when he is up there.
4 And he said he did not.

5 CHAIRMAN ZIEMER: Right.

6 DR. ANIGSTEIN: But he accessed the
7 roof from outside the building. The Betatron
8 operator didn't even know he was there.

9 CHAIRMAN ZIEMER: I think we also
10 had times on that, John, in the number of
11 times per year that were done so you could
12 bound that dose.

13 MR. ALLEN: Twenty minutes
14 semiannually.

15 CHAIRMAN ZIEMER: Right. You could
16 bound that dose based on even on these numbers
17 if we accepted these.

18 Okay. Any other comments on this
19 issue at the moment? Okay. Let's go ahead
20 and get the next one on the board. Issue 5,
21 Failure to Assess Other Radiography Sources,
22 The SC&A Finding: The authors acknowledge the

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1 use of other radiography sources, notably 60-
2 cobalt, but dismiss the doses from these
3 sources, as shown in our analysis, an 80-curie
4 cobalt-60 source produced a dose rate of up to
5 960 millirem per hour on the roof of the new
6 Betatron building and rates of 12 to 16
7 millirem per hour in other locations outside
8 the building.

9 Furthermore, stray radiation from a
10 250 millicurie cobalt-60 source that was used
11 in a lightly shielded structure could have
12 produced dose rates in accessible areas of 9
13 to 17 millirem per hour. These rates are one
14 to three orders of magnitude higher than the
15 stray radiation cited in the Appendix .

16 Then the NIOSH response, as
17 indicated in the SC&A review, NIOSH has
18 obtained film badge results for Betatron
19 operators. We are in the process of comparing
20 this data to the modeled estimates provided by
21 both the Appendix and SC&A. The data
22 includes operators that indicated they used

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1 the sources.

2 MR. RAMSPOTT: Dr. Ziemer, John
3 Ramspott. If I may?

4 CHAIRMAN ZIEMER: Yes, John? Go
5 ahead.

6 MR. RAMSPOTT: The 250-millicurie
7 cobalt source used in building 6 would have
8 been done totally separate and independent
9 from anything going on in the Betatron
10 building.

11 And we do have some old-timers, I'm
12 going to call them, from GSI that were there
13 in the earlier days, one of them being a
14 supervisor of the Betatron, a Mr. Burgess, and
15 another cobalt-certified person, Jim Powers.

16 And they both confirm that that
17 small source according to Mr. Burgess was used
18 as far back as into the '40s to examine
19 railway car parts, namely trucks, which are
20 the wheels, for a New York Transit Authority
21 contract. And he knows 100 percent for sure
22 when he came to work in '53, it was definitely

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1 being used then down in 6 building.

2 And all this tends to really
3 reemphasize the importance of missing badge
4 data from '53 to '64. And that was my point I
5 was trying to make a little earlier as data is
6 only good if it is accurate and everything is
7 factored into it.

8 And not having it for that
9 operation, which definitely was not running at
10 the same time, you definitely can use cobalt
11 at GSI and a Betatron at the same time. If it
12 is done in different locations. That is the
13 point that is really missed. I just wanted to
14 add that.

15 CHAIRMAN ZIEMER: Yes. Thanks,
16 John.

17 MR. RAMSPOTT: Yes.

18 CHAIRMAN ZIEMER: John, was it also
19 your concern, then, that, particularly at the
20 earlier times, that there could have been
21 radiographers using only the isotopic sources
22 who weren't monitored, versus individuals who

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1 used isotopic sources plus Betatron?

2 MR. RAMSPOTT: Absolutely. That is
3 the other inaccuracy of the badge data, is we
4 have photographs, which we have provided with
5 names. I'm going to use one example: Mr. Jim
6 Powers.

7 Mr. Powers, his main job was
8 working in the chem. lab. We spoke with Mr.
9 Powers. And he is available. He is actually
10 signing a document as far as to confirm this.

11 Mr. Powers if you look at that
12 photograph of the chem. lab, which everybody
13 refers to because they're also the
14 isotope-certified guys, he didn't wear a badge
15 in the chem. lab.

16 He did wear a badge while he was
17 working with isotopes. And then he worked
18 part-time in the Betatron on Saturdays for
19 overtime pay.

20 So how do you know what his badge
21 data is? It's part-time, on/off? You know,
22 we're looking at accumulated doses, I think is

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1 the term that is used, accumulated doses for a
2 guy that had it on one day versus a guy that
3 had it on seven days.

4 There is going to be a real
5 difference trying to use his badge to
6 extrapolate anything, it just seems to me like
7 it would be totally inaccurate because all of
8 the information is not there.

9 CHAIRMAN ZIEMER: Okay.

10 MR. RAMSPOTT: Thank you.

11 CHAIRMAN ZIEMER: Thanks.

12 MEMBER MUNN: A point of
13 clarification with respect to the information
14 that we were just given.

15 CHAIRMAN ZIEMER: This is Wanda
16 Munn. Go ahead, Wanda.

17 MEMBER MUNN: Yes. Are we working
18 on the assumption that any exposure to any of
19 the sources was all related to the covered
20 contract here or am I hearing something that
21 is telling me that there were likely exposures
22 to those low-level sources which were

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1 affiliated with work the company is doing not
2 connected to the contract?

3 DR. McKEEL: Wanda, this is Dan
4 McKeel.

5 MEMBER MUNN: Yes, Dan?

6 DR. McKEEL: It is true that the
7 small gamma source, for instance, in building
8 6 was used on railroad trucks not used on
9 Mallinckrodt uranium.

10 We really don't have any positive
11 evidence that the large cobalt-60 source was
12 used on Mallinckrodt uranium either. However,
13 the two points that are highly relevant are
14 both the old Betatron building and the new
15 Betatron building had ports through the
16 control room wall for the control cable that
17 was used to draw -- to retract the top of the
18 pig that carried the cobalt-60 source pill
19 inside.

20 MEMBER MUNN: I remember that.

21 DR. McKEEL: Yes. And so the men
22 also described a few occasions where, for

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1 example, Mr. Dutko was instructed to shut down
2 and lock out the Betatron while the large
3 source was used inside the Betatron building.

4 The other relevant thing I think
5 that there still is confusion about is that in
6 making dose reconstruction for the contract
7 period of 1953 to 1966 with the AEC and with
8 Mallinckrodt for the uranium, all source terms
9 must be included.

10 And so the beta term operators did
11 work outside the Betatron building as well.
12 And, in fact, for those uses, they all
13 described that their badges were placed on
14 little clip racks on the wall when they went
15 to work, for example, in building 10.

16 And so all the sources have to be
17 included. And that's why we keep commenting
18 on the fact that in the white paper and in
19 Appendix BB, the gamma sources, which were
20 iridium as well as the cobalt-60, and the
21 smaller portable 250 kVp unit that was used in
22 different buildings in the plant, that those

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1 also have to be included because the SEC
2 proposed class, for instance, involved all the
3 workers at the plant.

4 And, as far as I understand it,
5 NIOSH and ORAU use uniform dose assumptions
6 for all workers at GSI: Betatron, isotope,
7 chem. lab, and other workers in their dose
8 constructions, a number of which have been
9 done by now. So that is all very important
10 supportive reasoning why you have to consider
11 all of the sources.

12 MEMBER MUNN: Thank you, Dan. I
13 was just trying to establish clearly in my own
14 mind that the sources that were being used
15 were not solely used for contract purposes.

16 DR. McKEEL: That's absolutely
17 true. Correct.

18 MEMBER MUNN: Thank you.

19 MR. RAMSPOTT: John Ramspott again.
20 If I may?

21 CHAIRMAN ZIEMER: Yes, John?

22 MR. RAMSPOTT: Wanda, the document

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1 that I found by accident, actually, -- and
2 maybe it is just my oversight -- is
3 OCAS-IG-003.

4 MEMBER MUNN: Yes.

5 MR. RAMSPOTT: And that document,
6 and I really applaud NIOSH. November 7th or
7 November 5th, I think, 2007 is when it's
8 issued. That is the first document we have
9 ever seen that thoroughly starts to describe
10 radiography as having to or I think the term
11 is "All radiation sources must be used in dose
12 reconstruction." Those are the words, --

13 MEMBER MUNN: Yes.

14 MR. RAMSPOTT: -- the words. And
15 with that 13-year window we have, you really
16 have a good point. Those 13 years where all
17 sources must be used. And that, of course, is
18 either the big cobalt, little cobalt, X-ray
19 machines. You hit it right on the head.
20 Thank you.

21 MEMBER MUNN: Thank you.

22 CHAIRMAN ZIEMER: And this is

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1 generally true of all facilities where there
2 may have been other non-contract work going on
3 coincidentally, but if the workers are exposed
4 to both, you take the totals. And we have
5 done that at other sites as well.

6 I guess the only exclusion to that
7 would be if one could very specifically and
8 clearly identify workers who were completely
9 unassociated with one of the contracts and
10 only got exposed to those sources. But in
11 general, that is going to be difficult to do,
12 I would think.

13 DR. NETON: No. It would be
14 included unless the facility designation
15 excluded those workers.

16 CHAIRMAN ZIEMER: No. You would
17 have to be able to show clearly that they had
18 no association.

19 DR. NETON: It would have to be
20 defined --

21 CHAIRMAN ZIEMER: Defined in the
22 definition of the facility.

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1 MEMBER POSTON: I have a couple of
2 questions here.

3 CHAIRMAN ZIEMER: Yes, John?

4 MEMBER POSTON: This could be a one
5 -- a "Yes" or "No" question. Have you guys
6 modeled the 80-curie source?

7 MR. ALLEN: We didn't, SC&A did, at
8 any point, we didn't in ours.

9 MEMBER POSTON: Okay. So you
10 haven't done it.

11 DR. NETON: But I think the brief
12 answer to this, and Dave, correct me if I am
13 wrong, is that we believe that the assigning
14 exposure to a Betatron worker would be
15 bounding to those people who were working with
16 the other sources.

17 MEMBER POSTON: Well, I was going
18 to ask just doing it in my head, John, 80
19 curies would be about, well, less than 130 r
20 per hour at one meter from the source. And
21 the dose on the roof is two or three times
22 what was in one of the other findings. And

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1 these buildings are that much different?

2 Well, then why? That doesn't make
3 sense. I mean, if you've got a machine that
4 is putting out 250 r per minute versus 140 r
5 per hour, how can you get a higher dose on the
6 roof for the situation for the cobalt source
7 than you can for the beta source?

8 DR. ANIGSTEIN: Can I answer?
9 Since we did the model? I use the cobalt
10 source based on the description from one of
11 the operators who had actually handled that
12 source was you have a -- for me, the
13 description I wasn't quite sure.

14 But let's say, for example, a
15 pressure vessel for a nuclear reactor. And it
16 would be open on one end. The cobalt source
17 is placed in the middle. And then it's lined
18 or, rather, the opposite sequence, of course,
19 is lined with X-ray film and then place a
20 cobalt source in the middle. It is open on
21 top. The source is visible from the roof.

22 The Betatron rarely, if ever, will

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1 be shot straight up at the roof. So that's
2 the answer.

3 MEMBER POSTON: Okay. I still --

4 DR. ANIGSTEIN: So you're getting
5 straight radiate. The 208 millirem per hour
6 from the Betatron operation is the Betatron is
7 higher in this model, this simulation, is
8 fired horizontally at a heavy steel casting,
9 so the tubular casting.

10 And then you find the dose
11 immediately above the point where the center
12 of the beam hits the steel. So it's all due
13 to scattered radiation and a little penumbra
14 effect from the Betatron because it's not all
15 straightforward. But it's mostly --

16 MEMBER POSTON: My concern is you
17 are talking about one. For cobalt, you are
18 talking about r per hour. For --

19 DR. ANIGSTEIN: No, no, no. If I'm
20 talking about millirem per minute in both
21 cases -- I'm sorry -- millirem per hour in
22 both cases, the cobalt, as Dave pointed out,

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1 is isotropic.

2 MEMBER POSTON: But you have 4 pi
3 r² effects associated with that -- you know,
4 let me say it again. And then we'll leave it,
5 and you can chew on it. The gamma factor for
6 cobalt-60 is 1.33 r per hour for curie in a
7 meter.

8 DR. ANIGSTEIN: In a meter.

9 MEMBER POSTON: So you multiply
10 that by 80. You get somewhere around 120 or
11 less r per hour at a meter from the source.
12 Okay? And so that is per hour; whereas, the
13 output of the Betatron is per minute. Okay?
14 So that is a factor of 60 right there.

15 So I am saying the dose on top of
16 the roof, even though it is isotropic, is
17 higher for the cobalt source than it is for
18 the Betatron. And I recognize that what you
19 are doing, you are dealing with the scatter.

20 DR. ANIGSTEIN: Betatron.

21 MEMBER POSTON: I understand. I am
22 just saying it looks a little screwy to me.

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1 CHAIRMAN ZIEMER: Well, the
2 standard component is probably a thousandth of
3 the main --

4 MEMBER POSTON: Yes, sure.

5 CHAIRMAN ZIEMER: -- or something
6 like that.

7 DR. ANIGSTEIN: As I said, we did
8 an MCNP run for the cobalt source. And MCNP,
9 I mean, that is a very simple calculation.

10 CHAIRMAN ZIEMER: Straight inverse
11 squared?

12 MEMBER POSTON: I understand. I am
13 quite familiar with MCNP.

14 DR. ANIGSTEIN: Well, we didn't,
15 actually. I mean, we actually take and count
16 the scatter and put it inside the container.
17 And, you know, no. I mean, that was reviewed,
18 and I believe that is correct.

19 MEMBER POSTON: What's the height
20 of the building?

21 DR. ANIGSTEIN: About 35 feet above
22 the level. Well, that is not -- the roof is

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1 about 35 feet, positioned the worker at about
2 38 feet. It's in the report. I can check it
3 out.

4 But then the source and the casting
5 are elevated from the floor. I mean, the
6 Betatron and the casting are several feet
7 above the floor. The casting is generally --
8 we have a photograph, actually, of it, and
9 that's how we did it.

10 So the casting will be a few feet
11 up off the floor. So the actual distance is
12 less than 35 feet. Maybe it's 30 feet. The
13 idea of those numbers have come to my head.

14 MEMBER POSTON: I'm just trying to
15 get an order of magnitude to understand the
16 problem.

17 MR. RAMSPOTT: Dr. Ziemer, this is
18 John Ramspott. If I may again?

19 CHAIRMAN ZIEMER: Yes, John?

20 MR. RAMSPOTT: Dr. Poston, you
21 raise a really good issue. The issue is
22 cobalt sources in 6 building have been

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1 ignored. It has not been modeled except by
2 SC&A.

3 NIOSH does not account for them in
4 all these other areas that we're talking about
5 other than the Betatron building itself unless
6 you are an isotope-certified person in 6
7 building and that little block building, or
8 unbadged.

9 Again, we keep coming back to the
10 badging. There will be no badge information
11 for many of the workers other than the isotope
12 worker in 6 building. That's used. That's
13 the missing data.

14 MEMBER POSTON: I understand, but I
15 thought I had heard the NIOSH folks say that
16 they accepted the SC&A estimate and didn't
17 model when I asked. Is that what you said?

18 MR. ALLEN: We accept the criticism
19 and it should be modeled --

20 MEMBER POSTON: Oh, accept the
21 criticism. Okay.

22 MR. ALLEN: -- and likely end up

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1 accepting their model. We'll look at it a
2 little closer.

3 DR. MAURO: Do I hear an action
4 item here for us to write a note explaining
5 the apparent inconsistency between the
6 radiation field on the roof when you look at
7 the cobalt-61?

8 MEMBER POSTON: Well, it depends on
9 what you're talking about. That's why I asked
10 what the height of the building is because he
11 mentioned pressure vessels. And now we're
12 talking about something that is huge. It
13 probably would be --

14 CHAIRMAN ZIEMER: I think at some
15 point we'll have to be mapping perhaps when
16 NIOSH looks at whether they model it to see
17 how it agrees.

18 MEMBER POSTON: That was why I
19 asked the question first. I wanted to know
20 who --

21 CHAIRMAN ZIEMER: Part of it is
22 they're in the primary beam on the cobalt at

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1 some distance. They're in a scattered beam
2 from the other at a somewhat similar distance.
3 But, you know --

4 MEMBER POSTON: Yes. If it was
5 human tissue, the scatter factor would be
6 1,000. But this is steel. And the scatter
7 factor is probably smaller than that.

8 CHAIRMAN ZIEMER: It could be.

9 MR. RAMSPOTT: If I may? This is
10 John Ramspott again. We're talking about the
11 roof of the Betatron buildings now for some of
12 these equations. We can't miss a little
13 block, one layer thick, brick or block wall in
14 6 building, where cobalt was used. It was a
15 smaller source that was used. There is no
16 roof on it. The wall is about eight feet high
17 according to the workers.

18 That whole part has been missed
19 except to Dr. Anigstein.

20 MEMBER POSTON: There's no roof,
21 period?

22 MR. RAMSPOTT: None.

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1 MR. ALLEN: It's inside the other
2 building.

3 MR. RAMSPOTT: Six building. There
4 were grain operators going over the top of
5 that building because that is how they would
6 lift the railroad car, part they called the
7 truck, into the building. And that is also
8 the reason the wall could only be eight feet
9 high because you have a roof that is X high.
10 You have to be able to lift these railroad
11 parts over and into that little block
12 building.

13 And we have workers that say -- I
14 mean, we're not talking about any 35-foot
15 distance. We've got guys working on -- and
16 this is a heavily occupied finishing area. We
17 have guys working immediately on the other
18 side of those concrete part of the -- those
19 block walls, which are only about at the most
20 a foot thick.

21 We have diagrams of that wall that
22 were done based on the workers' testimony that

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1 were done by an engineering consulting firm
2 which will show that -- I have shared with
3 SC&A and NIOSH, Dr. Poston. There is no roof
4 on that building at all.

5 CHAIRMAN ZIEMER: Thank you, John.

6 MR. RAMSPOTT: Yes, sir.

7 DR. McKEEL: This is Dan McKeel. I
8 just want to underscore that, underscore also
9 that there is additional testimony that in
10 building 6, there may have been several
11 hundred workers at a time working around that
12 concrete building.

13 So without quantifying things,
14 which none of us have done, there is a cobalt
15 source operating in an open space, no roof, in
16 concrete blocks that would not completely
17 attenuate the beam and the gamma protons that
18 were going through there and that unbadged,
19 unmonitored workers, which also included from
20 time to time Betatron workers, isotope
21 workers, people who had been badged in the
22 Betatron facility and when working with

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1 isotopes but were not badged when they went
2 into building 10, 9, 8, and 6 because they
3 were worried that the badges might get hit by
4 some of the flying hot particles -- and so
5 they took those badges off.

6 Anyway, there were people who were
7 not badged who were exposed to gamma radiation
8 there. And there were people working in
9 building 10, which was right adjacent to the
10 new Betatron larger unit with a higher output.
11 And they were also not badged. And they were
12 exposed to radiation that came through that
13 ribbon door, which offered minimal attenuation
14 of the beam.

15 So there were really a large number
16 of GSI workers who were never monitored that
17 were exposed to those kinds of radiation.
18 Thank you.

19 CHAIRMAN ZIEMER: Bob, you did
20 model a lot of that, I think, because you had
21 the flow plans and so on, right?

22 DR. ANIGSTEIN: Yes. I'm sorry.

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1 For a moment I wasn't paying attention. I was
2 looking at --

3 CHAIRMAN ZIEMER: Well, he was
4 talking about modeling the cobalt work. And
5 it's basically the transmitted beam through
6 the concrete. And that's actually fairly easy
7 to model that if you know the source --

8 DR. ANIGSTEIN: Yes. We very --

9 CHAIRMAN ZIEMER: -- and the
10 thicknesses of the wall and the geometric
11 position.

12 DR. ANIGSTEIN: Of course. Yes.
13 Well, we just use the heavy machine, our heavy
14 machine, meaning MCNP, --

15 CHAIRMAN ZIEMER: Yes.

16 DR. ANIGSTEIN: -- for all of it.
17 Yes, we model the doses at one meter. It's a
18 rectangular building. So we model it one
19 meter from the long wall, one meter from the
20 short wall. And that's why in the findings I
21 think I just said 9 to 17 millirem per hour.

22 CHAIRMAN ZIEMER: Right.

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1 DR. ANIGSTEIN: That was very
2 definitely.

3 CHAIRMAN ZIEMER: John, you --

4 DR. ANIGSTEIN: We did not model
5 the crane operator above the building.

6 CHAIRMAN ZIEMER: But that could be
7 modeled as well.

8 DR. ANIGSTEIN: Of course.

9 CHAIRMAN ZIEMER: Yes.

10 DR. ANIGSTEIN: And basically it's
11 a matter of distance because that hollow
12 cinder block wall does not afford much
13 shielding.

14 CHAIRMAN ZIEMER: No. John,
15 additional comment?

16 MR. RAMSPOTT: Yes. Doctor, if I
17 could? Dr. Anigstein and if somebody could
18 answer from NIOSH? You guys use different
19 computer software, I believe, MCNP-X and MCNP
20 and then I guess Attila? That was different
21 software that was used? Is that all
22 pre-proven and tested and --

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1 DR. ANIGSTEIN: Yes. The MCNP,
2 basically it's a political division within Los
3 Alamos. You had the MCNP code. And then it
4 diverged into two different groups doing
5 further development on it.

6 So you have the MCNP-5, which is a
7 code that is a little easier to run. It's a
8 simpler code. It's not as demanding on the
9 computer on the -- you don't need as much
10 horsepower on the computer to run it.

11 The MCNP-X has additional. For
12 instance, only the MCNP-X could do the delayed
13 radiation from the irradiated steel. But for
14 the simple thing like a cobalt source, either
15 code will give identical answers.

