

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

convenes the

WORKING GROUP MEETING

ADVISORY BOARD ON  
RADIATION AND WORKER HEALTH

ROCKY FLATS

The verbatim transcript of the Working  
Group Meeting of the Advisory Board on Radiation and  
Worker Health held telephonically on January 9,  
2007.

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### TRANSCRIPT LEGEND

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

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

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(By Group, in Alphabetical Order)

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HOMOKI-TITUS, LIZ, HHS  
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POTTER, GENE, ORAU  
RICH, BRYCE, ORAU  
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SHARFI, MUTTY, ORAU  
SHIELDS, LASHAWN, NIOSH  
SMITH, MATTHEW, ORAU  
STAUDT, DAVID, CDC  
ULSH, BRANT, NIOSH

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

(10:30 a.m.)

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22WELCOME AND OPENING COMMENTSDR. LEWIS WADE, DFO

**DR. WADE:** The work group is here. Are there any other Board members on the call other than the work group members? Any other Board members on the call?

**MR. SCHOFIELD:** Phillip Schofield here. I'm not officially yet but --

**DR. WADE:** Okay, well, welcome. No, you're not a Board member at this point, but we're pleased to have you with us and thank you for making the effort. As I'm sure most know, Phillip will be joining us as soon as we can get the necessary paperwork in place.

**MS. MUNN:** It will be nice to have someone from Los Alamos. Thank you, Phil.

**DR. WADE:** We look forward to overworking you. So thank you for joining us and again thank you for your willingness to serve. This is as well-intentioned and as productive a Board as I've ever been involved with, and I

1 know you'll enjoy the task and the people that  
2 you undertake the task with.

3 **MR. SCHOFIELD:** That's good. Glad to hear  
4 that.

5 **MR. PRESLEY:** Thanks, Phillip. This is Bob  
6 Presley. What group do you work with out  
7 there?

8 **MR. SCHOFIELD:** I'm no longer with the lab.  
9 I'm actually on disability. I was with NMT  
10 Division out of 55.

11 **MR. PRESLEY:** Okay, that TA-55?

12 **MR. SCHOFIELD:** Right.

13 **MR. PRESLEY:** Because I worked up on the  
14 hill at this 55 and the TA-1 and 18 for about  
15 16 years as a resident from Y-12 there  
16 sometimes.

17 **DR. WADE:** Mark, if you're ready, maybe we  
18 can begin with the some introduction. So we  
19 know that the work group is here and so what  
20 is with us as well is an incoming Board  
21 member, and no other Board members have  
22 identified themselves. So there is no issue  
23 with quorum.

24 I guess I would ask that we go through  
25 our normal sort of introduction which would be

1 members of the NIOSH or ORAU team to identify  
2 themselves, and when they do to identify any  
3 conflicts that they have relative to Rocky  
4 Flats. And then SC&A team, then I would ask  
5 other federal employees who are on the call by  
6 virtue of their federal employment to identify  
7 themselves. I'd ask for workers, worker reps,  
8 members of Congress or their representatives  
9 to identify themselves, and anyone else who  
10 would like to identify themselves.

11 Again, to start, this is a call of the  
12 working group of the Advisory Board dealing  
13 with issues related to Rocky Flats, both an  
14 opened SEC petition as well as a site profile  
15 review. And the group is very ably chaired by  
16 Mark Griffon, and its members are Robert  
17 Presley, Wanda Munn and Mike Gibson. So with  
18 that I would ask the NIOSH/ORAU team to  
19 identify themselves and conflicts.

20 **DR. ULSH:** This is Brant Ulsh with NIOSH,  
21 and I have no conflicts.

22 **DR. NETON:** Jim Neton with NIOSH, no  
23 conflicts.

24 **MR. LITTLE:** Craig Little with the ORAU  
25 team, no conflicts.

1           **MR. SHARFI:** Mutty Sharfi, the ORAU team, no  
2 conflicts.

3           **MS. JESSEN:** Karin Jessen with the ORAU  
4 team. I have no personal conflicts.

5           **MS. BRACKETT:** Liz Brackett with the ORAU  
6 team. I have no conflicts.

7           **MR. FALK:** And this is Roger Falk, and, yes,  
8 I do have conflicts.

9           **MR. McFEE:** Matt McFee with the ORAU team.  
10 I have no conflicts.

11          **MR. CHEW:** Mel Chew, ORAU team, no  
12 conflicts.

13          **MR. RICH:** Bryce Rich, ORAU team. I have a  
14 conflict.

15          **MR. POTTER:** Gene Potter, ORAU team,  
16 conflicted.

17          **MR. FIX:** Jack Fix, ORAU team, no conflicts.

18          **MR. SMITH:** And Matt Smith, ORAU team, no  
19 conflicts.

20          **MS. HOFF:** And Jennifer Hoff, ORAU team, no  
21 personal conflicts.

22          **MR. BAKER:** Steve Baker, ORAU team, I am  
23 conflicted.

24          **DR. WADE:** Anyone else from the NIOSH/ORAU  
25 team?

1           **MS. LOPEZ:** Theresa Lopez, ORAU team, no  
2 conflicts.

3           **DR. WADE:** Anyone else?

4           (no response)

5           **DR. WADE:** Okay, well how about SC&A and  
6 their team?

7           **DR. MAURO:** Yes, this is John Mauro from  
8 SC&A, no conflicts.

9           **DR. WADE:** Welcome, John.