16 MR. RAMSPOTT: Either one of those
17 programs would be accurate. Do you agree with
18 that, Mr. Allen?

19 MR. ALLEN: Yes. Yes, I do.

20 MR. RAMSPOTT: So it's a good,
21 reliable program, both of them?

22 MR. ALLEN: Yes, I believe so.

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1 DR. ANIGSTEIN: It's been very --

2 MR. RAMSPOTT: I guess my question
3 is if those programs are completely reliable
4 and used?

5 DR. ANIGSTEIN: Yes. They have
6 been used for the last 30, MCNP codes have
7 been used, initially developed for nuclear
8 weapons design. They have been used for about
9 30-40 years.

10 They have been extensively
11 benchmarked, which means they will do a
12 simulation of a problem. And then they will
13 take the actual measurement of that exact same
14 geometry. And they come in within a very
15 small percent, you know, two, three percent.

16 MR. RAMSPOTT: And I guess NIOSH
17 agrees that they are that accurate. So then
18 my question is, how can the badges not show
19 any radiation when the best computer models
20 do? I guess that would be my question.

21 And my thought is perhaps the
22 badges aren't gathering all of the doses and

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1 exposures like they were supposed to because
2 they weren't worn regularly in sites that were
3 radiologically dangerous. If you have
4 computer programs that are tested and used at
5 probably every site in the United States and
6 then you have a badge that says, "Nothing,"
7 something doesn't match.

8 CHAIRMAN ZIEMER: Well, there are
9 any number of explanations for that. For
10 example, we take the computer models. And
11 then we make some assumptions about the amount
12 of time that people are there.

13 Usually we assign them in a
14 high-exposure spot, for example, for eight
15 hours a day. In reality, we know that doesn't
16 happen. So in one sense, the badges are more
17 realistic.

18 Now, we have to take that within
19 the framework of what the badges' detection
20 limits are and any other limits on the badges.
21 But keep in mind the bounding calculated
22 values are often much higher than real values.

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1 And we see that in many locations. That may
2 not be the only explanation, but that is one
3 kind of issue we have to keep in mind.

4 The other issue, you're quite
5 right, the workers don't wear their badges all
6 the time. That also comes into play. And so
7 --

8 MR. RAMSPOTT: That's part of my
9 quality --

10 CHAIRMAN ZIEMER: And we're aware
11 of that. And for a given worker, one has to
12 -- you know, for a given claim, you would have
13 to look at the situation and see.

14 MR. DUTKO: Dr. Ziemer?

15 CHAIRMAN ZIEMER: Yes?

16 MR. DUTKO: Can I speak, sir?

17 CHAIRMAN ZIEMER: Yes.

18 MR. KATZ: Can you identify
19 yourself, please?

20 DR. McKEEL: John.

21 CHAIRMAN ZIEMER: That's John
22 Dutko, I think. Isn't it, John?

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1 MR. DUTKO: This is John Dutko, I
2 was a Betatron and Magnaflux operator, GSI.

3 Sir, there was 91 people in our
4 department in '64 and '65. More than a third
5 were Magnaflux operators, who were never
6 issued any badges at all. They never were.

7 When we were in magnaflux, you were
8 not issued a badge. When you were a Betatron
9 operator, it was the next step up, then chem.
10 lab. Betatron operators were instructed to
11 remove their badges when they left the
12 Betatron.

13 If we worked overtime on the Mag
14 floor, they were afraid of chipping, burning,
15 grinding, welding, intense hot sparks flying
16 around those badges.

17 CHAIRMAN ZIEMER: Okay.

18 MR. DUTKO: They simply did not
19 where them off on out of the Betatrons. And
20 that was policy, sir.

21 CHAIRMAN ZIEMER: Yes. Understood.
22 Thanks for that comment, then, John, as well.

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1 MR. DUTKO: Yes, sir.

2 CHAIRMAN ZIEMER: We are going to
3 take our lunch break at this time. After
4 lunch, we will pick up with issue six and
5 continue from there.

6 DR. McKEEL: Dr. Ziemer?

7 CHAIRMAN ZIEMER: Yes?

8 DR. McKEEL: This is Dan. I hate
9 to delay lunch, but could I make a
10 several-sentence comment?

11 CHAIRMAN ZIEMER: You certainly
12 may.

13 DR. McKEEL: And it has really got
14 to do with this issue. And I don't want to
15 leave it before lunch.

16 CHAIRMAN ZIEMER: Sure.

17 DR. McKEEL: That is that one thing
18 I want to dispute, the first thing I want to
19 dispute is that the normal difference between,
20 let's say, MCNP-5 code values and real data,
21 someone made the comment that it was on the
22 order of two three percent. And I have read

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1 many papers that would dispute that.

2 I also read papers, which I can
3 furnish, where MCNP-5 data, for example, was
4 compared to real data at three different time
5 points at a given facility, where the MCNP-5
6 dose calculations for each of those three
7 periods was basically the same; whereas, the
8 real data on two occasions was very close and
9 then on a third occasion was quite different,
10 significantly different, between the other two
11 time periods of real data.

12 And when the authors traced that
13 back, they found that there were variations in
14 the machine itself that was generating the
15 doses.

16 And so the point of the paper was
17 that you had to be careful in that; that,
18 whereas, the computer code will run very
19 uniformly assuming you don't change the
20 parameters time after time after time;
21 whereas, the real machine might not. So
22 that's one comment.

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1 The second comment was that we have
2 not commented at all, I don't believe, in
3 Appendix B in any of the NIOSH comments. And
4 I don't think it has even been covered by the
5 SC&A review.

6 And that is that our experts from
7 the Milwaukee School of Engineering, one of
8 the first comments out of their mouths was
9 that ordinary film badge film -- and we
10 believe that some of the film used at GSI was
11 standard dental film, which is designed for
12 much softer, lower-energy X-rays, was simply
13 not sensitive and not accurate when applied to
14 24-25 MeV Betatron output. And the badges at
15 GSI gave no information about neutrons.

16 So, just to go on the record, I
17 would say for the sources at GSI, no one has
18 modeled the 250 kVp portable X-ray source.
19 Nobody has done that. There is no real data
20 for that.

21 There is no real data for people
22 who were responsible for the isotopes, the

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1 cobalt-60 and the iridium, except as with
2 respect to the time that they were in the
3 Betatron building.

4 We have no real information whether
5 those men wore their badges. We know they did
6 not wear their badges, for instance, when they
7 were in certain areas of GSI, such as the
8 chem. lab and when they went into building 10.
9 So I just think that's really important.

10 The other thing that I would
11 comment on is that I think, without exception,
12 every paper that I read that used MCNP or
13 Attila modeling also made an attempt to use at
14 least some real data as a verification that
15 the models were providing accurate results.
16 And the real and the computed data often vary
17 by at least ten percent.

18 So we don't have that situation
19 here. We have computer-generated model data,
20 period. Then we have dosimetry data from
21 individual film badges with film that was
22 insensitive to Betatron, photons, did not

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1 measure neutrons.

2 And so we do not have complete
3 representative, appropriate, accurate film
4 badge data either. And I just need to put
5 that on the record.

6 We do need to have a discussion
7 today of whether the film badges that people
8 think were used at GSI, the red Landauer type,
9 whether they were really adequate to monitor
10 the Betatron. And I will just let it go at
11 that.

12 Thank you.

13 CHAIRMAN ZIEMER: Thanks, Dan.

14 I don't know if anyone has
15 established that the films were insensitive.
16 I think you used the term that they were
17 insensitive to the high energy. Do we know
18 that or --

19 DR. McKEEL: Dr. Kuttemperoor and
20 Dr. Kobiske from Milwaukee School of
21 Engineering said that they made that as a
22 categorical statement. And I have seen no

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1 information to the positive.

2 CHAIRMAN ZIEMER: Okay. I thought
3 they were speculating. Did they have
4 something positive that would demonstrate that
5 that's the case?

6 DR. McKEEL: No. But I'm saying
7 the opposite. You all are speculating that
8 the film that was used is sensitive. And Dr.
9 Kobiske and Dr. Kuttemperoor said it was
10 well-known that ordinary film badges were not
11 accurate when used to monitor 24-25 MeV
12 photons. And certainly you gentlemen should
13 be the ones who are experts in that area. So
14 you would have to tell us.

15 MEMBER POSTON: Dan, you can't have
16 it both ways. Either you're dealing with
17 scattered radiation or you're not. And once
18 you start dealing with scattered radiation,
19 you're not talking about 25 MeV. In fact,
20 that's the maximum energy. You have some sort
21 of distribution.

22 DR. McKEEL: Well, Dr. Poston, we

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1 are dealing with multiple kinds of X-rays:
2 direct beam, scattered X-rays, activation
3 daughter products, fission products caused in
4 the uranium by the Betatron.

5 MEMBER POSTON: Now, that is
6 speculation.

7 DR. McKEEL: No. We furnished
8 multiple papers that showed that 25 MeV
9 Betatrons caused fission in uranium-238.

10 MEMBER POSTON: The cross-section
11 for that is tiny.

12 CHAIRMAN ZIEMER: Yes. In any
13 event, we will have to address those
14 questions. Actually, it has to do with the
15 adequacy of the films.

16 DR. McKEEL: Correct. That's --

17 CHAIRMAN ZIEMER: And that relates
18 to --

19 DR. McKEEL: I just wanted to get
20 that on the table.

21 CHAIRMAN ZIEMER: Yes.

22 DR. NETON: I don't want to get

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1 into this too much detail here, but we have
2 looked at the sensitivity of the film. And
3 it's our position that that film is sensitive
4 to the energy of the photons that were
5 measured. We could talk about that later.

6 CHAIRMAN ZIEMER: Okay. Let's go
7 ahead and take our break now. It's 12:30.
8 We'll reconvene at 1:30. Thank you very much.

9 (Whereupon, the above-entitled
10 matter went off the record at 12:28 p.m. and
11 resumed at 1:31 p.m.)

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

2 (1:31 p.m.)

3 CHAIRMAN ZIEMER: We will call the
4 meeting back to order. I want to confirm that
5 we are still discussing TBD 6000 Appendix BB.
6 And I want to confirm that Dr. McKeel is on
7 the line.

8 (No response.)

9 CHAIRMAN ZIEMER: How about John
10 Ramspott?

11 MR. RAMSPOTT: I'm on, Doctor.
12 Thank you. Ramspott.

13 CHAIRMAN ZIEMER: Yes, Ramspott.

14 DR. McKEEL: This is Dan McKeel on
15 the line.

16 CHAIRMAN ZIEMER: I'm putting a
17 'port' on there John, sorry. John Dutko, are
18 you on the line?

19 MR. DUTKO: Yes, sir.

20 CHAIRMAN ZIEMER: Very good. Dan
21 McKeel?

22 DR. McKEEL: Yes, sir.

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1 CHAIRMAN ZIEMER: Thank you.

2 DR. McKEEL: Thank you.

3 CHAIRMAN ZIEMER: Also I will just
4 double check if Terri Barrie is on the line.

5 (No response.)

6 CHAIRMAN ZIEMER: Wanda, are you
7 back?

8 MEMBER MUNN: Yes, I am.

9 CHAIRMAN ZIEMER: Very good. Then
10 we'll proceed. I want to move us ahead
11 through the matrix. We had finished issue 5,
12 5 of 13. I want to move us through the rest
13 of those so we can get into the white paper.
14 So let me read issue six and the responses,
15 and then we'll go from there.

16 This is issue 6, "Neglect of Skin
17 Dose from Activated Steel," "SC&A Finding:
18 Appendix BB ignores the skin dose from beta
19 radiation from activated steel. Our analysis
20 yielded doses of about two rads per year to
21 bare skin from beta radiation from irradiated
22 steel.

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1 NIOSH response: As indicated in
2 the SC&A review, NIOSH has obtained film badge
3 results for Betatron operators. We are in the
4 process of comparing this data to the modeled
5 estimates provided by both the Appendix and
6 SC&A.

7 The modeled beta dose and photon
8 dose are linked. And so the beta dose can be
9 adjusted to the film badge data by using the
10 model.

11 And I will ask, Dave, do you have
12 any additional comments on the NIOSH response
13 at this time?

14 MR. ALLEN: No, not at this time.
15 I think there was a little bit of that in the
16 white paper.

17 CHAIRMAN ZIEMER: Right. And, Dr.
18 McKeel, do you have any other questions on --

19 DR. McKEEL: Well, you know, I, do
20 have a comment.

21 CHAIRMAN ZIEMER: Yes?

22 DR. McKEEL: My comment is that

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1 basically all of these NIOSH responses really
2 did avoid the question. The finding was that
3 you neglected to do anything about the skin
4 dose from the activated steel.

5 And we've got to assume, even
6 though we don't know when NIOSH got the film
7 badge data, that at the time they wrote
8 Appendix BB, they did not have the film badge
9 data or they would have let us know that.

10 And so the finding was that you
11 didn't mention it. And I think the response
12 should include why didn't you include beta
13 skin doses in Appendix BB.

14 And I think the response is sort of
15 disingenuous. It's really a non-response to
16 that finding. So I understand that there is
17 an official final response coming, but that's
18 the general comment about all of these
19 responses that I am hearing from NIOSH.

20 CHAIRMAN ZIEMER: Okay. Thank you.

21 And I think at the time of the SC&A
22 finding, the materials in BB were based on

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1 modeling the doses. At the time that NIOSH
2 responded, they had become aware of the film
3 badge data.

4 DR. McKEEL: Well, like I say, Dr.
5 --

6 CHAIRMAN ZIEMER: So you're right,
7 yes.

8 DR. McKEEL: Dr. Ziemer, I just
9 have to stress --

10 CHAIRMAN ZIEMER: No. I
11 understand.

12 DR. McKEEL: -- it's not a matter
13 of that they had become aware of it. It's a
14 matter of when they actually tried to get it
15 and did get it. We don't know those dates
16 yet.

17 I told them about the presence of
18 the data at Landauer in 2006.

19 CHAIRMAN ZIEMER: Right.

20 DR. McKEEL: Okay.

21 CHAIRMAN ZIEMER: Yes. Thank you.

22 Should I go on to issue seven here

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1 or, Bob, did you have a comment first on this
2 point?

3 DR. ANIGSTEIN: Yes. I mean, I
4 don't want to be interrupting, but I don't
5 think that Dave actually responded to this
6 already in the finding because unless I missed
7 something, I didn't see anything in the white
8 paper about beta dose from activated steel.

9 MR. ALLEN: Well, I might be wrong
10 there. When you get all the way to the end of
11 the white paper, basically the white paper is
12 essentially -- you know, the first part of it
13 is analyzing the film badge data and coming up
14 with an estimate of that, making some
15 adjustments to the SC&A model and essentially
16 accepting that and prorating it for the film
17 badge and prorated all the doses down.

18 DR. ANIGSTEIN: I don't see how the
19 film badge date can be used to adjust, since
20 the film badges do not have beta dose. I
21 don't see how that can be used.

22 CHAIRMAN ZIEMER: Do we know that

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1 for sure, Bob? If this is a typical Landauer
2 film, what were the dates on those?

3 MR. ALLEN: It was '64 through --

4 CHAIRMAN ZIEMER: Well, I used
5 Landauer during that same time period. They
6 always had an open window.

7 MR. ALLEN: They didn't report it.
8 It's not reported on this form.

9 CHAIRMAN ZIEMER: Not reported, but
10 they did have open windows. So there was
11 capability if you had a separate --

12 DR. ANIGSTEIN: It's not even
13 reported as M. I mean, there is a column for
14 it, but it's simply not -- I don't think it
15 was reported, period.

16 CHAIRMAN ZIEMER: I guess there we
17 would almost have to investigate Landauer's
18 practice because my recollection is they
19 didn't report skin doses unless there was a
20 specific indication that there was one. They
21 just did not report it. I am not absolutely
22 certain of that, but I know that their badges

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1 had open windows as well as filters.

2 DR. NETON: Aren't there certain
3 stocks, ratios of stock, dose that one can
4 apply?

5 CHAIRMAN ZIEMER: Well, I think
6 that's what you were --

7 DR. MAURO: That's not what we had
8 in mind, though. When we get to the white
9 paper, we'll --

10 CHAIRMAN ZIEMER: Yes. We'll come
11 back to that. Anyway, Bob, that was --

12 DR. ANIGSTEIN: I mean, there is a
13 column.

14 CHAIRMAN ZIEMER: Yes.

15 DR. ANIGSTEIN: There is a column
16 under exposure, column for gamma and X-ray.
17 And they always have an entry, either a number
18 or M. There is a column for beta, and it is
19 blank on all of the reports.

20 CHAIRMAN ZIEMER: I think that was
21 the case in the reports I got from Landauer,
22 too. If there was not a specific -- in other

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1 words, if you had only darkening under the
2 open window and not under the filters to
3 indicate that it was pure shallow dose, they
4 would not have reported it probably.

5 DR. ANIGSTEIN: They wouldn't even
6 have reported it if --

7 CHAIRMAN ZIEMER: We could probably
8 go back and establish that, maybe talk to
9 Craig Creode or somebody. But let's deal with
10 that later.

11 DR. McKEEL: Dr. Ziemer?

12 CHAIRMAN ZIEMER: Yes?

13 DR. McKEEL: I have one quick note.
14 And that is that two GSI workers furnished us
15 with three of their annual AEC dosimetry
16 reports. And on those reports as well, there
17 was a column called beta dose that was not
18 filled in.

19 So the reports -- the few reports
20 there, there were only three we know of, that
21 the workers ever got and that have been --
22 survived, you know, there was no beta skin

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1 dose on that either.

2 CHAIRMAN ZIEMER: Right.

3 MEMBER MUNN: So the white paper
4 addresses the inconsistent assumption between
5 photon and beta dose, but I assume we are
6 going to --

7 CHAIRMAN ZIEMER: Yes. We'll get
8 to that. Yes.

9 MEMBER MUNN: -- further down the
10 line.

11 CHAIRMAN ZIEMER: Right. Let's go
12 on. Issue seven. This is called
13 Underestimate of Exposure to Activated
14 Betatron Apparatus, SC&A Finding: Appendix
15 BB assigns an initial exposure rate of the
16 Betatron operator of 15 mr per hour from
17 activation products in the Betatron apparatus
18 based on the measurement reported by Schuetz,
19 2007, at 6 feet or 183 centimeters from the
20 Betatron target.

21 This exposure rate would apply only
22 if the operator were located six feet from the

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1 Betatron during the setup period. Such an
2 assumption is inconsistent with the
3 calculation of dose rates from the handling of
4 irradiated steel or uranium, which assumes
5 that the Betatron operator spent one-half of
6 the setup time at a distance of one-fourth or
7 30 centimeters from the metal and the rest at
8 one meter, assuming, as we did, that his
9 distance from the Betatron target ranged
10 uniformly between 3 and 6 feet or 61 to 183
11 centimeters with double his exposure rate.

12 NIOSH response: As indicated in
13 the SC&A review, NIOSH has obtained film badge
14 results for Betatron operators. We are in the
15 process of conferring this data to the model
16 of estimates provided by both the Appendix
17 and SC&A.

18 So, again, basically NIOSH is
19 referring to the film badge data as the way to
20 address this inconsistency here. But the
21 initial finding I think had to do with
22 differences in how you were modeling it, --

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1 DR. MAURO: Exactly.

2 CHAIRMAN ZIEMER: -- as to whether
3 or not you would use two --

4 DR. MAURO: Distances.

5 CHAIRMAN ZIEMER: Two discrete
6 distances versus a continuum. And I guess one
7 could debate that, of course.

8 Yes?

9 MR. DUTKO: Can I speak, sir?

10 CHAIRMAN ZIEMER: Yes.

11 MR. DUTKO: It goes without saying,
12 sir, an operator is touching an activated
13 casting of putting lead X's, arrows, numbers,
14 and pentrometer, climbing up on a casting,
15 laying down on it, when necessary, to hand
16 film to the man on the inside. The inside man
17 is touching, handling the cassette constantly
18 that is reused, plus a lead standard shield.

19 When an operator is shooting six
20 feet and nine feet to designated distances,
21 how close do you think he is going to be to an
22 activated doughnut tube when the machine is

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1 only six foot away from a casting and he is in
2 between the machine and the casting setting it
3 up?

4 Thank you, sir.

5 CHAIRMAN ZIEMER: Yes. Okay. So I
6 think that was John Dutko, I believe. John I
7 guess is asking whether these distances also
8 are realistic, I guess, John. Is that what
9 you are asking?

10 DR. McKEEL: This is Dan McKeel. I
11 would like to speak on John Dutko's point.
12 And that is what he is saying is that those
13 distances are not realistic.

14 CHAIRMAN ZIEMER: Yes. That's what
15 I was asking.

16 DR. McKEEL: And literally the man
17 described being crouched inside hunched up
18 against the casting sitting the cassettes and
19 on those big castings, their whole bodies
20 basically being arrayed on top of the casting
21 reaching to set the film for the next shot.
22 So they were in intimate contact except for

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1 their clothing with the activated casting.

2 CHAIRMAN ZIEMER: Okay. So I
3 believe that both Dr. McKeel and Joe Dutko are
4 arguing maybe that both estimates may be --

5 DR. ANIGSTEIN: This statement is
6 just a very tiny summary. In the actual
7 model, we modeled both situations. We modeled
8 a situation where it was what John Dutko
9 described to me as the short shot, where the
10 heavy casting and also the uranium would be
11 six feet from the target or assumed, well, the
12 Betatron takes a certain amount of space.

13 So in those things, we put the
14 worker at a fixed distance of three feet,
15 halfway in between. Then for the long shots,
16 where it's nine feet away, it was more room
17 for him to move. So only there did we assume
18 that he moved uniformly between three and six
19 feet.

20 So I just gave this as an example
21 of how it gets. I didn't want to repeat the
22 whole report in the finding, the matrix

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1 finding. But we did address both situations.

2 And then, just to jump ahead and to
3 answer Dr. McKeel and John Dutko, we
4 separately assumed. And, as Dave Allen
5 correctly pointed out in the white paper,
6 there is a logical inconsistency. But we also
7 assumed that he was between one meter and one
8 foot from the metal itself to account for this
9 close -- because some workers will be very
10 close to the metal, and others would be a
11 little further away manipulating the Betatron.
12 So we basically tried to capture both
13 situations in one exposure, make it bounding
14 basically for both classes of workers.

15 CHAIRMAN ZIEMER: What about the
16 contact situations that he has described?

17 DR. ANIGSTEIN: Well, when you are
18 one foot away, that is essentially contact. I
19 mean, we're talking about a center of the
20 body, --

21 CHAIRMAN ZIEMER: Oh, okay.

22 DR. ANIGSTEIN: -- one foot to the

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1 center of the body. So that's essentially
2 contact.

3 CHAIRMAN ZIEMER: Yes. But it is
4 not clear to me here. They're not necessarily
5 talking about skin dose here, then. They're
6 talking about depth dose.

7 DR. ANIGSTEIN: Yes. But you get
8 both from contact with metal essentially.

9 CHAIRMAN ZIEMER: Right.

10 DR. ANIGSTEIN: I mean, the finding
11 should not be used as a surrogate for the
12 whole report.

13 CHAIRMAN ZIEMER: Okay. Thank you.

14 Let's go ahead and go through the
15 next one briefly. This will be issue 8,
16 Underestimate of Work Hours. The authors
17 assume that the GSI employees worked an
18 average of 2,400 hours per year.

19 This estimate is contrary to the
20 recollection of workers who remember working
21 50 to 80 hours a week. The consensus estimate
22 was 65 hours a week or 3,250 hours per year.

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1 Such a value is reasonable and
2 claimant-favorable and should be adopted as a
3 default value for dose reconstruction.

4 NIOSH response: As indicated in
5 the SC&A review, NIOSH has obtained film badge
6 results for Betatron operators. We are in the
7 process of comparing this data to the modeled
8 estimates provided both by the Appendix and
9 SC&A.

10 Since the film badges measure the
11 dose covered over the course of a week, the
12 amount of time taken to receive that dose
13 would no longer be relevant.

14 So the argument here is that if the
15 film badge data turns out to be useable, then
16 you have taken care of whatever time it took
17 to receive that dose. If not, we have a
18 difference in the modeling of the time.

19 DR. McKEEL: Dr. Ziemer?

20 CHAIRMAN ZIEMER: Yes?

21 DR. McKEEL: This is Dan McKeel.

22 CHAIRMAN ZIEMER: Yes, Dan?

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1 DR. McKEEL: I will restate my
2 comment that I don't believe NIOSH addressed
3 the finding, but there is a practical reason
4 why NIOSH needs to address the finding and not
5 revert back to the skin dose.

6 And that goes back to the fact that
7 when Appendix BB was first released, almost
8 immediately John Ramspott and I gave feedback
9 to NIOSH that we thought there were many flaws
10 in the formulation of this Appendix .

11 And we believe that SC&A's
12 subsequent report that we're now reviewing
13 amply confirmed, basically, all of their
14 concerns that were actually put up on OCAS
15 well before SC&A furnished its report.

16 And so we pled with NIOSH not to
17 start making dose reconstructions based on
18 this Appendix BB. And NIOSH said, no. We're
19 going to go ahead anyway, and we can resolve
20 all of that later.

21 Well, here we are at this point.
22 And large numbers of what we believe are

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1 flawed dose reconstructions have already been
2 done with Appendix BB. Lots of workers have
3 been denied. Forty-eight have been paid.

4 But basically the bottom line of
5 all of this, regardless of what happens with
6 the SEC, is that a bunch of those dose
7 reconstructions we are going to contend have
8 to be reopened dose reconstructions done again
9 with the new revised Appendix BB.

10 So it will be very important when
11 that comes around to have these legitimate
12 concerns of SC&A done before the film badge
13 data was available answered for the record.
14 And it seems to me that we are hearing an
15 attempt not to have to do that.

16 So, please, I am begging the Board
17 not to allow that to happen either and look
18 forward to what really is in our collective
19 futures to be dealing with these dose
20 reconstructions that have to be revised and
21 redone, maybe by a new PIR that is in addition
22 to PIR 24, which still needs to be resolved.

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1 CHAIRMAN ZIEMER: Yes.

2 DR. McKEEL: So that is my comment.

3 Thank you.

4 CHAIRMAN ZIEMER: Thank you.

5 One thing that occurs to me -- I
6 don't know if NIOSH has thought about this,
7 but one possibility would be that the film
8 badge data are considerably lower than the
9 modeled data. Usually that is the case.

10 Those workers who were subject to
11 dose reconstruction based on modeling and who
12 were successful, did they benefit in not
13 having the film badge data available?

14 And is it, therefore, fair for
15 those who were denied without the film badge
16 data to -- if, for example, let's say you
17 agreed with SC&A's work time. And I assume
18 that must come into play in the modeling. If
19 you agreed with that work time, would those
20 workers have been successful had they been
21 constructed or if the dose had been
22 reconstructed without film badge data?

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1 Do you see what I am saying?

2 DR. NETON: I understand what you
3 are saying.

4 CHAIRMAN ZIEMER: It's kind of a --

5 DR. NETON: I think the relevant
6 question, though, is the model that we
7 employed to do those dose reconstructions, was
8 it sufficiently bounding given what we know
9 about the film badge data today?

10 CHAIRMAN ZIEMER: Yes.

11 DR. NETON: If the film badge data
12 could be established to be a reasonable
13 representation, then given that there may be
14 some tweaks in that model, is it insufficient
15 bounding given what we know now about the
16 monitoring data? That's sort of the way we
17 would approach it.

18 CHAIRMAN ZIEMER: Yes. I
19 understand that.

20 DR. NETON: In fact, even at the
21 end of the day, if we ended up reducing the
22 doses in the new model because of the film

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1 badge data, NIOSH typically has not gone back
2 and had those reworked that were granted
3 compensation.

4 CHAIRMAN ZIEMER: Oh, no. I know
5 that. I know that. That's why I saw --

6 DR. NETON: I understand the --

7 CHAIRMAN ZIEMER: -- some may
8 benefit from --

9 MR. ALLEN: From having it done
10 early, you mean?

11 CHAIRMAN ZIEMER: Yes.

12 DR. NETON: That's always the case.

13 CHAIRMAN ZIEMER: That's always the
14 case, yes.

15 DR. NETON: But I think, you know,
16 Dr. McKeel raises a valid point. I mean,
17 there are issues here that we have got a long
18 way to go to iron out whether or not our model
19 as posed is sufficiently bounding.

20 CHAIRMAN ZIEMER: Right.

21 MR. ALLEN: And what you have said
22 entered into the decision, I mean, the worst

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1 case, some will benefit from jumping the gun
2 if it turns out to be lower later.

3 But as far as the PDR system, it's
4 we've got an Appendix to which a bunch of
5 dose reconstructions were done. Once this
6 Working Group is done and we come to some sort
7 of settlement, there will be a revised
8 Appendix and if the doses are lower, then
9 there won't be anything done with those
10 previously, comparatively to have been as
11 higher, we will ask for those that were
12 completed and not --

13 CHAIRMAN ZIEMER: Of course.

14 DR. NETON: I take a little
15 exception to your statement that we have
16 jumped the gun. I don't think we have
17 actually jumped the gun here. You know, it
18 has always our position. And we will move
19 forward given that we believe we have a
20 sufficiently bounding model that can move dose
21 reconstructions forward and provide a
22 claimant-favorable, probably, analysis of

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1 their situation.

2 It's always going to be the case
3 almost invariably when we find more
4 information doses typically go down. I can
5 think of very few cases. There have been
6 some, Super S comes to mind, where we have had
7 to have gone back and reworked and raised the
8 model.

9 MR. DUTKO: Dr. Ziemer?

10 CHAIRMAN ZIEMER: Yes?

11 MR. DUTKO: May I please make one
12 comment on workers' time?

13 CHAIRMAN ZIEMER: Sure.

14 MR. DUTKO: Sir, I don't
15 understand. We were working a heck of a lot
16 of hours back at that previous time. We
17 agreed that 65 hours per work week across the
18 board average in a year was very reasonable.

19 Some of the workers, I guarantee,
20 worked a lot more than that, a lot more than
21 that. Yet, somehow miraculously 46 hours
22 appears on a work record for NIOSH in Appendix

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1 BB. Now, I am completely confused as to how
2 they arrived at this figure, sir.

3 Thank you.

4 CHAIRMAN ZIEMER: Okay. Let's see.
5 NIOSH used the -- did you use a 40-hour week
6 or --

7 MR. ALLEN: No. It was more of a
8 46.

9 CHAIRMAN ZIEMER: Was that the 46
10 hours he's mentioned? And you arrived at that
11 based on something. That is what he was
12 asking.

13 MR. ALLEN: It was based on
14 information in the transcript about hourly
15 rate and hours, et cetera. And it spelled out
16 in the Appendix what we used. The 65 hours
17 came from a worker outreach meeting that we
18 were there to explain what was in Appendix
19 BB. It came after the Appendix was written
20 and --

21 CHAIRMAN ZIEMER: So that is a
22 later figure?

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1 MR. ALLEN: That is a later figure.
2 And we said at the time we would have to
3 consider that for a revision. But there is no
4 reason to do a revision when there are other
5 things to be considered. We need to get it
6 all spelled out in --

7 CHAIRMAN ZIEMER: Yes.

8 MR. DUTKO: Sir, it shorts the
9 worker 30 percent of their time.

10 CHAIRMAN ZIEMER: When you say
11 consensus estimate, that came out of the
12 worker groups?

13 MR. ALLEN: That came out of the --
14 I've got the data somewhere -- October 9th of
15 '07, I think.

16 DR. ANIGSTEIN: That came out of
17 the meeting, the SC&A-sponsored meeting. And
18 we had a range. As I said, the range was 50
19 to 80 hours. And there seems to be kind of --
20 I sort of proposed the 65 would be a
21 reasonable estimate. And everyone said, yes.
22 That's it.

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1 CHAIRMAN ZIEMER: The workers said
2 this?

3 DR. ANIGSTEIN: Yes. There were
4 about 2000 workers there. And they said, yes,
5 sixty-five sounds --

6 DR. NETON: I guess I have a
7 question. I probably should know the answer
8 to this. The 65 hours, would that be
9 continuous operations involving Betatron work?
10 Is that what they're saying? Is that what the
11 workers are asserting or --

12 DR. ANIGSTEIN: This would just be
13 the work hours. That's what --

14 DR. NETON: We would assume 65 work
15 hours with Betatron.

16 DR. ANIGSTEIN: They typically put
17 in -- maybe it should have been 64 because
18 they said they typically put in their regular
19 5 shift and 3 shifts of overtime. So that
20 would come to 64.

21 DR. NETON: My point is this is
22 continuous Betatron operations.

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1 DR. ANIGSTEIN: Well, this was
2 their job. Betatron, some were Betatron
3 operators. Some were other, other operators.

4 CHAIRMAN ZIEMER: Jim is saying the
5 model assumes they're working the Betatron --

6 DR. NETON: A hundred percent of
7 their work hours.

8 CHAIRMAN ZIEMER: -- 100 percent of
9 the time. So that even though the 65 --
10 maybe, then, that number is 80, but the 65 is
11 reasonable since it is unlikely that any
12 worker worked continuously on the Betatron.
13 Is that what is being said?

14 DR. NETON: I think you're --

15 DR. ANIGSTEIN: No, no. I think
16 we're missing that. Their assignment, the
17 Betatron -- first of all, the way it was
18 explained to me, the Betatron involved a team
19 of three people.

20 The operator, who is the most
21 highly trained, would be the one to account
22 for it. You would have an assistant, who, as

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1 John Dutko pointed out, will be on the far
2 side of the casting placing the film, locating
3 the film. And then there is a third one that
4 would be running back and forth to develop the
5 film.

6 CHAIRMAN ZIEMER: Right.

7 DR. ANIGSTEIN: Then they rotate.
8 Those jobs, then, were sometimes rotated with
9 the layout man. So they would have the beta.
10 One week he would be operating the Betatron.
11 Another week he would be taking the hot
12 castings, I don't mean the hot castings, the
13 especially radiographed castings immediately
14 after he left the Betatron room and start
15 crawling all over it with chalk and marking
16 where the defects were, first of all, marking
17 the film locations. And then from the film
18 locations, they could find the defects.

19 So that job according to our model
20 was almost as high because, number one is they
21 were getting their radiation from the
22 activated steel. And also if they happen to

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1 be in this location in the 10 building, where
2 it was essentially unshielded from the
3 Betatron, it was a portion of the wall, they
4 will be getting a number from the Betatron.
5 So the dose rate there was significant.

6 And so that would be according to
7 our estimate -- yes, they would be. I mean,
8 that's their job. You know, they're not
9 working continuously. Simply, during the
10 shot. They're in the control room. So they
11 have little breaks, you know, in that way.

12 CHAIRMAN ZIEMER: Well, I think Jim
13 was saying --

14 MEMBER POSTON: We heard John Dutko
15 say -- maybe it was -- I don't know who said
16 it, that they would take off their badge and
17 go to another part of the building to work
18 overtime. So they're not even anywhere near.
19 They're not involved in it.

20 MR. RAMSPOTT: Dr. Ziemer, this is
21 John Ramspott.

22 CHAIRMAN ZIEMER: Yes, John?

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1 MR. RAMSPOTT: Dr. Poston, you made
2 a very good point. When they were in 10
3 building climbing all over those castings,
4 they weren't badged.

5 Mr. Dutko, am I correct on that?

6 MR. DUTKO: Absolutely, sir.

7 MEMBER POSTON: I didn't make that
8 point.

9 DR. NETON: You were making a
10 slightly different point, yes.

11 MEMBER POSTON: Well, I was just
12 trying to understand what we heard earlier.

13 MR. DUTKO: Every time we left for
14 Betatron, our badges came off and were put on
15 the clipboards. When we went to magnaflux out
16 on the floor, anywhere out on the floor, we
17 wore those badges, sir.

18 DR. NETON: That was my question.
19 What fraction of the time was devoted to
20 Magnaflux versus Betatron versus others?

21 MR. DUTKO: There is absolutely no
22 way I could tell you, sir. We were working 7

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1 days a week, 24 hours a day. It was like that
2 for a good three-year period. And to try to
3 lay this out as some kind of a format for how
4 much we worked where would be impossible, sir,
5 absolutely impossible.

6 CHAIRMAN ZIEMER: Okay.

7 DR. McKEEL: This is Dan McKeel.
8 I've got to weigh in on that thing, too.

9 We're putting the onus on the wrong
10 place. The right place to put the answer to
11 Dr. Poston's question is how can NIOSH decide
12 what percentage of the time was spent in the
13 Betatron building, what percentage was spent
14 in building 10?

15 Our contention is if petitioners --
16 they can't possibly do that with the data on
17 hand. And, therefore, you can't possibly
18 allocate those doses. But it is true that a
19 Betatron operator could leave the Betatron
20 building, walk across, let's say, in the new
21 Betatron building, could walk across the
22 causeway to building 10, be working in

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1 building 10 near the ribbon door, be exposed
2 to the Betatron that was operating, get
3 exposure, then go over and work around an
4 activated casting that had been brought out of
5 the Betatron into the rest of the building,
6 get more dose, not be badged.

7 And so this is just one of our
8 arguments where people were being exposed in
9 the other buildings besides the Betatron
10 buildings that were not badged. And so that
11 part of their dose was not recorded and,
12 therefore, the film badges are not accurate.

13 Thank you.

14 MEMBER POSTON: Dan, that's not the
15 question we're asking. The only way we can
16 find out what percentage of the time that you
17 were in the Betatron and others is to ask the
18 workers. I don't understand why you expect
19 NIOSH to make that assumption without some
20 input from --

21 DR. McKEEL: Dr. Poston, I don't
22 expect NIOSH to do anything. If the question

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1 is, what information does NIOSH need to be
2 able to accurately, sufficiently, accurately
3 calculate doses --?

4 MEMBER POSTON: Well, you just
5 heard one of those questions. And you chose
6 not -- no one can answer it.

7 DR. McKEEL: No. We didn't choose
8 not to answer it. The --

9 MEMBER POSTON: I didn't say that.
10 I said no one --

11 DR. McKEEL: We don't know the
12 answer.

13 MEMBER POSTON: -- chose to answer.

14 DR. McKEEL: We don't know the
15 answer.

16 MEMBER POSTON: Okay.

17 DR. McKEEL: And if we don't know
18 the answer and NIOSH doesn't know the answer,
19 then NIOSH can't accurately calculate the
20 doses. That's their contention.

21 CHAIRMAN ZIEMER: Well, I think the
22 --

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1 MEMBER POSTON: I'm going to have
2 to read the transcript, but I'm not sure
3 that's what you said.

4 CHAIRMAN ZIEMER: I think Bob has
5 told us that the workers have indicated to him
6 that they felt that 65 hours a week was a
7 reasonable estimate of --

8 DR. McKEEL: That's true. That was
9 agreed on --

10 CHAIRMAN ZIEMER: Yes.

11 DR. McKEEL: -- at that October 9th
12 meeting by all attending.

13 CHAIRMAN ZIEMER: The only point I
14 was making is, even if it was 80 hours a week,
15 I think John Dutko suggested 80, but one of
16 the questions that Jim Neton asked was, but
17 would it be likely that they would be doing
18 that task continuously for 80 hours or was the
19 65-hour-a-week pretty good estimate or
20 bounding estimate of how much work effort went
21 into the task of working on these facilities?

22 DR. McKEEL: Well, you know, I

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1 don't think we ought to prolong this because I
2 think everybody at that meeting agreed, as Dr.
3 Anigstein just said quite correctly, that 65
4 hours was agreed on as a good average work
5 hour week for the people at GSI.

6 MR. DUTKO: I agree, sir. I just
7 wanted to make one comment to Dr. Poston, is
8 it?

9 CHAIRMAN ZIEMER: Poston, yes.

10 MEMBER POSTON: However you want to
11 pronounce it.

12 MR. DUTKO: I just wanted to tell
13 him of his question of how much time could be
14 associated in magnaflux or chem. lab or
15 Betatron, my answer was 100 percent honest.
16 It would be impossible to figure, sir. Unless
17 you were the timekeeper back in those days and
18 recorded all of it, it would be absolutely
19 impossible.

20 CHAIRMAN ZIEMER: Yes. I
21 understand that. And that is true of most of
22 our jobs, but at least we got an estimate from

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1 the workers that Bob used with his model. So
2 that is helpful.

3 Bob has one additional comment.

4 DR. ANIGSTEIN: Yes. Let me make
5 one more observation. The question is partly
6 moot because the -- you know, in our report on
7 Appendix BB, the high-end estimate, the
8 bounding estimate, of the exposure of a worker
9 doing radiography on steel is 33.5 mr per
10 shift.

11 The worker spending all his time --
12 again, a bounding estimate for doing layout on
13 the steel immediately after the radiography is
14 33.3 mr per shift. So it's --

15 CHAIRMAN ZIEMER: How you split
16 them off.

17 DR. ANIGSTEIN: Yes.

18 CHAIRMAN ZIEMER: Okay. Let's go
19 on. I think we have got the information here
20 on this for future reference. Issue 9 called
21 Mischaracterization of Steel Work Practices,
22 SC&A Finding: According to Appendix BB, the

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1 overall estimate for Betatron X-ray of steel
2 is 30 minutes set up with no dose, one-hour
3 Betatron X-ray closure due to sky shine at .72
4 mr per hour, and 30 minutes tape-down.

5 Such a description is at variance
6 with a report prepared by former GSI workers
7 that imitates repeated exposures of the same
8 casting with 12 to 15 minutes between
9 exposures. Since both the steel and the
10 Betatron were activated from previous
11 exposures, there was no setup period with no
12 dose.

13 Furthermore, most exposures were of
14 a few minutes' duration, which reduced the
15 time in the control room, where the exposure
16 rates were relatively low, and increased the
17 number of times during the day that the
18 operators were exposed to the steel and the
19 Betatron.

20 Then the NIOSH response, as
21 indicated in the SC&A review, NIOSH has
22 obtained film badge results for Betatron

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1 operators. We are in the process of comparing
2 this data to the model estimates provided by
3 both the Appendix and SC&A. Since the film
4 badge measures the dose received while
5 performing this work, the exact exposure
6 scenario is no longer important.

7 Again, that's basically a similar
8 answer to the previous one that, if one
9 establishes that the film badge data can be
10 used, then these time differentials make no
11 difference at that point. We still have to
12 deal with the film badge data, but that is the
13 basic response.

14 Bob, any other comments on that
15 finding?

16 DR. ANIGSTEIN: No.

17 CHAIRMAN ZIEMER: Okay. Board
18 members, any questions on that one?

19 (No response.)

20 CHAIRMAN ZIEMER: And, Dr. McKeel
21 or Don or John, do you have any other
22 comments?

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1 DR. McKEEL: No. I'm just going to
2 make my same comment that --

3 CHAIRMAN ZIEMER: Yes.

4 DR. McKEEL: -- it's really not an
5 answer. And it will become important in the
6 future to address this. We said in our, I
7 said in my critique of Appendix BB, that
8 there is abundant evidence from the
9 literature, I believe, that says that the
10 steel activation, the significant activation,
11 and the activated daughter products have
12 half-lives that extend much further than 15
13 minutes.

14 So I think that's a very limiting
15 non-claimant-favorable assumption that
16 exposure to activated products only lasts 15
17 minutes. I don't know any nicer way to put it
18 than I think that's just plain wrong. So
19 that's something to address at a later time.

20 CHAIRMAN ZIEMER: Okay. Issue 10
21 called Errors in Calculating Dose Rates From
22 Uranium, SC&A Finding: we have found errors in

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1 calculations that lead to a significant
2 overstatement of the dose rates from uranium
3 presented in Appendix BB.

4 The Appendix lists a dose of 21.7
5 millirem during the first 30 minutes following
6 irradiation. Our model yields a dose of 1.4
7 millirem using the same assumptions regarding
8 the duration of radiologic exposure, the
9 duration of the worker's exposure, and his
10 distances from the metal.

11 Since the dose rates in the
12 Appendix are not scientifically correct, they
13 should not be used as the basis of dose
14 reconstructions of exposed workers.

15 And the NIOSH response: to the
16 extent model doses are used, any errors in
17 this calculation will be corrected. However,
18 NIOSH has obtained film badge results for
19 Betatron operators. We are in the process of
20 comparing this data to the model estimates
21 provided by both the Appendix and SC&A.

22 Can you clarify, Bob, on this? Are

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1 you saying that NIOSH overestimated?

2 DR. ANIGSTEIN: Yes. Yes. We
3 obtained the spreadsheets used to make the
4 calculations, all the input files, and our
5 expert reviewed them. And he found that there
6 was just an error in the spreadsheet. It was
7 a factor of 20 error and 25, I think it was.

8 I mean, we have some differences
9 with the model, but that would have led to a
10 small difference. But there was a major
11 difference in the way the data was evaluated.

12 CHAIRMAN ZIEMER: Well, NIOSH has
13 indicated they would correct that if that is
14 --

15 MR. RAMSPOTT: Dr. Ziemer, this is
16 John Ramspott. If I may?

17 CHAIRMAN ZIEMER: Yes, John?

18 MR. RAMSPOTT: It appears that an
19 adjustment down is pretty easy to do. It
20 would be fast to happen. All I can say is I
21 hope an adjustment up can be that easy and a
22 correction could be made where necessary.

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1 It definitely shows that mistakes
2 can happen. I know they are accidental. It
3 can go both ways, but hopefully this gives us
4 -- I think the answer of why we're so
5 concerned about the badges, you want them to
6 be wrong, badges to be wrong.

7 CHAIRMAN ZIEMER: Right. And
8 you're right. In this case the issue is not
9 whether it's up or down, but if it's a
10 calculation error, whether it's this one or
11 any other, wherever we find a calculation
12 error, obviously it has to be corrected.

13 MR. RAMSPOTT: It's also
14 calculation. It's also factual, like not
15 wearing badges a good portion of your 65
16 hours, perhaps. Thank you, though.

17 CHAIRMAN ZIEMER: Thank you. Issue
18 11, SC&A Finding -- oh, let me give -- this is
19 titled Underestimate of Doses to Other
20 Workers, SC&A Finding: Appendix BB states
21 that workers who do not work in the Betatron
22 building and did not routinely handle steel or

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1 uranium within 2 hours following X-ray
2 exposure should be assigned a dose rate of .72
3 mr per hour. And the dose is in quotation
4 marks here because technically it is an
5 exposure. I'll just insert that. But we
6 understand what is meant.

7 As discussed under finding four,
8 there were many situations in which these
9 other workers could have been exposed to much
10 higher radiation levels.

11 NIOSH response: this finding
12 appears to be -- it says, a included in
13 finding four. I think it should say, this
14 finding appears to be included in finding
15 number four.

16 As noted, NIOSH is in the process
17 of evaluating the effect of film badge data on
18 the exposure models presented by both the
19 Appendix and SC&A. Okay.

20 DR. McKEEL: Well, Dr. Ziemer, this
21 is Dan McKeel again. Again I would say this
22 comment by NIOSH not only doesn't answer the

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1 question, but it doesn't follow the logic that
2 we have already established. And that is the
3 people who were not Betatron operators, not
4 isotope operators, didn't wear badges.

5 So, actually, the people that
6 worked in building 10 and building 6 around
7 the gamma source and the people in building 10
8 who worked near the ribbon door and were
9 exposed to the Betatron rays who were never
10 badged, the film badge readings aren't going
11 to have any relationship to them at all. So I
12 don't even think that is an answer that makes
13 sense within the aspect of having to wait
14 until the film badges got analyzed.

15 Thank you.

16 CHAIRMAN ZIEMER: Thank you.

17 MR. KATZ: Excuse me. There is
18 someone on the line who is having a
19 conversation. Will you please mute your
20 phone? Thanks.

21 CHAIRMAN ZIEMER: Any questions
22 from the Work Group on this one? Bob, any

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1 other comments?

2 DR. ANIGSTEIN: On?

3 CHAIRMAN ZIEMER: Eleven.

4 DR. ANIGSTEIN: On 11?

5 CHAIRMAN ZIEMER: Or NIOSH?

6 DR. ANIGSTEIN: Well, I mean,
7 essentially it's that the film badge results
8 would not apply to people who were outside the
9 building.

10 MR. RAMSPOTT: Dr. Ziemer, this is
11 John Ramspott again.

12 CHAIRMAN ZIEMER: Yes, John?

13 MR. RAMSPOTT: One point I made at
14 an earlier meeting seems to be overlooked.
15 Uranium didn't fly into those Betatron
16 buildings. It had to come across and through
17 the main gate, actually the main receiving
18 gate, checking off with a scale. So other
19 workers that weren't badged definitely are a
20 big part of this.

21 That uranium came across the entire
22 plant. And the only way to get uranium into a

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1 new Betatron building was actually to go
2 through either 8, 9, or a 10 building or all
3 3. There was no other access to that building
4 except through those, number 10 building.

5 And number 10 building, you talk
6 about number 10. Nine is badged. But number
7 10, you get uranium through there regularly
8 for 13 years. And those people, nobody in 10
9 building was ever badged. That's an issue
10 that can't be overlooked.

11 I thank you.

12 CHAIRMAN ZIEMER: Right. Any other
13 questions on this one or comments right now?

14 (No response.)

15 CHAIRMAN ZIEMER: The way this one
16 currently reads, it's talking about a dose
17 rate that NIOSH would assign to individuals
18 who were not badged, this, that, and the other
19 thing.

20 Jim or Dave?

21 MR. ALLEN: It's in Appendix BB,
22 yes.

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1 CHAIRMAN ZIEMER: Right. And then
2 SC&A is saying, in essence, -- it doesn't say
3 here -- that .72 mr per hour is not high
4 enough.

5 DR. ANIGSTEIN: Correct.

6 CHAIRMAN ZIEMER: So at this point,
7 the issue that is being raised is whether the
8 right number is being assigned. And both
9 parties are recognizing that there are
10 individuals exposed, as John Ramspott just
11 described, who were not badged but who would
12 get assigned dose of some value.

13 DR. NETON: This is not unlike what
14 we run into at every site.

15 CHAIRMAN ZIEMER: Right.

16 DR. NETON: It's sort of the
17 appropriateness of a coworker model.

18 CHAIRMAN ZIEMER: Right.

19 DR. NETON: If you take the 95th
20 percentile highest value, whatever you use, is
21 that a bounding analysis for the workers who
22 were more exposed to more ancillary functions?

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1 And that's something we probably
2 need to pick up when we do our review of the
3 white paper because we agree that this might
4 be an issue.

5 CHAIRMAN ZIEMER: So it's not an
6 issue saying everybody got badged and we have
7 the numbers. The issue of how you use that
8 and what do you assign to unbadged workers --

9 DR. NETON: Exactly.

10 CHAIRMAN ZIEMER: -- in terms of
11 both their job tasks and their times of
12 exposure and years of exposure.

13 Okay. Issue 12, which is called
14 Incorrect Calculation of Residual Surface
15 Contamination and Resuspension -- and I think
16 you sort of covered this before, Bob, but for
17 the record, we'll read this and the SC&A
18 finding.

19 The Appendix uses the same methods
20 of calculating surface contamination and
21 resuspension as were used in the main report,
22 which is Scherpelz, S-C-H-E-R-P-E-L-Z, 2006.

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1 DR. ANIGSTEIN: The TBD 6000
2 basically.

3 CHAIRMAN ZIEMER: Yes. In SC&A's
4 review of that report, we pointed out that
5 calculating surface contamination on the basis
6 of the settling velocity of five micrometers
7 AMAD, aerosol particles, ignores the sloughing
8 off of much large flakes of uranium oxide that
9 fall directly onto the floor. We also showed
10 that a resuspension factor of 10^{-6} might
11 underestimate airborne concentrations by one
12 or more orders of magnitude.

13 NIOSH response: this finding
14 indicates it is a reiteration of the comment
15 from Battelle TBD 6000 review. Therefore, the
16 finding should be addressed in that review,
17 rather than in here.

18 We talked --

19 DR. MAURO: We talked --

20 CHAIRMAN ZIEMER: We talked about
21 that this morning. And that would be
22 addressed under TBD 6000.

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1 Okay. I just have one question in
2 relation to that one. It seems that you're
3 saying that they sort of didn't take into
4 account some of the larger particles in terms
5 of calculating surface activities and --

6 DR. MAURO: No.

7 CHAIRMAN ZIEMER: -- the sloughing
8 off of --

9 DR. MAURO: Yes, the --

10 CHAIRMAN ZIEMER: -- greater than
11 five micrometer particles.

12 DR. MAURO: Think of it this way.
13 TBD 6000 is really not written for this
14 scenario.

15 CHAIRMAN ZIEMER: Right.

16 DR. MAURO: Okay? It was written
17 generically to apply to a broad range of AWE
18 facilities where the premise, the operating
19 premise, was they were handled, these other
20 facilities were handling uranium in such a way
21 that it would generate an aerosol, airborne
22 particles --

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1 DR. ANIGSTEIN: Right.

2 DR. MAURO: -- in milligrams per
3 cubic meter or whatever. And that that is
4 your starting point. And from there they
5 would calculate it on the surface. So, I
6 mean, there is a whole series of calculations
7 that fly across the board.

8 Here we are dealing with -- and
9 that approach, they simply adopted TBD 6000 to
10 this situation. Now, what happens when you do
11 that is, well, really, we have a completely
12 different situation here.

13 I mean, the way in which airborne
14 particulates might occur here in terms of the
15 handling of these slabs, the movement of these
16 slabs, and what is being done, the question
17 you have to ask yourself, to what extent does
18 that generic TBD 6000 model apply to this
19 circumstance? Either is it too conservative,
20 too unconservative?

21 So, in effect, all we really did is
22 when we got to this part of our review of

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1 Appendix BB, we simply saw that they adopted
2 TBD 6000. And we simply said, listen, we have
3 a problem with --

4 CHAIRMAN ZIEMER: Does it apply? is
5 what you asked.

6 DR. MAURO: Yes. Well, really, it
7 is a two-pronged problem. First of all, we
8 have some serious problems with TBD 6000
9 generically. And then, of course, the second-
10 order question, which you really haven't
11 gotten into, is that, to what degree does that
12 fundamental approach adopted in TBD 6000 apply
13 to this circumstance? In other words, it is
14 because of the very different nature of the
15 handling of the material.

16 CHAIRMAN ZIEMER: I understand.

17 DR. MAURO: So, I mean, that's the
18 issue here.

19 CHAIRMAN ZIEMER: Yes. But you
20 seem to focus on the larger particles, like --

21 DR. NETON: Explain that to me.

22 CHAIRMAN ZIEMER: Let me ask the

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1 question, then, because it seems as if the
2 premise is that you are underestimating the --

3 DR. MAURO: Surface.

4 CHAIRMAN ZIEMER: -- surface
5 contamination because these large particles
6 carry additional activity down. But
7 ultimately we are concerned about the
8 resuspension.

9 DR. MAURO: Yes.

10 CHAIRMAN ZIEMER: And my question
11 is, don't you have the reverse problem with
12 resuspension? The heavy particles are hard to
13 resuspend. They all become aerosolized or do
14 they get ground out?

15 DR. MAURO: Exactly, exactly. That
16 is always.

17 DR. ANIGSTEIN: Being stepped on or
18 --

19 DR. MAURO: But even only --

20 DR. NETON: Oxidized uranium comes
21 up in big chunks like that.

22 DR. MAURO: Well, I mean, you know

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1 --

2 DR. NETON: It's a very fine
3 powder, very fine.

4 DR. MAURO: Well, five micron. I
5 mean, I think, really, the question becomes we
6 have a circumstance here where I am
7 visualizing the handling of these slabs. Now,
8 I don't know the degree to which there is very
9 much flaking occurring. There is no cutting
10 on. There is no grinding going on.

11 CHAIRMAN ZIEMER: Okay.

12 DR. MAURO: So then it becomes a
13 question of, okay. Under those circumstances,
14 as their handling there, what would be a
15 reasonable amount of activity deposited on
16 surfaces?

17 Now, it may turn out that in my
18 mind, remember, I said two levels of problem.
19 One is where the problem is with TBD 6000.

20 CHAIRMAN ZIEMER: Right.

21 DR. MAURO: Now, the other is now,
22 all right. Given the TBD 6000, would you

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1 simply, even if it were correct -- let's say
2 we have no problem with TBD 6000. Okay? Then
3 we come along and say we're going to use TBD
4 6000 to this problem.

5 Then you have to ask yourself the
6 question, does that make sense, because this
7 operation from my perspective bears no
8 resemblance. In other words, the X-raying of
9 slabs bears no resemblance to any of the
10 scenarios in Harris report, the Adley report,
11 Simon Saw report.

12 In other words, there are three
13 major sources of data which characterizes
14 airborne activity and activity on surfaces and
15 which caused the empirical data that we have
16 in the literature. None of that data has any
17 applicability to this circumstance.

18 DR. NETON: There is probably good
19 reason for that just on the fairly low
20 airborne-generating activities.

21 DR. MAURO: And I would agree with
22 that. From reading everything, the activities

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1 --

2 CHAIRMAN ZIEMER: Well, I don't
3 know if there's evidence that you get flaking
4 of this or is this more like I know if you
5 handle many oxidized metals, for example, if
6 you are wearing white gloves, you see it right
7 away. Aluminum would be a good example. You
8 do get removal of the oxidation.

9 But it's not in big chunks. It's
10 pretty fine. But is there evidence externally
11 that --

12 DR. MAURO: I have no evidence that
13 it would --

14 CHAIRMAN ZIEMER: Okay. You are
15 just raising this as a question --

16 DR. MAURO: Right.

17 CHAIRMAN ZIEMER: -- to say we have
18 got to think about --

19 DR. ANIGSTEIN: Aluminum is
20 different --

21 CHAIRMAN ZIEMER: Well, okay.

22 DR. ANIGSTEIN: -- in the sense

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1 that it forms, the aluminum oxide actually
2 forms a refractive layer.

3 CHAIRMAN ZIEMER: It's a surface
4 layer.

5 DR. ANIGSTEIN: It's a single, very
6 thin surface layer that prevents further
7 oxidation.

8 CHAIRMAN ZIEMER: Right.

9 DR. ANIGSTEIN: Otherwise aluminum
10 would burn, actually.

11 MR. RAMSPOTT: Dr. Ziemer, this is
12 John Ramspott. If I may?

13 CHAIRMAN ZIEMER: Yes?

14 MR. RAMSPOTT: Dr. Mauro, the
15 FUSRAP clean-up report, the DOE report --

16 DR. MAURO: Yes.

17 MR. RAMSPOTT: -- they actually
18 removed uranium from the old Betatron building
19 in 1993 that was on the floor. So I don't
20 think that's just us. That's got to be fairly
21 big particles to start with, especially since
22 it was still there in 1993.

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1 The plant closed in '73. That's 20
2 years of walking over, doing whatever you are
3 going to do, I mean, in and out because that
4 was the main pathway into that old Betatron.

5 And, yet, in 1993, according to new
6 photographs we actually received from DOE, I
7 think if you read that clean-up report, they
8 hauled out of there either two or three
9 barrels of contaminated waste. But they
10 definitely had to use a scalping process.

11 I think they called it the concrete
12 that was contaminated. That must have been
13 some fairly good-sized pieces, definitely was
14 flaking, as they describe it.

15 The other thing the photographs
16 give us as far as a resuspension -- we have
17 never really seen these photographs before.
18 They're hanging furnaces in that building,
19 non-HEPA recirculating air, hanging furnaces.

20 If there was anything in that air,
21 any dust, uranium dust in that building, it is
22 sucked right in there and blown right out.

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1 The guys say those furnaces were running
2 year-round during the cold weather.

3 There are definitely some chunks or
4 flaking. I'm not going to say chunks but
5 flaking. I don't know what the definition of
6 a chunk or a flake is, but there are
7 definitely some decent-sized particles there
8 apparently that they still had there in '93.

9 CHAIRMAN ZIEMER: Well, I'm not
10 sure that that establishes the size, the fact
11 that they are still there.

12 DR. MAURO: I could help. I think
13 we might be making more out of -- we did
14 something very simple. We simply said that
15 they defaulted to TBD 6000 for this exposure
16 scenario. We have some serious concerns with
17 this scenario.

18 CHAIRMAN ZIEMER: Justify the use
19 of that.

20 DR. MAURO: And that's the extent
21 of it.

22 CHAIRMAN ZIEMER: All right.

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1 DR. MAURO: Now, we never went this
2 next step. So that's it. We stopped there.

3 DR. NETON: We need to prepare a
4 response to TBD 6000, which we --

5 MEMBER POSTON: I just couldn't get
6 that --

7 DR. MAURO: Well, that's --

8 MEMBER POSTON: I understand what
9 you're saying. I know what you're saying.

10 CHAIRMAN ZIEMER: Okay. We're
11 going to go on to issue 13.

12 MR. ALLEN: I'm sorry. Can I get
13 one clarification? From what you said, I'm
14 not sure if you're saying you're not sure that
15 TBD 6000 or you question whether TBD 6000 is
16 applicable to GSI in this regard?

17 DR. MAURO: Well, yes. There are
18 two levels.

19 MR. ALLEN: Yes, but does that mean
20 that we should disconnect this finding from
21 the TBD 6000 review, then, make this a
22 separate deal altogether? I mean, right now I

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1 think what you have got written down is this
2 is being covered under the TBD 6000 review.
3 But I think I'm hearing different from John.

4 MEMBER GRIFFON: Well, if you have
5 it included in the 6000, we sort of have to
6 address it under 6000, don't we?

7 MR. ALLEN: Yes. I mean, there --

8 DR. NETON: What John is saying is
9 this is a unique exposure scenario that is not
10 covered in TBD 6000. It would not be
11 necessarily covered in --

12 DR. MAURO: And I would go a step
13 further in saying -- and I am very familiar
14 with the literature on the uranium facilities
15 where you have residual radioactivity, and I
16 could say with a further degree of confidence
17 that there is nothing about the nature of the
18 operation that I have read that comes anywhere
19 near the potential for generating aerosols as
20 it does in the Adley report.

21 So, in other words, the potential
22 for surface contamination and resuspension

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1 seems to be much greater in the other
2 operations that I looked at that are
3 summarized by Harris and by Adley.

4 DR. NETON: So wouldn't that, then,
5 sort of imply that TBD 6000 might be bounding
6 if we apply it to this scenario?

7 DR. MAURO: I have so much problems
8 with TBD 6000 I wouldn't want to give it any
9 credence. I mean, I don't even --

10 DR. NETON: Well, let's assume the
11 analyses of TBD 6000 are appropriate, like you
12 had done before. Let's assume that they are
13 okay.

14 DR. MAURO: Well, if they were
15 okay, then they would be --

16 DR. NETON: They would be bounding
17 to this scenario. That is what I am trying to
18 --

19 DR. MAURO: I would say yes. I
20 mean, the TBD 6000 --

21 CHAIRMAN ZIEMER: If you are agreed
22 on --

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1 DR. MAURO: The way it --

2 CHAIRMAN ZIEMER: Those are much
3 more extreme. There are grinding and other --

4 DR. NETON: We are applying that
5 grinding, cutting operation to this particular
6 --

7 DR. MAURO: Here's a good way to --

8 DR. NETON: -- scenario.

9 DR. MAURO: If, in fact, the
10 methods you folks have adopted for predicting
11 residual radioactivity at these other
12 facilities was, in fact, struck me as
13 appropriate, reasonable bounding,
14 scientifically sound, without a doubt, there
15 would be bounding for this facility.

16 DR. NETON: So I think that would
17 speak that we should cover this in 6000.

18 CHAIRMAN ZIEMER: Yes. We need to
19 cover it, right.

20 DR. NETON: That is how to apply
21 it.

22 CHAIRMAN ZIEMER: Okay. Let's do

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1 the last one here. This is issue 13, Use of
2 Incorrect Units. I think this is almost an
3 editorial comment more than anything.

4 DR. ANIGSTEIN: Well, technically,
5 but it --

6 CHAIRMAN ZIEMER: SC&A Finding:
7 your comment switches erratically between
8 units of millirem and mr. I will put in
9 parentheses as do most health physicists when
10 they're talking.

11 The result of the sky shine
12 calculations are stated as .72 millirem per
13 hour in section BB 4.2. And there's .72 mr
14 per hour in a later section.

15 Dose rates are incorrectly stated
16 in units of milli rad per hour, which is an
17 exposure rate. Uranium dose rates are stated
18 in millirem; whereas, the output files from
19 Appendix BB analysis shows that the
20 calculations were air kernel, which is
21 expressed in m-rads, milli rads.

22 The notable misuse of units appears

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1 in the table of section BB 4.5 where the dose
2 to the skin from beta radiation is expressed
3 as 4 r per year. Beta radiation should not be
4 expressed in roentgens, which only applies to
5 photons.

6 NIOSH response: we accept the
7 comment and will correct the units in future
8 revisions.

9 I think we have taken care of one
10 of those. They agree.

11 DR. ANIGSTEIN: The same switching
12 appears in a white paper.

13 CHAIRMAN ZIEMER: Yes.

14 MR. ALLEN: I think at one point
15 the white paper is just because the Landauer
16 report actually calls it millirem and --

17 DR. ANIGSTEIN: Yes, they do. They
18 call it millirem.

19 CHAIRMAN ZIEMER: Right. And if
20 you're looking at old film records, you will
21 also find mr. You will find reps in some of
22 them and rads and who knows what else.

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1 Okay. Thank you. That gives us an
2 overview of what has to be done. We're going
3 to talk a little later this afternoon about
4 steps forward, but part of what happens is
5 independent of what the outcome of the white
6 paper is.

7 So let's move on to the white
8 paper. And, Dave, all of us received copies
9 of this quite recently. I guess it would
10 probably be helpful for you to give us sort of
11 a summary overview of the white paper and kind
12 of reiterate the bottom line. And then we can
13 go from there.

14 MR. ALLEN: Okay. I guess it has
15 been pointed out here earlier the Appendix BB
16 was put together without the benefit of the
17 film badge data. And the SC&A review of that
18 Appendix also was put together without the
19 benefit of that film badge data.

20 And I just thought it was
21 worthwhile to evaluate the film badge data and
22 have that as at least a starting point of

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1 discussion and to try to compare that with the
2 models, et cetera, and reach some sort of
3 middle ground on a lot of it.

4 So, with that, my intent was with
5 this first part of the white paper -- was to
6 analyze the film badge data, which that in
7 itself is very difficult when the vast
8 majority of the badges were recorded as just a
9 capital M, meaning they were monitored but it
10 was less than ten millirem.

11 I went through several different
12 aspects or several different possibilities of
13 trying to analyze the data into a
14 distribution. And I think, as Dr. Anigstein
15 pointed out in his review of this, that there
16 is simply no good distribution that dealt with
17 this data the way it is.

18 I settled on one or at least in the
19 white paper we settled on one, where we
20 substituted that censored data, all those
21 capitol Ms, with ten millirem, which is
22 essentially an overestimate of that missed

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1 dose. We assumed every single one of them was
2 ten millirem that indicated less than ten
3 millirem. And that by itself would not
4 account for the 22 readings that were greater
5 than ten millirem.

6 So from there, I am trying to
7 remember which way we ended up going, but we
8 went through several iterations and eventually
9 came up with the approach that we would
10 substitute ten for each non-positive reading.
11 We would then add up everybody's dose, adding
12 ten for the non-positive, adding the recorded
13 dose for what was recorded.

14 And since everybody worked at
15 different time frames and different lengths of
16 time in there, the only way to really
17 normalize this was per badge reading. So then
18 we came up with totaling all that up, dividing
19 by the number of badge readings, an individual
20 got to get an average dose per badge reading.
21 That, like I said, includes the ten millirem
22 for each non-zero reading.

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1 From that, then, we had the other
2 reading for -- I don't remember the number, 89
3 I think it was, 89 individuals in the contract
4 period, and came up with a couple of different
5 distributions for that, none of which fit the
6 distribution well.

7 But we settled on the one that I
8 believe it was a normal distribution where we
9 just put the average and standard deviation
10 with the standard techniques and came up with
11 the 95th percentile of 14.87 and half a basis
12 for that. That was one of the larger numbers
13 we came up with that is not too outrageous or
14 too ridiculous.

15 All of the ones without the
16 substitution, all of those with normal
17 distributions, essentially will have you with
18 almost half your readings as a negative
19 number. So a normal distribution simply
20 wasn't going to work that way. And that's why
21 we did the substitution.

22 As far as the rest of this paper

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1 and the intent of that, then, was to try to
2 come up with what we would call a bounding
3 estimate of the weekly badge reading and
4 adjust essentially what I call the SC&A model,
5 the model in the SC&A review of our Appendix ,
6 and adjust that estimate to the badge reading,
7 in order to do that, what I call a few
8 inconsistencies in there.

9 And we can discuss those
10 inconsistencies or what, but I saw what I
11 consider to be a few inconsistencies in there.
12 So I tried to reproduce their model and then
13 adjust it for these inconsistencies to come up
14 with a new -- and it's table 16, near the end
15 of the white paper. And then those numbers
16 were then adjusted on the last page of the
17 white paper to the film badge data.

18 And that's the whole white paper in
19 a nutshell.

20 CHAIRMAN ZIEMER: Let me open the
21 floor for questions for Dave on the white
22 paper, on the methods.

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1 DR. McKEEL: Dr. Ziemer?

2 CHAIRMAN ZIEMER: Yes, Dan?

3 DR. McKEEL: Yes. I have two very
4 basic questions I would like to ask Dave
5 Allen, please.

6 CHAIRMAN ZIEMER: Sure.

7 DR. McKEEL: The first question,
8 David, is, when did OCAS first contact the
9 site about the data, the date?

10 MR. ALLEN: I don't know the date
11 when we first contacted. We contacted them
12 about a number of possible sites. At one
13 point they finally got back to us with several
14 sites that they had dosimetry data for without
15 necessarily telling us how much they had.

16 DR. McKEEL: You don't have any
17 idea of when that was?

18 MR. ALLEN: Well, I got a date when
19 we got this data.

20 DR. McKEEL: When did you get that?
21 That was my second question.

22 MR. ALLEN: Well, that I have to

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1 look. Just a second. Near the date. It
2 might not be the exact date. The date we gave
3 it to ORAU and asked them to scan this and put
4 it in our database was March 12th of '08.

5 DR. McKEEL: And you couldn't even
6 estimate whether it was one month, two months,
7 three months, or a year before that that you
8 asked for it?

9 MR. ALLEN: There was some time.
10 It was several months at least because we had
11 to go through what they had and what they were
12 capable of giving us, what sites they might
13 have.

14 And then we also went through some
15 iterations as far as them being assured that
16 we would handle this as Privacy Act type of
17 information. It's their company record, but
18 it's also the records of the customers. And
19 they wanted some assurances we weren't going
20 to be just sending this information out all
21 over the place.

22 DR. McKEEL: Can you tell the

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1 Board, please, and myself and SC&A, why it is
2 when I informed Larry Elliott that the
3 Landauer badge data existed in 2006 that you
4 all did not try to obtain it then?

5 MR. ALLEN: Yes, I think I can. I
6 haven't been able to find where you had said
7 that other than in transcripts that you sent
8 us. And in the transcripts, you were
9 describing this data as -- I'm trying to find
10 it here. You indicated that you had seen two
11 reports and that they both said Atomic Energy
12 Agency at the top.

13 DR. McKEEL: No. That wasn't the
14 Landauer data. That was reports that GSI
15 workers simply had in their possession and
16 shared with us.

17 MR. ALLEN: Okay. In those reports
18 you mentioned they said Nuclear Consulting
19 Corps at the bottom.

20 DR. McKEEL: Yes, that's correct.
21 That was not the Landauer data at all. But
22 when I contacted Landauer, I was told that

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1 Landauer -- what I sent to Landauer was we
2 were looking to find any place that had any
3 data on film badge personnel monitoring data
4 on either the Dow Madison facility or General
5 Steel Industries.

6 So we got permission from the
7 workers. And I think we had lists of 90
8 workers at each place and, you know, with
9 Privacy Act waivers and HIPAA waivers and all
10 that kind of thing. And we sent lists of
11 those people to Landauer to see whether they
12 had any data at all.

13 And I talked to a gentleman there
14 named Chris Passmore. And Chris Passmore told
15 me that Landauer was unique in having kept a
16 record of every film badge reading that they
17 had ever recorded, which I thought was truly
18 remarkable.

19 Anyway, in about a couple of weeks,
20 they came back and said, well, yes. They had
21 not located any data at all on Dow people, but
22 they had located data on 30, about 30, GSI

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1 workers. And they wanted to know whether they
2 wanted us to try to prepare that data and send
3 it back to us.

4 And we said, well, what do you
5 actually have?

6 And they said, well, we have weekly
7 data. And we have some monthly data. And
8 then we have annual summary reports on
9 cumulative doses. And they said,
10 unfortunately, there will be a charge to you
11 all to get this.

12 So we came up with a compromise,
13 which we would get the annual report. And
14 pretty soon they did send us those on 30
15 workers. And I think we paid them \$230 or
16 something.

17 What was interesting was, apropos
18 the white paper, they told us that that is all
19 the data that they had ever had on GSI, was on
20 those 30 workers. They also said that there
21 was a -- and this was pretty much a quote -- a
22 marking on the drawer on the file cabinet that

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1 contained that data, which indicated that
2 maybe NIOSH had sought that data previously
3 and maybe had even gotten that data.

4 So I didn't know what to say about
5 that. I said, well, you know, be that as it
6 may, we would like to see the data on the
7 annual reports.

8 And they sent us that data. And
9 they did warn us beforehand that some of the
10 data was barely readable or not readable at
11 all and did we want that.

12 And we said, well, yes, because we
13 just -- at this point, we need to -- there
14 being no monitoring data that NIOSH has turned
15 up, that we would like to see any data.

16 And I told them we had those three
17 reports from those three people. Anyway, we
18 then got the data. And much of the data from
19 '64 was really grayed out. And the lady who
20 sent it said that they had tried to copy that
21 data every way they could to make it clear,
22 but it just wasn't clear. And basically it

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1 wasn't readable. And they told us that.

2 So the third question I have for
3 you is, in your white paper, you don't really
4 describe -- you describe the number of
5 readings, the number of names that were
6 mentioned, but you don't describe the
7 readability percentage of all the reports that
8 you got.

9 Mr. Dutko said, at my instigation,
10 he requested the data that applied to him be
11 sent to him because he would like to see that.
12 And he said of the 20 pages that he received,
13 19 were totally unreadable.

14 So my question to you is, how many
15 pages did you get from Landauer? And of those
16 pages, how many were completely readable? And
17 how many were not?

18 MR. ALLEN: I don't know a page
19 count. We got '64 through '73, so ten years'
20 worth of data. And many of those we got over
21 100 pages on most of those years, if not all
22 of those years.

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1 DR. McKEEL: And how much of it was
2 not readable?

3 MR. ALLEN: Nineteen sixty-four was
4 very hard to make out. Most of the rest of
5 it, you know, a lot of it, there is some
6 difficulty to it. But you can make out most
7 of it on the other years. There will be some
8 pages where we can't.

9 DR. McKEEL: Words like most are a
10 big problem for me. I think that NIOSH should
11 actually make a much more detailed rendition
12 of exactly what they got, the number of pages,
13 the number broken down by year, and the number
14 of pages that were readable and were not
15 readable. And I assume you will share that
16 data with SC&A if you already haven't done so.

17 But that needs to be put into a
18 report so that we all know exactly what you
19 got and exactly how representative. I mean,
20 it bears importantly on how representative the
21 data is.

22 We do know that people were badged

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1 at GSI for much longer than '64 to '73. And
2 so we really need to know exactly what you've
3 got. So that's that question.

4 The related question is that there
5 is an enormous discrepancy between the numbers
6 of people badged that were estimated by you in
7 the white paper as you obtained data from
8 Landauer.

9 You said 108 people were badged.
10 Landauer basically affirmed to us
11 unequivocally that they only had data on 30
12 people in an independent interaction with
13 them.

14 And Jerry Dutko sent me a list
15 based on a 1964 or '65 seniority list from GSI
16 that 61 workers were badged. So somehow we
17 all have to come to an accounting of that
18 data. And I don't see how we can do it other
19 than comparing lists.

20 So that is something for the
21 future, but I would be interested to know if
22 you have any comments on that.

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1 MR. ALLEN: I don't have any
2 comments on what Landauer gave you or told
3 you. There is no way I can comment on any of
4 that.

5 DR. McKEEL: I will look up and
6 find the e-mails and so forth where I informed
7 you all of that data. One time was at --
8 well, I'll furnish you and the Board and
9 everybody with that data.

10 MR. ALLEN: Okay. As far as the
11 readability, I don't think you can go through.
12 It would be between 1,000 and 1,500 pages.
13 And, I mean, as far as how readable each page
14 is, it's going to be very subjective type of
15 information.

16 The good thing about this data is
17 that they assign the same badge number to
18 people over and over. And on one page a name
19 might not be that readable, but on the next
20 page with that badge number, it is readable.

21 So sometimes you have to put
22 information together from two or three pages

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1 to get a clear picture, but the picture does
2 get fairly clear with all the information.

3 DR. McKEEL: That was 108 people,
4 then, that had some readable data for all 3
5 years. Well, that's the other thing that is
6 not broken down. How much readable data do
7 you have? What number of individuals have
8 readable data for each of the years '64 to
9 '73?

10 Don't you think that would be a
11 perfectly reasonable thing to ask because the
12 contract period for the AEC only extended to
13 '66? So presumably the uranium was gone
14 except for the residual contamination, but the
15 metal itself was gone from the plant by '66.

16 So we would really be interested in
17 how many badge readings you all have between
18 '64 and '66. And maybe that will resolve the
19 issue of 30, which we had.

20 MEMBER BEACH: Dan, I have a
21 question for you. This is Josie Beach. Did
22 you end up only getting the annual dose

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1 readings?

2 DR. McKEEL: Correct. As I said,
3 it would really cost us thousands of dollars
4 to get the whole set.

5 MEMBER BEACH: Okay.

6 DR. McKEEL: And we didn't have
7 that much money to pay. So we got just the
8 annual reports.

9 MR. ALLEN: The annual reports,
10 were they by name or --

11 DR. McKEEL: Yes.

12 MR. ALLEN: And you recognize the
13 names on there, I guess, a number of them?

14 DR. McKEEL: Some of them, yes.

15 MR. ALLEN: Yes, some of them.
16 Okay.

17 DR. McKEEL: I didn't have all of
18 the names of all of the GSI workers then or
19 now, still don't. But I did recognize some
20 names, yes.

21 MR. ALLEN: I was just making sure
22 you verified it was Granite City, Illinois,

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1 not Pennsylvania or some other --

2 DR. McKEEL: John Ramspott and I
3 spent two years getting straight with
4 everybody that it was General Steel Industries
5 and not Granite City Steel. So yes, we got
6 that straight.

7 MR. ALLEN: I didn't say Granite
8 City Steel. I said Granite City. That's the
9 city it is located in.

10 DR. McKEEL: We well knew that. We
11 knew it first, and we told everybody first.
12 No. They were General Steel Industries
13 workers in Granite City, Illinois. Right.

14 MR. ALLEN: That was my only guess
15 on what the inconsistency is with what
16 Landauer gave you and what they gave us.

17 DR. McKEEL: Would you all be
18 willing at some point to compare lists and
19 names?

20 MR. ALLEN: With the lawyers'
21 permission. I don't think she is going to let
22 us. We could take your list of names, I think

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1 -- I am looking at her right now. We could, I
2 think, get your list of names and see if they
3 fall on our list. Okay. That seemed to be
4 acceptable.

5 DR. McKEEL: Well, I leave that up
6 to the Board, but that is not acceptable to
7 me. This one-way exchange of data is
8 ridiculous because I have -- I mean, so if we
9 can't work that out, we can't work that out.
10 Okay?

11 So that's the main four questions
12 right now. And then I have a big question
13 about your last table, but I will save that
14 until we get to that part of the discussion.

15 Thank you.

16 CHAIRMAN ZIEMER: Okay. Thanks.
17 Let's see.

18 MR. RAMSPOTT: Dr. Ziemer, this is
19 John Ramspott.

20 CHAIRMAN ZIEMER: Yes, John?

21 MR. RAMSPOTT: If I could, Dr.
22 McKeel, did you not get Privacy and HIPAA

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1 releases for all of the names that we did get
2 information from Landauer, in case that's part
3 of NIOSH's --

4 DR. McKEEL: John, that's what I
5 said. Yes. Every single patient that we sent
6 to Landauer, we had a fully notarized, signed,
7 sealed Privacy Act release and HIPAA release.

8 MR. RAMSPOTT: I guess I am
9 wondering if that would solve NIOSH's concern
10 about the legality.

11 MS. HOMOKI-TITUS: No.

12 DR. McKEEL: What does NIOSH need?

13 CHAIRMAN ZIEMER: For?

14 DR. McKEEL: To compare lists. Is
15 there not some way that we can code the list
16 and have an intermediary like the Office of
17 General Counsel compare the names on the list?

18 MS. HOMOKI-TITUS: We'll be happy
19 to compare the names on the list for you if
20 you want to provide your list to the Office of
21 General Counsel and NIOSH provide their list.

22 DR. McKEEL: What kind of feedback

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1 will we get? I want verification that we are
2 looking at the same list.

3 MS. HOMOKI-TITUS: So you want to
4 know if the 30 names you have match the names
5 that NIOSH has? I'm just trying to get clear
6 exactly what you are looking for.

7 DR. McKEEL: Well, I think what
8 else needs to be done -- it's not just what I
9 am looking for. It's to clarify the validity
10 of the data that NIOSH is reporting. We need
11 to ask the same question in reverse of them.
12 How do you know that all of the patients that
13 you are reporting actually worked at General
14 Steel Industries?

15 And you have another way to
16 internally verify that. You can look at your
17 own lists and see how many of those patients
18 file claims. You can get with Department of
19 Labor and find out how many of those patients
20 or those individuals filed claims for OIPA.

21 Now, obviously some of them
22 probably didn't file claims, but you can do

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1 verification of those people that they were
2 actually workers at General Steel in those
3 ways.

4 MS. HOMOKI-TITUS: But the Office
5 of General Counsel wouldn't be needed to do
6 that.

7 MR. RAMSPOTT: You know, there's
8 another solution to this -- this is John
9 Ramspott -- possibly. Mr. Dutko has already
10 requested his badge information. That
11 apparently has been sent to him, but he can't
12 read it. That's being worked on now, if I
13 understand correctly.

14 Is that right, Jerry?

15 MR. DUTKO: Yes, sir.

16 MR. RAMSPOTT: If every worker that
17 we're familiar with requested their badge
18 information like Mr. Dutko did, would you be
19 kind enough to send him that information?

20 MR. ALLEN: As far as I know, we
21 would.

22 MS. HOMOKI-TITUS: If it's a FOIA

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1 request, we would have to. They would have to
2 sign a Privacy Act waiver that is provided by
3 HHS, not the one that Dr. McKeel has. And
4 that information would be provided directly to
5 the employee.

6 MR. RAMSPOTT: That would be great.

7 MR. ALLEN: Now, these pages have,
8 I'll say 20 names. You know, this is one line
9 per person. So I'm assuming we --

10 CHAIRMAN ZIEMER: We've got a lot
11 of names.

12 MS. HOMOKI-TITUS: It's going to
13 take a long time to get.

14 MR. RAMSPOTT: I'm talking about
15 the weekly or monthly reports, not a big
16 summary report.

17 MR. ALLEN: Yes. The weekly
18 reports have each individual on one line.

19 CHAIRMAN ZIEMER: Multiple entries.

20 MR. ALLEN: Multiple individuals.
21 Each person has one line for their each week.
22 Each week is a different page.

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1 CHAIRMAN ZIEMER: So you would have
2 to redact all the names except one on a given
3 page.

4 MR. RAMSPOTT: I guess I am just
5 curious what Jerry got. And if you could
6 provide that for all these people, that would
7 probably be pretty helpful. Jerry didn't seem
8 to have any problem.

9 DR. McKEEL: Mr. Dutko's list was
10 all the other names were redacted, of course.

11 CHAIRMAN ZIEMER: Yes, same thing.

12 DR. McKEEL: Right.

13 MR. DUTKO: Dr. Ziemer?

14 CHAIRMAN ZIEMER: Yes?

15 MR. DUTKO: I had 20 pages. All 20
16 were unreadable. The only thing I could make
17 out on any of them was one week of record. I
18 could make out my name. I couldn't make out
19 any of the numerical values. The 20th sheet
20 was a 3-month record, sir. And I couldn't
21 make anything out on them.

22 MR. ALLEN: Mr. Dutko, did you get

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1 those from us or through the Department of
2 Labor? Do you remember?

3 MR. DUTKO: I requested from Tonya
4 Fields from the Department of Labor.

5 MR. ALLEN: Okay. Because I know
6 you contacted us, and we are seeing if we can
7 produce a more readable version of that. But
8 we weren't positive of what you had before.
9 We're going to try to produce a more readable
10 --

11 MR. DUTKO: I had never seen them.
12 I never saw them when I worked there. They
13 were not displayed to us. That's really why I
14 wanted to see it, because I had never seen
15 them in my life.

16 MR. ALLEN: I understand. And we
17 are going to try to produce one that you can
18 actually read, but --

19 MR. DUTKO: Thank you, sir. Thank
20 you so much.

21 CHAIRMAN ZIEMER: Well, I mean, a
22 lot of times we're talking about copies of

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1 copies of copies. And this is a copy.

2 MR. ALLEN: Right, copies of
3 microfiche, I think.

4 CHAIRMAN ZIEMER: They keep losing
5 their quality as they get --

6 DR. NETON: Especially those forms
7 have like sort of a light green, darker green
8 --

9 CHAIRMAN ZIEMER: Did Landauer have
10 these on --

11 DR. McKEEL: Microfiche.

12 CHAIRMAN ZIEMER: -- microfiche,
13 and then you had the copy?

14 DR. McKEEL: Well, the ones that I
15 got were direct copies from the originals.

16 CHAIRMAN ZIEMER: Those are
17 probably better quality, then. Did you get --

18 DR. McKEEL: Except 64, a lot of
19 that data was unreadable. That's what I said.
20 That was the best they could do, but it was
21 still --

22 CHAIRMAN ZIEMER: The original --

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1 DR. McKEEL: -- not readable on --

2 CHAIRMAN ZIEMER: The originals
3 were poor quality, were they, Bob?

4 DR. NETON: I have a lot of
5 experience with Landauer readings. I mean, I
6 was there probably ten years ago working on a
7 study with X-ray technologists at the National
8 Cancer Institute. And sometimes you almost
9 have to go back there and just look at the
10 original microfilm outputs to get the
11 readings.

12 But they're much clearer.
13 Microfilms are better.

14 DR. McKEEL: Did you all do that
15 this time?

16 DR. NETON: No, we did not. We
17 requested this from Landauer, and they printed
18 out what came off the microfilm.

19 DR. McKEEL: Well, Jim, is that an
20 unreasonable question that I asked, to
21 estimate what percentage? Well, let me ask
22 you this. Were there any records that you got

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1 from Landauer that were not readable?

2 DR. NETON: I think Dave has
3 indicated that is true, but I think what he
4 also said, though, is you have to be careful
5 because the percentage unreadable does not
6 necessarily track to how well we can establish
7 a worker's dose because, like you said,
8 sometimes you have weekly readings. And don't
9 they give you like cumulative dose per year?

10 You could go two or three readings,
11 weekly readings that have nothing readable,
12 then come up one that gives you the cumulative
13 dose for that monitoring quarter or whatever.
14 So you had to be careful.

15 DR. McKEEL: Right. I understand
16 that.

17 DR. NETON: You have to be careful
18 in generalizing the unreadability, I suppose,
19 is what I'm saying. But I think it is a
20 reasonable request for us to establish the --

21 DR. McKEEL: Well, the question
22 would be, then, to frame the question more

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1 precisely to be more useful to everybody. Of
2 the 108 names that you have, how many have
3 useable, readable, interpretable data?

4 MR. ALLEN: From all of them, we
5 can get the interpretable data from all of
6 them. Like I said, sometimes you might not be
7 able to read the total number of badges he's
8 had on one page, but then the next page you
9 can read it and the page after that is
10 incremented, the cumulative of it is the same
11 on the page you can read as it was three pages
12 earlier. And you pretty much know what those
13 other pages said.

14 So either there is a little bit of
15 interpolation on some of it or interpretation
16 on some of this, but when you put them all
17 together, you can get data from pretty much
18 all of it.

19 DR. McKEEL: Well, I will tell you,
20 one thing I will share, is when I look up the
21 transmission date that I informed you about
22 Landauer, I am going to also recontact the

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1 people that I interacted with at Landauer.

2 And I am going to replay for them
3 their assertion that they only had data on 30
4 people and that NIOSH was given data on 108
5 people. I am going to ask Landauer to resolve
6 that huge discrepancy for me. And I will be
7 happy to share their answers back with you
8 all.

9 I am also suggesting in my review
10 of the white paper that you all share the
11 correspondence that you all had with Landauer
12 so that we could all be transparent and know
13 exactly what you asked for and know exactly
14 what they believe they sent you.

15 MR. ALLEN: I have to see if we can
16 find out. Some of it was telephone
17 conversations, but I have to see what we've
18 got.

19 MR. RAMSPOTT: Dave, this is John
20 Ramspott. If I may?

21 CHAIRMAN ZIEMER: Go ahead, John.

22 MR. RAMSPOTT: Can someone tell us

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1 how many badged employees you have information
2 on from '64 to '66? I tried to pick that up
3 out of the white paper. And I just did get
4 the white paper. So I haven't looked at it
5 maybe closely enough. But exactly how many
6 workers do you have information on from '64 to
7 '66?

8 MR. ALLEN: Well, I thought I put
9 that in the white paper, but I don't see it.
10 So I must not have. I didn't?

11 DR. ANIGSTEIN: You said 80. The
12 white paper says there were 89 workers during
13 the covered period. Separately from that, in
14 my response to the white paper, I counted 92
15 badge numbers that had been issued during that
16 time.

17 CHAIRMAN ZIEMER: Including the
18 control room?

19 DR. ANIGSTEIN: No. Excluding the
20 control room.

21 CHAIRMAN ZIEMER: Excluding it.

22 DR. ANIGSTEIN: In other words, the

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1 highest badge number at the end of this period
2 was 93. Number one was the control room. So
3 that leaves 90. However, it's possible -- I
4 won't dispute that -- that some badge numbers,
5 for some reason, were never assigned.
6 Sometimes you get a badge reported with no
7 name attached to it.

8 So I would say somewhere between 89
9 and 92 is the right number. It's no more than
10 92 and might be as low as 89.

11 MEMBER POSTON: It's normal to say
12 control badges shifting back and forth.

13 DR. ANIGSTEIN: No, no. There are
14 two control badges. There is a manpower
15 control badge that is no-number. In addition,
16 apparently GSI must have taken one of the
17 numbered badges, number 1, and called it
18 Betatron CTL, beta control.

19 We have no idea what it is. I
20 mean, maybe they just kept it in the Betatron
21 control room to see what the dose, you know,
22 like an aerial monitor --

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1 CHAIRMAN ZIEMER: Well, if that's
2 where the badges were racked, that would be
3 fairly common practice for a badge in where
4 the other badges sit when they're not in use.
5 And that typically would be subtracted from
6 the other readings.

7 DR. ANIGSTEIN: But that's a
8 control. They have one badge that Landauer
9 assigned control to, which is unnumbered.

10 CHAIRMAN ZIEMER: No. What I'm
11 saying, Landauer does that for shipping
12 purposes.

13 DR. ANIGSTEIN: Exactly.

14 CHAIRMAN ZIEMER: Your badge batch
15 can be exposed during shipment.

16 DR. ANIGSTEIN: Right.

17 CHAIRMAN ZIEMER: But many places,
18 in addition, take a badge. And if you have a
19 rack of badges up, in case that rack gets
20 exposed on site, --

21 DR. ANIGSTEIN: Right.

22 CHAIRMAN ZIEMER: -- you have one

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1 of those as your control. And if you specify
2 that to Landauer, they will also subtract that
3 from the others or you can do it yourself if
4 you don't want to do it that way.

5 DR. ANIGSTEIN: That seems to have
6 been the case.

7 CHAIRMAN ZIEMER: Yes.

8 DR. ANIGSTEIN: Yes.

9 CHAIRMAN ZIEMER: Now, one question
10 I had, it looks to me like they may have had
11 90 people, but at any given time, there's just
12 a single-page report.

13 DR. ANIGSTEIN: No. Two pages.

14 CHAIRMAN ZIEMER: Is it two?

15 DR. ANIGSTEIN: No. I mean, these
16 just happen to have been things that I printed
17 out when I wanted to examine a particular
18 week. But, in fact, there were typically two
19 pages in each of the reports.

20 CHAIRMAN ZIEMER: Maybe there were
21 like 30 at a time, even though the numbers may
22 run to 90, but --

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1 DR. ANIGSTEIN: That was not my
2 impression.

3 CHAIRMAN ZIEMER: Okay.

4 DR. ANIGSTEIN: I have at the end
5 of 1964 the weekly report for the first week,
6 I think, of '65. There were actually 62.

7 CHAIRMAN ZIEMER: But actually
8 means that --

9 DR. ANIGSTEIN: Yes.

10 CHAIRMAN ZIEMER: Oh, okay. That
11 would explain it, then. I thought perhaps at
12 any given time --

13 DR. ANIGSTEIN: There were already
14 people who confirmed NIOSH's assumptions about
15 this. I already mentioned the white paper.
16 And I, incidentally, checked it.

17 Just about every one that I have
18 heard of, every name that I have heard
19 mentioned, in one way or another, has been
20 among the GSI workers I seem to have found
21 here. There were 11 that were in a GSI news
22 handout that said, these workers, it could be

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1 the isotope, right?

2 CHAIRMAN ZIEMER: Right.

3 DR. ANIGSTEIN: They were always --

4 CHAIRMAN ZIEMER: I found that, I
5 think, in your report or somebody's report if
6 it wasn't in yours.

7 DR. ANIGSTEIN: Right.

8 CHAIRMAN ZIEMER: There doesn't
9 seem to be any doubt that you have the crux of
10 the report.

11 DR. ANIGSTEIN: And the fact is --

12 CHAIRMAN ZIEMER: I wasn't sure on
13 comparing the names. Dan, were you concerned
14 that you might have gotten a different data
15 set from Landauer than --

16 MR. ALLEN: I think that was my
17 guess to Dan. He said he recognized the --

18 CHAIRMAN ZIEMER: But you recognize
19 names on your set, too, Dan, right?

20 DR. McKEEL: Yes, sir. I'm sure it
21 was GSI data set that --

22 CHAIRMAN ZIEMER: And this is very

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1 clearly identified as GSI with an account
2 number. So I --

3 DR. McKEEL: Well, not only did
4 they have an account number. That actually is
5 another question, which you can answer with a
6 FOIA request, I suppose.

7 When I got my data from Landauer,
8 they gave me the name of the two account
9 managers that had managed the badge program
10 from 1964 to 1966 and then a new one who
11 managed it from 1966 to 1973. And the men all
12 verified that the person named as the badge
13 manager in 1966 had come on board in 1966. So
14 that was an exact match. And the individual
15 named as the badge manager for that first
16 period was also -- many of them knew him
17 there.

18 So everything jibes that I was
19 told. The thing that doesn't jibe is that I
20 was told that all they had was data on 30 GSI
21 workers. And I want to know from them why if
22 they really had data on 108 they didn't tell

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1 me that.

2 CHAIRMAN ZIEMER: Yes. I think
3 that's a valid point.

4 DR. McKEEL: Yes. I don't like for
5 people to say they have one thing and then
6 they have --

7 CHAIRMAN ZIEMER: I don't really
8 think the issue is whether or not we have the
9 right data set.

10 DR. McKEEL: It's not.

11 CHAIRMAN ZIEMER: It's why yours is
12 incomplete. And it seems to me it's
13 appropriate for you to ask Landauer that
14 question. Maybe -- well, I have no idea.

15 DR. McKEEL: Well, there is one
16 other thing that needs to be done. And that
17 is -- and we'll get to this, I guess, later.
18 But I have three people listed who I know
19 worked at GSI who had very high readings on
20 their badges.

21 And those individuals, some way we
22 have to work out to verify that those three

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1 individuals are also on your data set. And at
2 that point, then I would ask why it is that
3 those three very high readings, cumulative
4 lifetime readings, were not singled out
5 specifically in the white paper and used and
6 at least considered as to why they wouldn't
7 factor into the bounding doses. And when you
8 all reduce it down to an average, of course,
9 those three very high readings are negated.

10 CHAIRMAN ZIEMER: I am going to ask
11 a question here. I am going to ask counsel.
12 Is it possible for us, for example, to ask Dan
13 what the badge number was for the high
14 readings?

15 MS. HOMOKI-TITUS: Yes, he can tell
16 you any information that he wants to give you.
17 It's the government that has to protect the
18 information.

19 CHAIRMAN ZIEMER: Yes. I don't
20 think the name is --

21 MEMBER GRIFFON: He's got them in
22 his comments, actually.

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1 CHAIRMAN ZIEMER: Yes. Okay.

2 MEMBER GRIFFON: The numbers --

3 CHAIRMAN ZIEMER: No. I don't
4 think the names are important at this point if
5 we can match it up to see if he has some data
6 that we don't have versus the reverse of that.

7 But if we can identify, for
8 example, those three high readings and that we
9 have access to those as well. Dan, I don't
10 know if --

11 DR. McKEEL: Well, I mean, within
12 whatever we can do according to the legal team
13 --

14 CHAIRMAN ZIEMER: Well, we can
15 certainly --

16 DR. McKEEL: I mean, what I have is
17 the people's name and a date.

18 CHAIRMAN ZIEMER: Do you have a
19 badge number on them?

20 DR. McKEEL: I can't remember. I
21 will have to look and see. But I have their
22 name.

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1 DR. ANIGSTEIN: He can tell us the
2 name.

3 CHAIRMAN ZIEMER: Well, we should
4 do that offline, though, right?

5 DR. McKEEL: No, I'm not going to
6 do that here.

7 CHAIRMAN ZIEMER: Yes. Okay.

8 DR. McKEEL: But what I'm saying is
9 I will do it. You all tell me the
10 instructions, and I will follow the
11 instructions. But what I do want back -- I
12 don't somehow want verification back the other
13 way of what I have sent, what was the answer.
14 I have to have that.

15 CHAIRMAN ZIEMER: Of what you sent?

16 DR. McKEEL: That's a requisite.

17 CHAIRMAN ZIEMER: Oh, yes, yes.
18 Well, we --

19 DR. McKEEL: If they match.

20 CHAIRMAN ZIEMER: Yes. Okay.

21 DR. McKEEL: And that I have to
22 know.

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1 MEMBER GRIFFON: Dan, those three
2 high values that you have in your report, are
3 those all from '64 to '66? They're in a --

4 DR. McKEEL: Right. They're in the
5 covered period of time.

6 MEMBER GRIFFON: Just checking
7 that, right.

8 DR. McKEEL: Right.

9 CHAIRMAN ZIEMER: I was going to
10 say I think it would be important for us to
11 also hear the SC&A initial response. Dr.
12 Poston will have to be leaving in 15 minutes.
13 And Josie does, too. So let's get to the
14 initial response. And then we can talk about
15 next steps.

16 Bob, do you want to go through that
17 with us?

18 DR. ANIGSTEIN: Yes. Okay. The
19 response which I assume everybody has --

20 CHAIRMAN ZIEMER: I skipped a
21 break.

22 DR. ANIGSTEIN: Sure.

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1 CHAIRMAN ZIEMER: But if you need a
2 comfort break, you're on your own.

3 DR. ANIGSTEIN: I assume everybody
4 who was interested --

5 CHAIRMAN ZIEMER: We're going to
6 keep going.

7 DR. ANIGSTEIN: I assume everybody
8 who was interested had gotten the e-mail.

9 CHAIRMAN ZIEMER: Right.

10 DR. ANIGSTEIN: I just went through
11 in the same sequence as the white paper was
12 written. I just went through and answered.
13 In terms of just in summary, in terms of the
14 dosimetry data, we don't have any quarrel with
15 their -- I mean, again, given the fact that
16 some of the data was totally illegible; others
17 were barely legible -- and, frankly, it's a
18 real, real big chore going through page by
19 page on the screen and trying to decipher the
20 data because it turns out that it is easier to
21 read on a screen than on a printout. But that
22 doesn't make it easy.

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1 So I did not look at every page. I
2 did spot-checks looking at cumulative doses in
3 various places. I found one discrepancy with
4 their conclusions is that the conclusion and
5 particularly reiterated in the evaluation
6 report is that every one of the significant
7 dose -- I won't say non-zero but above the
8 recording level, was received in one week.

9 We found at least one case where an
10 individual whose punitive dose end of the year
11 with 300 millirem. And I found a ten millirem
12 reading for him earlier in the year. So that
13 point was split at least two times. We don't
14 know how many more times, just a technical
15 observation.

16 The bigger observation we have is
17 the statistical handling of the data. I
18 consulted our house statistician, Harry
19 Chmelynski, who has a Ph.D. in statistics.

20 And if you see on my pages 4 and 5,
21 we plotted the data. And it does not -- we
22 both tried a normal and a log-normal

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1 distribution. All this data, which I
2 produced, alternated the same way that NIOSH
3 said they did, meaning everybody who was an M
4 was assigned a ten.

5 And then I looked for each of these
6 individuals, I got the total amount at the end
7 of the period of employment or at the end of
8 the covered period how many total badge
9 readings there were because they are listed,
10 cumulative and divided the total dose by the
11 total badges, to get an average weekly dose.

12 So of these 89 people, 79 had 10
13 because either 69 or 67 were all Ms -- there's
14 a 10 -- another 13, 10, 12 had, in fact,
15 readings of 10 at one time or another. So,
16 again, their average would be ten. Then the
17 others were a little higher.

18 So when you plot those, they
19 absolutely do not resemble a normal
20 distribution. We did a correlation. And for
21 a normal distribution, you get an r^2 of .096.
22 For a log-normal, it rises to .115 as an r^2 .

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1 Now, inherently applying an r^2 to
2 this kind of a normal plot, there is a bias.
3 We commented on this on our review of OTIP-19.
4 There is an upward bias. You typically get r^2
5 that are way up in the .9 something because
6 you already rank ordered the data.

7 So here given that it's already a
8 bias in there, to have something as low as
9 this, it is simply not a normal distribution.
10 So, therefore, using the method of, as the
11 white paper did, simply saying, well, we just
12 calculated the mean, standard deviation, and
13 take 1.645 times the standard deviation to
14 calculate the 95th percentile, I mean, we
15 checked the arithmetic. Our arithmetic is
16 correct, but it is not a valid, scientifically
17 correct way of estimating the 95th percentile.

18 We don't have a better way, I
19 should say, immediately. I was hesitant to
20 make that observation because somebody once --
21 I remember once hearing in a totally different
22 context, don't bring up a problem if you don't

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1 have a solution. Well, we don't have a
2 solution.

3 Speculating, whether it should be
4 15 millirem, as they have, whether it should
5 be the highest of these data, the highest
6 one-week dose, which was 2,470 -- and for that
7 individual, I did confirm that, in fact, he
8 got no other dose. Every other dose, every
9 other one of his hundred odd batch readings,
10 was M.

11 I might suggest it occurred to me
12 that through the advocate for the workers,
13 perhaps if that person is still available,
14 somebody could contact him and find out if he
15 had any recollection of that.

16 Then I will just go on. Then there
17 is most of the white --

18 DR. McKEEL: I can tell you what
19 letter of the alphabet is --

20 CHAIRMAN ZIEMER: No. Don't do
21 that, Dan, right now.

22 DR. ANIGSTEIN: Right, that is a

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1 problem. Then the rest of the white paper is
2 pointing out, as Dave Allen said,
3 inconsistencies in our analyses. And for each
4 of these, I believe we have an adequate
5 response. The first is consistency, the
6 location of the Betatron operator. And I
7 touched on that a little earlier.

8 Yes, he says he can't be at two
9 places at once. He can't be one foot and one
10 meter away from the steel and also be moving
11 back and forth. And we simply did that to
12 cover all bases.

13 So it's true. And John Mauro even
14 criticized me for that. Adding the two is
15 not, strictly speaking, scientifically
16 correct. However, it makes no difference
17 because the total dose per shift for
18 radiographic steel, our estimate, is 33.5 mr
19 per shift.

20 If you take away the radiation from
21 the steel -- and we're talking about whole
22 body dose now, not skin -- it drops to 33. So

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1 there's only .5 of the 33.5. So, even if we
2 said, okay. He's really further away from the
3 steel, and we recalculate the dose from the
4 steel, it is going to be somewhere between 33
5 and 33.5. So that's an insignificant point.

6 MR. ALLEN: Well, the biggest
7 inconsistency with that, though, then becomes
8 the beta dose.

9 DR. ANIGSTEIN: The beta dose needs
10 to be at those close distances because some
11 workers were literally falling over the seal.

12 MR. ALLEN: I agree, but the photon
13 dose will -- well, start over. The beta dose
14 predominantly is going to affect skin cancer.

15 DR. ANIGSTEIN: Right.

16 MR. ALLEN: And the photon dose is
17 not insignificant with skin cancer. It also
18 affects it. So with the methods you've got
19 there and the table you presented to the
20 working group, the Procedures Working Group,
21 and you put --

22 DR. ANIGSTEIN: Yes.

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1 MR. ALLEN: -- beta dose side by
2 side with the photon doses, those numbers have
3 that person in two places at once.

4 DR. ANIGSTEIN: I agree. And I
5 think that has to be handled on a case-by-case
6 basis except that, again, the other scenario
7 is the worker just handling the steel after
8 and he gets the same dose, the same photon
9 dose, as the Betatron operator because it is a
10 different scenario.

11 So, really, I think it is really
12 moot. I think that it is --

13 MR. ALLEN: If that part is true,
14 then yes, by the time we work it all out, we
15 will find out that that one is limiting,
16 instead of this one. I haven't gotten that
17 far with the layout manual.

18 DR. ANIGSTEIN: Okay. Moving on,
19 the other one is the time of onset of exposure
20 to residual radiation. I pointed out that, in
21 calculating the exposure from the steel of the
22 Betatron operator, we give it a five-second

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1 lapse because there is no way he is going to
2 get out of the control -- open the door to the
3 control room, and walk over to this steel in
4 less than five seconds.

5 And our MCNP calculations of this
6 delayed gamma start, you know, time zero is
7 the time the beam is shut off. However, in
8 doing this residual exposure from the
9 apparatus itself that starts off at 15 mr per
10 hour, the way that it was measured is that Mr.
11 Schuetz reported to us that Allis-Chalmers did
12 exactly that. Naturally he was in the control
13 room when the Betatron was running.

14 And then after the beam was shut
15 off, he walked out, took a meter, and made the
16 measurement. So the measurement, his time
17 zero, was actually the time a person reaches
18 the apparatus from the control room. So there
19 was no reason to put any additional delay.

20 Going on to what I think is really
21 the heart of the matter. And that is the
22 white paper asserts that the railroad track

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1 exposure could not have happened during the
2 covered period because the supervisor who was
3 in charge at that time and attended our
4 meeting with the workers and was mentioned by
5 name by the workers and he himself was there
6 also -- no, he would not have allowed such a
7 practice. Well, his name appears on the badge
8 reports.

9 And, in fact, even though he
10 retired from GSI sometime in 1966, at the end
11 of the covered period, he changed jobs because
12 his name on the film badge record week by week
13 -- and those happen to be luckily legible --
14 stops the week of November 9th, 1964.

15 And I contacted him to verify this.
16 And he said yes, he did change jobs. He got a
17 promotion. He got put in charge of the
18 finishing operation and had nothing more to do
19 with the Betatron operation. I'm interpreting
20 that's why he longer needed a badge because if
21 he was issued a badge, was being monitored,
22 they wouldn't suddenly stop monitoring him if

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1 he was still doing the same work.

2 And then they also mentioned the
3 name of the supervisor who succeeded him who
4 ordered them to reverse the head and override
5 the limit switches. And his name, in fact,
6 starts on the badge reports exactly when the
7 other one left. His name actually appears
8 about two months later, but by his name, you
9 see that he had seven previous weeks, so
10 whatever reason.

11 So, therefore, this practice, this
12 supervisor who ordered them to the point of
13 practice was on duty at the end of 1964 and
14 certainly by the beginning of 1965. So that
15 practice may well have occurred during the
16 covered period and cannot be discounted.

17 DR. MAURO: Bob, could you explain
18 why that is important?

19 DR. ANIGSTEIN: Yes. Okay. It is
20 important because if the Betatron -- it's very
21 simple. Let's do this from a Betatron
22 shooting. There is a very good example of

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1 that.

2 If the Betatron is in the middle of
3 the room and it actually had limits, it
4 couldn't even point to where it happened.
5 They drew me an arc through which it was
6 allowed to travel. Then it can only point
7 towards these walls.

8 These are these six to
9 ten-foot-thick walls. Two feet are like
10 concrete with several feet of sand in between
11 the walls of concrete. And the radiation
12 would be pretty much confined to the Betatron
13 room. However, there is a corner.

14 The railroad track comes in right
15 there past that bathroom out here. If they
16 bring the Betatron close to the railroad track
17 and reverse it, it can -- I'm not going to say
18 the direct beam goes out that door, but the
19 scattered radiation will definitely go out
20 that door.

21 And, furthermore, that portion of
22 the wall there is not shielded. The shield

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1 wall for some reason goes here. And then
2 there in this corridor, the one side is not
3 shielded.

4 The Betatron control room is not
5 shielded. It's just a hollow cinder block
6 wall there. So both the Betatron workers get
7 more dose because now the scattered radiation
8 gets into the control room. That accounts for
9 the difference between that .7 and the 2.4, I
10 think.

11 And also workers outside, workers
12 inside the bathroom will get 51, I think it
13 was, millirem per hour, mr per hour. Workers
14 in what they call the break area get 30 or 40.

15 And workers working on the castings
16 that have been removed in this 10 building,
17 they actually get, not merely scatter, they
18 actually get the penumbra from the beam, that
19 if you look at the beam, you can actually draw
20 a straight line out from the Betatron target,
21 internal Betatron target, out to that area
22 that does not pass through the heavily

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1 shielded wall.

2 Now, most of the radiation goes
3 forward. So that angle is a much lower flux,
4 but still --

5 MEMBER BEACH: So you're saying
6 that that was not normal procedure, but
7 because of this new supervisor, --

8 DR. ANIGSTEIN: Yes.

9 MEMBER BEACH: -- he allowed that
10 to take place?

11 DR. ANIGSTEIN: He ordered them to
12 do it because it was quicker. And the
13 estimate by John Dutko, if I remember this
14 correctly, he said that happened maybe 15
15 percent of the time.

16 So, again, I admit that this
17 probably will be a little bit overstating to
18 say that this was the practice, you know,
19 every 40 hours a week on every shift. But at
20 least it happened sometimes.

21 And, by the way, the initial SC&A
22 report critiquing Appendix BB was not to

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1 substitute, not to say, you should throw this
2 one out and replace it with this across the
3 board, but to point out where there were cases
4 and instances where the original analysis was
5 not sufficient, was not bounding.

6 The other thing I will go over very
7 quickly, we talked a little bit about the
8 output of the old Betatron, whether it was
9 250. We never said it was 250. We just said
10 we used the same beam current calculated for
11 the 25 MeV machine, applied it to the 24. And
12 then it will be a lower output, somewhat lower
13 output. But maybe that assumption, I don't
14 say was necessarily correct, but I thought it
15 was the only safe thing we could do.

16 And there was again a
17 misunderstanding of what we did when we said
18 the beta doses were calculated assuming that
19 the operator did all the uranium radiography
20 that year and the steel doses were assumed he
21 did no uranium radiography. They work on
22 different shifts.

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1 All the uranium radiography,
2 according to the purchase order, had to be
3 done between the hours of 7:00 and 5:00 Monday
4 through Friday. My guess is they didn't want
5 workers who received overtime or shift
6 differential. They didn't want to have to pay
7 for that; whereas, the operation went on 24/7.

8 So, therefore, it's not implausible
9 there would be workers who never did uranium
10 radiography and workers who did all the -- so
11 that's why the two are not inconsistent.

12 Finally, there was a minor point
13 raised about -- they couldn't check our
14 numbers. Well, there was a wrong bill. I
15 mean, they took rounded numbers and tried to
16 calculate our result and got a slightly
17 different result. And that is because I
18 deliberately put in -- didn't want to put in
19 ten significant figures, which Excel uses. I
20 just put in a couple. And when you use those,
21 you don't get exactly the same number. So
22 that is basically it.

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1 And then what I would like to
2 perhaps take this point is to go off slightly
3 answer the points made by Dr. McKeel and John
4 Ramspott. I mean, how can the badge readings
5 be different than the model?

6 The model, correctly in my
7 estimation, calculates the dose rate or
8 exposure rate at a certain point in space for
9 a certain exact configuration of the exposure
10 condition, meaning the Betatron at this energy
11 shooting in this direction at this piece of
12 metal. And that's the dose at that moment.
13 However, that is not where the film badge is,
14 you know, all the time that it is being worn.
15 So naturally there is going to be a
16 difference.

17 CHAIRMAN ZIEMER: Okay. Thank you.

18 Questions or comments?

19 DR. McKEEL: Dr. Ziemer?

20 CHAIRMAN ZIEMER: Yes?

21 DR. McKEEL: I would like to make
22 my single comment, last comment, about the

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1 final conclusion of the white paper before
2 hopefully Josie and Dr. Poston have to leave.

3 CHAIRMAN ZIEMER: Go ahead.

4 DR. McKEEL: They're gone?

5 MR. KATZ: They have left, but --

6 CHAIRMAN ZIEMER: Just went out the
7 door, but I'm sure we will share it.

8 DR. McKEEL: That's fine. I find
9 that sad. But, anyway, I'm going to have to
10 make this comment. I would like to have at
11 least this conclusion addressed.

12 The bottom line of all of these
13 manipulations in the white paper was to
14 markedly decrease the external dose. And
15 that's as listed in the last page.

16 And so if you take, for example,
17 the year 1958, the SC&A model comes up with a
18 dose, an external dose, of 12.4 roentgen per
19 year. NIOSH's rendition with ATTILA code
20 comes out to 5.8 roentgen per year. And the
21 new film badge manipulation, which everybody
22 admits cannot be described by a log-normal or

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1 normal distribution comes out as .7 roentgen
2 per year.

3 We have already heard comments
4 today that ATTILA and MC&T agree within a few
5 percent of one another. Well, this final
6 table proves that that is not the truth or
7 somebody has made a mistake or somebody has
8 made a grossly different assumption. But,
9 anyway, the real difference is not 2 to 3
10 percent, but it's 225 percent between the two
11 dose estimates by SC&A and NIOSH.

12 Then when you say, but the film
13 badges -- I think Dr. Poston was trying to
14 negate all of the other calculations and say,
15 well, that is what matters. And that is what
16 we should rely on.

17 I know he didn't quite come to that
18 conclusion, but it seems to me that is where
19 he was heading. And I'm sure that is one of
20 the considerations that will come forward from
21 all of this. That is at .7 roentgen per year.
22 And that differs from the highest dose

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1 proposed by SC&A's model by a factor of 18 or
2 1,800 percent.

3 Now, I would say that my
4 interpretation of all of that is that, number
5 one, the two models don't agree with each
6 other by a major factor of over 200 percent.
7 And neither of the models agree with the film
8 badge data by factors of 8 to 18-fold.

9 And so my conclusion of this is
10 exactly what we said when we started back in
11 2005, that if you couple those numbers with
12 the fact that not all the source terms are
13 modeled, including the cobalt-60 -- and, in
14 particular, no one has factored in the 250 ABT
15 machine. And there are no actual neutron
16 measurements at the site.

17 The proper course of action long
18 ago should have been to award an 83-14 SEC to
19 this site. And we still contend that this
20 data, even more strongly than anything that
21 has ever been presented, in fact, shows that.

22 So we will all now enter into a

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1 process where we will wrangle with this
2 another two to three to four to six months.
3 And I will predict that we will not be able to
4 resolve all of this.

5 And so I am perfectly happy to keep
6 on doing this and know I must. But that is
7 the way I feel about this white paper and what
8 it actually shows, actually extremely clearly.
9 And I think that is my time limit.

10 CHAIRMAN ZIEMER: Yes. Thanks,
11 Dan. I hope that you have not characterized
12 what we are going to do quite correctly. I
13 don't think we want to wrangle so much as try
14 to understand each other's views and see if we
15 can come to more of a consensus on if there
16 are differences why or the models, do they
17 need to be modified, has one side or the other
18 neglected something.

19 You know, this is the first time we
20 have all seen sort of these various views of
21 things, --

22 DR. McKEEL: Oh, yes, sir. No.

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1 CHAIRMAN ZIEMER: -- including your
2 own.

3 DR. McKEEL: I guess all I am
4 saying is at this point, the discrepancy
5 between the measures is huge.

6 CHAIRMAN ZIEMER: Yes. And at
7 least we know what the starting point is here.
8 We are going to try to see if we can come to a
9 reasonable closure on this.

10 And, again, your comments are also
11 helpful in this process, as are the others
12 from the petitioners, to make sure that we
13 have not overlooked things or if it appears
14 that we have, that we have at least reasonable
15 rationale for why various assumptions or other
16 models are being used or, when we can't use
17 them or when we can use them and so on.

18 In any event, we do want to make a
19 good effort and a fair effort on this, as we
20 are charged to do. And it does often take
21 longer than we would hope. But these are not
22 simple situations. And I think none of us

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1 would be happy if we simply glossed over these
2 issues and sort of took an easy road because
3 the law doesn't allow us to do that either.

4 We are mandated to make our best
5 effort to see if we can reconstruct dose or at
6 least find the limits and make the appropriate
7 determinations. So we will proceed on that
8 route.

9 Now, what I want to do here because
10 I don't think you had benefit of or did you --
11 you had benefit of the SC&A paper?

12 DR. MAURO: No.

13 CHAIRMAN ZIEMER: No, not?

14 DR. MAURO: As we speak, we are
15 trying to have it cleared.

16 CHAIRMAN ZIEMER: Okay. We would
17 like to have you have a chance to also review
18 the SC&A paper and provide your comments on
19 that. We have also now just received and some
20 just this morning, Dan, your own comments on
21 the white paper.

22 I think some of those comments are

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1 -- I kind of interpret them as being directed
2 toward NIOSH, such as the comment when did you
3 get the information and so on.

4 DR. McKEEL: Well, Dr. Ziemer,
5 actually, they weren't at all directed toward
6 NIOSH except that was a question that I
7 thought needed to be answered in this report.
8 But I would think it would be quite
9 interesting for you all to know that as well.

10 I mean, one of the things, I did
11 get that answer today. And the data was
12 received in March. And we were having this
13 meeting on the 10th in November.

14 And so, you know, the comment is
15 that it has taken eight months to produce this
16 white paper. And also if you look at the time
17 of issuance of some of the key reports in
18 here, one wonders if this data was received
19 back in March, why it wasn't commented on
20 before now.

21 So my comments in the white paper
22 are intended for the Board, SC&A, and NIOSH

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1 equally. And I approached it exactly the way
2 that you are talking about, that we all need
3 to understand each other.

4 And what we are confronted with
5 here specifically is a bunch of techniques
6 that are designed to estimate dose at a site,
7 and they are grossly way apart.

8 And if we were all scientists and
9 we were trying to develop a method to
10 characterize a dose, which I think is what we
11 are all about, and we said, okay, we've got
12 three different ways to do it. Are we within
13 the ballpark or are we within 20 percent
14 standard deviation? Fifty percent? Well, the
15 answer is no, we are really not. We have got
16 three results that are just extremely far
17 apart, 1,800 percent apart.

18 And as a scientist, that's a big,
19 tough problem. And I agree it is going to
20 take a while to solve, but I think that's
21 fine.

22 CHAIRMAN ZIEMER: Okay. Yes. And

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1 I guess the point I was making on some of your
2 comments was the information asked for it, not
3 information -- the Work Group itself can come
4 up with. NIOSH would have to provide that.

5 DR. McKEEL: But, Dr. Ziemer, no, I
6 don't want to let it rest at that because,
7 correct, you can't provide that information.
8 But in my opinion, these are questions that
9 are vital to your interest. And you can
10 certainly ask and reiterate the --

11 CHAIRMAN ZIEMER: Oh, I understand
12 what you are saying, yes. Yes. No. I am not
13 saying that the information shouldn't be
14 obtained. I am differentiating between
15 questions that the Work Group can address here
16 sitting around the table versus what sort of
17 information NIOSH would have to come up with,
18 yes.

19 DR. McKEEL: The Work Group if you
20 agreed with me, which you might not or you
21 may, but if you do agree with me, you could
22 certainly support the need for NIOSH to

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1 provide these answers.

2 CHAIRMAN ZIEMER: Oh, yes. Yes.

3 DR. McKEEL: That's all.

4 CHAIRMAN ZIEMER: Yes. I agree.

5 DR. McKEEL: Okay.

6 CHAIRMAN ZIEMER: Okay. Now we
7 need to sort of wrap up here today. Mark?

8 MEMBER GRIFFON: Along those lines,
9 I have one request for an action from NIOSH.
10 Just on the raw data -- I know this is
11 probably being tasked back to Dave, but if
12 they could put on there, draw the spreadsheet
13 with the analysis of that raw data, it might
14 be helpful.

15 Certainly all of us don't have the
16 time to go through all of these sheets of data
17 and find the 30 or so positive values and do
18 all of the work that you have done already.

19 So if you can post that when it's
20 in the right format.

21 MR. ALLEN: Some readable form?

22 MEMBER GRIFFON: Yes.

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1 CHAIRMAN ZIEMER: Okay. I'm going
2 to write that down.

3 DR. ANIGSTEIN: I just have a
4 question for Jim. You did not get copies of
5 the microfiches. You got printouts. Have you
6 explored the possibility? I know microfiche
7 can be copied because I know in a different
8 project, we had to get that.

9 DR. NETON: I don't know. We've
10 not talked about getting a better quality of
11 the data. I mean, I think we ought to do this
12 analysis first and see if it's sufficient for
13 our purposes, given the fact that we can look
14 at multiple needs and establish, fill in the
15 gaps, so to speak.

16 MR. KATZ: I am sorry. We have
17 some discussion going on on the telephone.
18 Can someone mute their phone, please?

19 CHAIRMAN ZIEMER: Okay. Mark has
20 asked that NIOSH put on O: drive the analysis
21 of the film badge data.

22 Let me go back, though, quickly.

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1 The TBD 6000 findings we need to have NIOSH
2 address those. So, NIOSH, if you can respond?

3 DR. NETON: SC&A analysis will be
4 very simple, but we will wait to start on
5 that.

6 CHAIRMAN ZIEMER: Okay. And then
7 let's see. The TBD 6000 Appendix BB
8 findings, we need to now be able to go back
9 and resolve each of those. Partially that has
10 to be done in the framework of the film badge
11 analysis.

12 Now, the petitioners don't have the
13 film badge analysis yet either, do they? So
14 we need to have --

15 DR. MAURO: Our white paper, you're
16 saying?

17 CHAIRMAN ZIEMER: The analysis of
18 the film badge white paper.

19 DR. MAURO: And the white paper,
20 but --

21 CHAIRMAN ZIEMER: And I think we
22 need NIOSH also to react to the SC&A response

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1 or SC&A's comments on the white paper.

2 DR. NETON: Yes. My concern is
3 that we're kind of getting narrowly focused on
4 these small issues.

5 DR. MAURO: Could I do something?

6 CHAIRMAN ZIEMER: Sure.

7 DR. MAURO: I have been reading the
8 material, working with Bob, listening, and
9 trying to educate myself. Then I have to step
10 back and say, you know, what is it that really
11 is disturbing me -- and I think SC&A would --
12 about the whole picture that is sort of
13 emerging in front of us? And there are two
14 things that I would say emerges that I think
15 we have to look at that I am concerned about.

16 One is that apparently there are
17 locations outside the shielded area where the
18 exposure rates were potentially fairly high
19 for some periods of time.

20 I think the number Bob had
21 mentioned was outside the ribbon door and
22 other locations where it could have been on

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1 the order of 50 millirem per hour.

2 So it sounds like there are
3 locations where there could have been a few
4 people, perhaps many people, that were not
5 badged. They were in the vicinity of the area
6 but not badged and maybe never were badged as
7 part of the program -- I'm not sure -- where
8 the exposure rates could have been on the
9 order of 50 millirem per hour or perhaps
10 higher.

11 So what that means is the default
12 value -- and if you can conceive of 50
13 millirem per hour, now we have a default value
14 of .7 or 700 millirem per year. There are 700
15 millirem per year as being the default value.

16 Does that capture the exposures
17 that might have been experienced by people in
18 unprotected areas outside the ribbon door that
19 we heard before, where it was 50 millirem per
20 hour?

21 And it doesn't take very many hours
22 that the person over the course of a year who

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1 may not have been badged could have
2 experienced exposures.

3 DR. ANIGSTEIN: Excuse me.

4 DR. MAURO: Sure.

5 DR. ANIGSTEIN: You know, that one
6 would be about 24 outside the ribbon door.

7 DR. MAURO: Okay. Go ahead.

8 DR. ANIGSTEIN: The 50 or 55
9 depending on the way you look at it millirem
10 or mr is an area that later I learned was
11 probably not accessible.

12 DR. MAURO: Okay.

13 DR. ANIGSTEIN: It was just outside
14 an unshielded area, but apparently there was a
15 fence around it.

16 DR. MAURO: Okay.

17 DR. ANIGSTEIN: There was an
18 exclusion. So that 50 is probably not --

19 DR. MAURO: Conceptually my concern
20 is that --

21 DR. ANIGSTEIN: But somewhere in
22 the range of 10 to 25 is definitely more

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1 accessible to occupy that area.

2 DR. MAURO: So I think the model,
3 the generic model, the degree to which there
4 is a level of assurance that the default
5 values were selected that would be applied
6 apparently to everyone at the site would, in
7 fact, be claimant-favorable for all workers,
8 especially given that there were areas in the
9 site where the exposure rates could have been
10 10 to 20 millirem per hour. A person may not
11 have been badged and perhaps could have been
12 there for many hours.

13 DR. ANIGSTEIN: Right. And, I
14 mean, when you kind of contrast that with 14
15 and a half millirem per week, --

16 DR. MAURO: Right.

17 DR. ANIGSTEIN: -- you know,
18 there's a disconnect.

19 DR. MAURO: Now, I'll just give you
20 my second analysis.

21 DR. NETON: Well, you're talking
22 about the default value is 700. Which --

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1 DR. MAURO: For the year. I'm
2 looking at your all per year.

3 DR. NETON: Okay. That's the
4 modified one that Dave came up with.

5 DR. MAURO: The most recent one,
6 right. So that would be, I assume that's your
7 14 millirem.

8 DR. NETON: Well, I'm thinking that
9 we need to start with what we currently have
10 on the table, Appendix BB.

11 DR. MAURO: That's the other
12 question I have.

13 DR. NETON: In Appendix BB, what's
14 on the table --

15 DR. MAURO: Oh, going back to the
16 5.8 per year.

17 DR. NETON: I don't know if it's on
18 the table, but I'm saying that that's what we
19 viewed to reconstruct couple of hundred doses
20 like that.

21 DR. MAURO: Okay. Good.

22 DR. NETON: And I'm saying, is that

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1 sufficiently adequate now given that we have
2 this new piece of information? That's where
3 I'm coming from.

4 DR. MAURO: Good. Then what you're
5 saying is we could look at the whole thing
6 collectively: --

7 DR. NETON: Reexamine --

8 DR. MAURO: -- the data; the
9 conversation we had today; your original
10 analysis -- that was 5.8 roentgens per year --
11 our original analysis, which is 12.4. In
12 other words, we have all this on the table.

13 DR. ANIGSTEIN: Let me understand
14 something.

15 DR. NETON: Go ahead, probably the
16 same question.

17 DR. ANIGSTEIN: If you had to
18 assign a new case -- I don't know how you
19 would make it, but if you were able to assign
20 a new dose reconstruction tomorrow, worker,
21 claimant came in and percolated and you
22 sending it out to one of your dose

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1 reconstructors, what would he be using? Would
2 he be using Appendix BB or would he be using
3 the SEC ER, which --

4 DR. NETON: Appendix BB, which is
5 the approved document --

6 DR. ANIGSTEIN: So Appendix BB is
7 still the --

8 DR. NETON: That's my point, you
9 know.

10 DR. MAURO: Okay. Well, I think
11 that --

12 DR. ANIGSTEIN: At what point does
13 it get replaced with the film badge
14 calculation with a 14 and a half --

15 MEMBER GRIFFON: Are you proposing
16 that at all? You're not.

17 DR. NETON: Dave, you might want to
18 answer that.

19 MR. ALLEN: We're not proposing.
20 We're throwing the information out there to --

21 DR. MAURO: Okay. Good. Good.

22 DR. NETON: I think the best we can

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1 say at this point is the film badge data
2 clearly in our opinion supports the fact that
3 our model is bounding, SC&A's model is even --

4 DR. MAURO: I would agree with
5 that. So you have heard my -- then the second
6 thing that is troubling me is the ten-year
7 period where apparently there was source or
8 sources on site and there was no -- at least
9 we have no data, film badge data, for the
10 workers who were working for that ten-year
11 period.

12 I find that very troubling,
13 especially when you're dealing with -- quite
14 frankly, I am less concerned with the Betatron
15 dose reconstruction, you know, the old
16 Betatron, because in theory, models could
17 place an upper bound on it. When it comes to
18 nondestructive testing --

19 DR. ANIGSTEIN: There's no
20 nondestructive testing.

21 DR. MAURO: No. I am so used to
22 thinking about sources. When you talk about a

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1 cobalt-60 source, even if it was a relatively
2 small, a 250-millicurie, source, I am
3 concerned --

4 DR. ANIGSTEIN: That's the worst
5 one. That one is worse because it was
6 considered to be not very dangerous and would
7 not --

8 DR. MAURO: Yes. One of the things
9 we did --

10 DR. NETON: The 250-millicurie?

11 DR. ANIGSTEIN: At that point the
12 80-curie source --

13 DR. NETON: Was in use.

14 DR. ANIGSTEIN: -- they put in a
15 well-shielded area.

16 DR. NETON: It was also in use at
17 the time. And we have that data.

18 DR. MAURO: That's right.

19 DR. ANIGSTEIN: That's true.

20 DR. MAURO: That's true. But let's
21 keep it --

22 DR. NETON: So sometimes --

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1 DR. MAURO: Let's just keep it -- I
2 think there is pretty good evidence that there
3 was, in fact, a cobalt-60 source that might
4 have been on the order of 250 millicuries that
5 was not very well-controlled because
6 apparently someone brought it home. We have
7 some information to that effect.

8 DR. ANIGSTEIN: Yes. The guy put
9 it in his pocket and took it home and -- you
10 didn't read that?

11 DR. NETON: I haven't heard that.

12 DR. ANIGSTEIN: And they actually
13 hired an airplane to fly over the area. And
14 they located it with a Geiger counter.

15 CHAIRMAN ZIEMER: What size source?

16 DR. MAURO: Two hundred and fifty
17 millicuries, which is not that much, but it's
18 logical --

19 CHAIRMAN ZIEMER: Put in your
20 pocket.

21 DR. MAURO: Yes. He brought it
22 home. Let's call it hearsay. Let's stay with

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1 --

2 DR. ANIGSTEIN: He thought it was a
3 fishing sinker.

4 DR. MAURO: This is certainly
5 information that is coming to hearsay, you
6 know, the degree to which. But the more
7 important point is I can't conceive of working
8 with nondestructive testing sources or not
9 having some way of surveying, controlling
10 access to the areas once it's withdrawn. And
11 I know I am very concerned about these being
12 stuck in the open position and how do you
13 respond to that.

14 So I would say if there is a single
15 place where I think there was a health,
16 potential health physics problem that needed
17 to be properly managed is when you are working
18 with a sealed source to nondestructive
19 testing, and there were no records of either
20 film badge records or radiation survey
21 controls that we can say we can place an upper
22 bound on the doses to the workers who might

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1 have been involved in those practices from
2 1953 to '63. That's my single greatest
3 concern.

4 DR. McKEEL: John Mauro, this is
5 Dan McKeel.

6 I highly support that, but in all
7 these analyses, everybody keeps on leaving it
8 that there is testimony, sworn affidavit
9 testimony, that an iridium-192 gamma source
10 was used. You have no calculations for that.
11 And there was a 250 kVp.

12 So if you pay attention to your own
13 guidance by OCAS, those sources have to be
14 modeled or real data found for them. And if
15 they're simply not accounted for, just
16 ignored, then these doses cannot be considered
17 either bounding or sufficiently accurate.

18 And before this is all over, I am
19 going to bring that up enough times that it
20 will either be answered and addressed or we
21 will just have to leave that on the table as
22 not complying with OCAS' own guidance. And

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1 that is my really big problem.

2 And I agree with you about your
3 point number two wholeheartedly.

4 CHAIRMAN ZIEMER: Okay. Bob? We
5 need to wrap up here.

6 DR. ANIGSTEIN: The iridium-192
7 source we looked into, I looked into. That
8 was not owned by GSI. That was owned by St.
9 Louis Testing. They brought it on site. And
10 the radiographers from St. Louis Testing were
11 the only ones who used it.

12 They would set up a perimeter that
13 excluded everyone from an area where it was
14 more than two mr per hour. So it would not be
15 a significant source of exposure to GSI
16 personnel.

17 DR. McKEEL: Dr. Anigstein?

18 DR. ANIGSTEIN: Yes?

19 DR. McKEEL: In all due respect, I
20 know you had that meeting on October the 9th
21 of 2007. We've had three long meetings that
22 the transcripts are all --

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1 DR. ANIGSTEIN: I read the
2 transcript, Dr. McKeel.

3 DR. McKEEL: And St. Louis Testing
4 also brought on site a gamma source that was
5 used in between the old Betatron and the new
6 Betatron buildings.

7 DR. ANIGSTEIN: Yes.

8 DR. McKEEL: And many men testified
9 that they were near that area. It was done in
10 the open. And there were definitely potential
11 exposures from that. And, even though it is
12 brought in by St. Louis Testing, it is still a
13 source at GSI and by the OCAS guidance just
14 put out, that has to be calculated.

15 DR. ANIGSTEIN: I agree with that
16 part of your statement, but the gentleman from
17 St. Louis Testing who attended the meeting
18 described how he did it. And he said the GSI
19 personnel, meaning everybody except his own
20 people, were excluded from that area.

21 DR. McKEEL: But I am telling you
22 for the cobalt-60, I know that gentleman. We

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1 have talked to him, too, long before you had
2 any contact with him at all. And we have also
3 talked with the workers. And they put it on
4 the record that some of that testing was done
5 and people observed it being done. So the --

6 DR. ANIGSTEIN: From a distance.

7 DR. McKEEL: They were GSI workers.
8 So they definitely were not excluded from that
9 area.

10 DR. ANIGSTEIN: Well, when I say
11 excluded, meaning adequate distance. I didn't
12 say they couldn't -- they could see it.

13 DR. McKEEL: Well, I think that you
14 have to consider that gentleman, you know.

15 DR. ANIGSTEIN: Okay.

16 DR. McKEEL: He has a certain
17 potential liability aspect. And, of course,
18 that is what he is going to say.

19 CHAIRMAN ZIEMER: Okay. We need to
20 define what is going to happen before our next
21 meeting. So, Jim, what do you see as NIOSH's
22 next steps?

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1 DR. NETON: I'm trying to sort this
2 out. I tend to agree with John that there are
3 a few sort of key issues that if we can't get
4 past those, then maybe the other ones are moot
5 because, you know, we just have to get past
6 maybe some of these unmonitored source
7 exposures. And if we can't get past that,
8 then I don't know what the occasions are.

9 So I don't know. Maybe we need to
10 go back and readdress some of these
11 unmonitored exposures. We haven't done that
12 yet, at least to anybody's satisfaction, I can
13 tell so far.

14 So key in on the cobalt-60
15 250-millicurie source. At least somehow
16 address the 250 kVp and the iridium-192,
17 either using what Bob has provided and other
18 information --

19 CHAIRMAN ZIEMER: What was that
20 X-ray source, by the way? Was that one of
21 those portable --?

22 DR. ANIGSTEIN: Apparently, yes.

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1 DR. NETON: Yes. These sources
2 tend to be not isotropic but sort of focused.

3 DR. ANIGSTEIN: Yes.

4 DR. NETON: We certainly need to
5 address those. I think that is a good
6 starting point. I don't know about the other
7 issues that are on the table. Possibly we
8 need to go back and do something with the film
9 badge data to demonstrate its reliability or
10 robustness or I'm not sure what the right term
11 --

12 MEMBER GRIFFON: One starting point
13 would be those high values that Dr. McKeel
14 identified and try to --

15 MR. ALLEN: You said that was in
16 the --

17 MEMBER GRIFFON: They're in his
18 redlined text, yes. You can talk to him
19 offline.

20 DR. ANIGSTEIN: Yes. But we don't
21 know who. And we didn't find it.

22 MEMBER GRIFFON: Right.

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1 DR. ANIGSTEIN: But there is a
2 possibility, actually a logical possibility.
3 I'm just putting this out as a possibility
4 that somebody could have gotten the high
5 exposure, but what he mentions is much higher
6 than what we saw.

7 Somebody could have gotten a high
8 exposure and, not coincidentally, been
9 terminated from the work because, my God, he
10 got over five rem. He shouldn't be doing his
11 --

12 MEMBER GRIFFON: For the record, he
13 has been --

14 CHAIRMAN ZIEMER: Well, Dan said
15 it's in his film badge records and,
16 unfortunately, isn't in your film badge
17 records.

18 DR. ANIGSTEIN: No, no. I
19 understand that. But it could be in the
20 record that we did not look at because they
21 were hard to read, the in-between year.

22 CHAIRMAN ZIEMER: Yes, it could

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1 have been.

2 DR. ANIGSTEIN: I look at the end
3 of each year. But that person might have
4 dropped out of the record precisely because he
5 got a high exposure. And so it's somewhere in
6 there, but it may be in the illegible records.
7 I'm just saying this as --

8 CHAIRMAN ZIEMER: Maybe offline you
9 can learn from Dan the dates and the badge
10 number.

11 DR. McKEEL: Dr. Ziemer?

12 CHAIRMAN ZIEMER: Yes?

13 DR. McKEEL: Can I mention
14 something?

15 CHAIRMAN ZIEMER: Sure.

16 DR. McKEEL: I have had this
17 confirmed by the CDC FOIA office. And I
18 believe Emily and Liz have said this as well.
19 The Privacy Act of 1974 does not apply to
20 deceased individuals. And the individuals
21 with the very high doses I believe are all
22 deceased.

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1 MS. HOMOKI-TITUS: Assuming --

2 DR. McKEEL: I want the legal
3 counsel to go back and review everything that
4 their guidances, their policies, and so forth.
5 But when I was at Washington University living
6 under the Privacy Act and HIPAA laws for 31
7 years and had to administer a program where we
8 delivered human tissue for research, Privacy
9 Act and HIPAA do not apply except for certain
10 significant information, which is not involved
11 here, for deceased individuals.

12 So I know for a fact some of those
13 individuals were not for RC. So I don't think
14 those considerations really apply. So why
15 don't we revisit that question as well? And
16 maybe the exchange of the data will be much
17 simpler.

18 MS. HOMOKI-TITUS: Dr. McKeel,
19 you're right that the Privacy Act doesn't
20 apply to deceased individuals, but if one of
21 their descendants has a claim with the OCRA,
22 then they have Privacy Act interest in that

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1 information and will protect that information
2 under their Privacy Act interest. But we
3 would just have to determine that.

4 And I am not saying that you can't
5 see it. All I'm saying is that it's not just
6 a straight, fast rule that because somebody
7 has died, all of a sudden, for this program,
8 the Privacy Act interest is gone, because it
9 is not.

10 DR. McKEEL: I'm just saying we
11 need a definite ruling on that particular
12 point from you, please.

13 MS. HOMOKI-TITUS: Well, I mean, I
14 am giving you a definite ruling. You are
15 right that there is no Privacy Act interest
16 for a deceased person, but under this program,
17 since their descendants can make claims or
18 their spouse can make a claim, then those
19 people have a Privacy Act interest in the
20 information under that claim.

21 DR. McKEEL: Well, I just --

22 MS. HOMOKI-TITUS: I am not saying

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1 that that is what is going to --

2 DR. McKEEL: -- registered for the
3 record. Your understanding of the Privacy Act
4 law is different from my understanding of the
5 Privacy Act law. So you will have to prevail,
6 but I don't accept what you said as being
7 correct.

8 CHAIRMAN ZIEMER: And also I
9 suppose that we would -- I don't know how you
10 would confirm that the person was necessarily
11 deceased. And you can't go by hearsay, I
12 don't suppose.

13 MS. HOMOKI-TITUS: We would either
14 have to have a death certificate or we go by
15 the --

16 CHAIRMAN ZIEMER: What's that?

17 DR. McKEEL: If there's a death
18 certificate, that's one way.

19 CHAIRMAN ZIEMER: Yes. Yes. Okay.
20 We're trying to determine here our next steps
21 for NIOSH.

22 DR. NETON: The first thing I had

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1 is provide to look at the analysis of
2 unmonitored sources we talked about.

3 CHAIRMAN ZIEMER: Okay.

4 DR. NETON: The second one so far
5 as my mind is reliability of the film badge
6 data that we have, which would include someone
7 who challenged the sensitivity of the film,
8 the representativeness, legibility, and some
9 type of inter-comparison with Dr. McKeel's
10 data sets.

11 CHAIRMAN ZIEMER: Okay.

12 DR. NETON: So we have got some
13 work to do on that. Those are the two big
14 ones that stick out in my mind. The other
15 ones I think are important, but until we can
16 get by this --

17 CHAIRMAN ZIEMER: Right. And,
18 plus, you are going to start working on the
19 6000 matrix findings.

20 DR. NETON: Oh, yes. Right, yes.

21 CHAIRMAN ZIEMER: And let's see.
22 For SC&A, you also are going to try to confirm

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1 those high numbers.

2 DR. ANIGSTEIN: Yes, yes.

3 CHAIRMAN ZIEMER: Maybe work with
4 Jim on that. Make sure that we're looking at
5 the same thing.

6 DR. ANIGSTEIN: We're working on
7 it.

8 CHAIRMAN ZIEMER: Let's see what
9 else. Well, as you address the reliability of
10 the film badge data, I guess you also will
11 take into consideration whatever comments,
12 both in terms of the SC&A comments and Dr.
13 McKeel's, insofar as they apply to that issue.

14 DR. NETON: Yes. We probably need
15 to revisit the statistical analysis of the
16 film badge data.

17 MR. RAMSPOTT: Dr. Ziemer, this is
18 John Ramspott.

19 CHAIRMAN ZIEMER: Yes, John?

20 MR. RAMSPOTT: If I may ask, will
21 someone be -- do you need sworn affidavits by
22 these workers who say they wore badges for a

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1 time? How do you analyze a badge if it's not
2 on a person in the 10 building? Are they
3 grouped into the people who didn't have
4 badges?

5 CHAIRMAN ZIEMER: I don't think the
6 Work Group needs that. I think NIOSH if
7 they're doing individual dose reconstruction,
8 if a person says, I didn't wear my badge --
9 well, Jim, you respond to it.

10 DR. NETON: Yes. Well, we're going
11 to have to look at this whole picture now that
12 there are some questions raised.

13 CHAIRMAN ZIEMER: Now that you have
14 film badge data, yes.

15 DR. NETON: This has not come up,
16 to my knowledge, until we got the film badge
17 data at any level that I was aware of.

18 MR. RAMSPOTT: Actually, the not
19 wearing the badges was a public comment on the
20 24th.

21 DR. NETON: When?

22 MR. RAMSPOTT: This year, 2008.

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1 DR. NETON: Twenty-fourth of what?

2 MR. RAMSPOTT: Twenty-fourth of
3 June. I'm sorry. The St. Louis Board
4 meeting.

5 DR. NETON: Something that hasn't
6 surfaced, at least in my mind. And we need to
7 look a little bit more at what that really
8 means, not wearing it, not wearing it in a
9 radiation environment. We are going to as
10 part of this analysis looking at the
11 underlying sources of railroad shots, that
12 sort of thing.

13 MR. RAMSPOTT: A lot of these
14 people already had their dose reconstructions
15 without the information available.

16 DR. NETON: Again, we have a
17 bounding analysis right now. And the film
18 badge data, at least as we see it now, is
19 fairly low. And we need to look at both
20 pieces and see where reality lies.

21 MR. RAMSPOTT: Okay.

22 CHAIRMAN ZIEMER: And if there's a

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1 change in the method of dose reconstruction,
2 you would go back and revisit those claimants,
3 yes.

4 MR. RAMSPOTT: Because not wearing
5 them would certainly flaw the credibility of
6 the data, would it not?

7 DR. NETON: It depends on under
8 what conditions they weren't wearing them,
9 yes.

10 MR. RAMSPOTT: Well, any time they
11 left the Betatron.

12 DR. NETON: Well, yes. The
13 question is, were the exposures that were
14 captured by the film badge data representative
15 of some of the highest exposed workers, yes or
16 no? If we can establish that, then we'll go
17 ahead and work with it. If we can't, then we
18 have to drop back and rely more on modeling.

19 CHAIRMAN ZIEMER: Okay. Any other
20 comments or questions for the group? Oh, I
21 want to find out when we can meet again.

22 MR. KATZ: Right.

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1 CHAIRMAN ZIEMER: Part of that
2 depends on the --

3 DR. NETON: When we can get this.

4 CHAIRMAN ZIEMER: I don't know if
5 you would be in a position to respond to that
6 yet, Jim.

7 DR. NETON: We're not.

8 CHAIRMAN ZIEMER: Let me do this --

9 DR. NETON: I've gotten in trouble
10 before, yes.

11 CHAIRMAN ZIEMER: Let's do the
12 following. After you get an idea, whether
13 it's later this week or when you have some
14 idea of when the information might become
15 available so that we can address it further,
16 then I would like to set up another meeting.

17 We do have the Board meeting coming
18 up next month in Augusta. I know the
19 Procedures Work Group plans to meet Monday
20 afternoon prior to that meeting. I think
21 there is going to be a tour of Savannah River
22 site on Monday morning.

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1 There's a possibility we could
2 possibly meet, like, the afternoon after the
3 meeting adjourns.

4 DR. NETON: I think I'm even
5 pushing that a little bit.

6 CHAIRMAN ZIEMER: The meeting gets
7 pretty long, yes.

8 DR. NETON: To get this out in
9 advance in time for people to review it and
10 everything would mean we would have to have it
11 completed in a couple of weeks.

12 CHAIRMAN ZIEMER: Right. That
13 being the case, we're talking about early
14 January, then, because that's going to take us
15 into the Christmas holidays.

16 MR. KATZ: Early January is shaping
17 up to be very busy with work groups.

18 CHAIRMAN ZIEMER: Yes. Okay.
19 We're going to have to plan a meeting early
20 January just --

21 MR. KATZ: You're right. I agree
22 with that.

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1 MS. BURGOS: And we do have the
2 Board call on the 13th.

3 CHAIRMAN ZIEMER: And we have a
4 Board call on the 13th as well, yes.

5 MR. KATZ: January 13th, right.

6 CHAIRMAN ZIEMER: Thank you,
7 everybody. Thanks, everyone on the phone.

8 DR. McKEEL: Dr. Ziemer?

9 CHAIRMAN ZIEMER: Yes?

10 DR. McKEEL: I was just saying
11 thank you for the meeting. I'm glad I got to
12 --

13 MR. KATZ: Dr. McKeel?

14 DR. McKEEL: Yes, sir?

15 MR. KATZ: This is Ted.

16 DR. McKEEL: Yes?

17 MR. KATZ: You don't need to give
18 me an answer now, but if you would think about
19 the upcoming Board meeting and whether you
20 would like to have the NIOSH presentation if
21 it's an evaluation report then or whether you
22 have concerns about that and just let me know

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1 in the next day or two, that would be great.

2 DR. McKEEL: Well, Ted, I can't
3 answer that question. It really depends on --
4 I have to have all of the information that is
5 allowed to get to me by the Privacy Act law
6 and all of those constraints.

7 And I cannot have them the day
8 before I go to December. I'm busy, too. So,
9 you know, my decision is based on -- I need
10 those documents. And I need to prepare my own
11 presentation. And the resources are limited.

12 So unless everything can get to me,
13 why don't we say, by the last week in November
14 or something like that, I don't think it's
15 possible for me to be expected to prepare
16 adequately.

17 CHAIRMAN ZIEMER: No. Dan, I think
18 you are right. And this is Ziemer. And, as I
19 indicated before, I don't think the Board is
20 going to be in a position to respond, in any
21 event. And I think it would be more fruitful
22 if you had more time so that when the ER is

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1 presented, that you will be in a position to
2 present fully.

3 DR. McKEEL: Yes, sir. I think
4 that's really the --

5 CHAIRMAN ZIEMER: So I think we're
6 talking about the first face-to-face meeting
7 in the next year.

8 MR. KATZ: I mean, that's what I
9 suspected, but I just wanted Dr. McKeel to
10 have the opportunity to say differently.
11 That's all.

12 DR. McKEEL: John, I think that's
13 --

14 CHAIRMAN ZIEMER: Well, otherwise
15 what will happen is, they could present the
16 evaluation report, and you could defer your
17 response to the later meeting.

18 DR. McKEEL: No. I don't want to
19 do that.

20 CHAIRMAN ZIEMER: But I think it's
21 more effective if they're both side by side.

22 DR. McKEEL: No. I want to talk to

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1 everybody face to face and talk about it. And
2 hopefully you all can make a decision then.
3 That would be great.

4 MR. KATZ: So I agree, Dr. McKeel.

5 CHAIRMAN ZIEMER: Okay.

6 MR. KATZ: So, for the record,
7 there will not be a presentation at the
8 December Board meeting.

9 DR. McKEEL: That's good. Thank
10 you.

11 CHAIRMAN ZIEMER: Okay. Thank you
12 very much. We're adjourned.

13 (Whereupon, the above-entitled
14 matter was concluded at 4:14 p.m.)

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