10          **MR. FITZGERALD:** Joe Fitzgerald, SC&A, no  
11 conflicts.

12          **DR. WADE:** Welcome, Joe.

13          **DR. MAKHIJANI:** Arjun Makhijani, SC&A, no  
14 conflicts.

15          **DR. BEHLING:** Hans Behling, SC&A, no  
16 conflicts.

17          **DR. LIPSZTEIN:** Joyce Lipsztein, SC&A, no  
18 conflicts.

19          **MS. ROBERTSON-DeMERS:** Kathy Robertson-  
20 DeMers, no conflicts.

21          **DR. WADE:** Someone just turned on a piece of  
22 machinery. There's a printer in the  
23 background somewhere. Someone has a printer  
24 on, needs to mute their phone.

25          **MS. MUNN:** I'm amazed you can identify that

1 as a printer.

2 **MR. BUCHANAN:** This is Ron Buchanan, SC&A,  
3 no conflicts.

4 **DR. WADE:** Anyone else from the team?  
5 (no response)

6 **DR. WADE:** This might be a good time for a  
7 little bit of discussion of phone etiquette.  
8 I mean, these calls are terribly important to  
9 the working group being able to do their  
10 business, but they can only succeed if all of  
11 us involved maintain proper phone etiquette.  
12 And that would be if you're not speaking,  
13 mute. If you are speaking, try and do it into  
14 a handset.

15 Be mindful of the fact that small  
16 noises in your background become very  
17 distracting to the people on the call. So you  
18 need to be mindful of that. Right now we've  
19 got some printer issue somewhere, and it comes  
20 and goes. So I would ask that person to think  
21 about that and mute their phone.

22 I would ask other federal employees  
23 who are on the call by virtue of their  
24 employment to identify.

25 **MS. HOWELL:** This is Emily Howell with HHS.

1           **DR. WADE:** Welcome, Emily.

2           **MS. HOMOKI-TITUS:** This is Liz Homoki-Titus  
3 with HHS.

4           **DR. WADE:** Hi, Liz.

5           **MR. KOTSCH:** Jeff Kotsch, Department of  
6 Labor.

7           **MR. BROEHM:** Jason Broehm, CDC, Washington  
8 office.

9           **DR. WADE:** Welcome.

10          **MS. SHIELDS:** LaShawn Shields, NIOSH.

11          **DR. WADE:** Hello, LaShawn.

12          **MR. STAUDT:** David Staudt with CDC.

13          **DR. WADE:** Any other federal employees who  
14 are on the call by virtue of their employment?

15                   (no response)

16          **DR. WADE:** Workers, petitioners, their  
17 representatives, members of Congress or staff?

18          **MS. ALBERG:** I'm Jeanette Alberg with  
19 Senator Wayne Allard's office.

20          **DR. WADE:** Welcome. Thank you for joining  
21 us.

22          **MS. BARRIE:** Terry Barrie with ANWAG.

23          **DR. WADE:** Hi, Terry, how are you?

24          **MS. BARRIE:** Fine, thanks.

25          **MS. BARKER:** Kay Barker with ANWAG.

1           **DR. WADE:** Any others who wish to be  
2 identified as being on the call, for the  
3 record?

4           (no response)

5           **DR. WADE:** And Ray, you're with us and up  
6 and ready to go I assume?

7           **THE COURT REPORTER:** Yes, sir, I'm here.  
8 I'm in my home office on my phone with a  
9 yelping Chihuahua, so I'm on mute.

10          **DR. WADE:** Well, thank you.

11                   Mark, it's back to you. I know that  
12 you've distributed some materials and you can  
13 do what you will with the rest of the time.

14          **MR. GIBSON:** This is Mike. Could I ask a  
15 question first?

16          **DR. WADE:** Surely.

17          **MR. GIBSON:** Again, for the record, could we  
18 just explain the difference between no  
19 conflict, personal conflict and conflicted and  
20 what participation these people are allowed to  
21 participate in this, just like we do in our  
22 Advisory Board meetings?

23          **DR. WADE:** Sure, I can take a stab at that,  
24 Mike.

25                   You know, not to get into all the

1           legalese of it, but I think we appreciate the  
2           fact that people with knowledge need to be  
3           heard. And if people have experience they  
4           share, we would like to hear that. But we'd  
5           like everyone to be able to identify that the  
6           people might be speaking with knowledge who  
7           might also bring bias to the table. And  
8           therefore, we'd like everyone to identify  
9           whether or not they have a personal conflict.

10                   We won't silence them if they profess  
11                   that conflict, but it's important that  
12                   everyone know that what they are saying needs  
13                   to be understood in light of the fact that  
14                   they do have a conflict. We wouldn't want the  
15                   people who have a conflict being principal  
16                   authors or owners of the documents that we  
17                   speak to. There'd be a prohibition against  
18                   that, but again, their expertise as a site  
19                   expert can be heard on the call and would not  
20                   limit that.

21                   Relative to organizational conflicts,  
22                   there again there are issues where there are  
23                   conflicts and there needs to be organizational  
24                   remedies put in place. I don't think that is  
25                   as affecting of these discussions as are the

1 personal conflicts. So again, we want  
2 everyone to identify whether or not they're  
3 conflicted. We'll not silence their voice,  
4 but their voice needs to be heard with that in  
5 mind.

6 **MR. GIBSON:** Okay, thank you.

7 **MR. GRIFFON:** I think we're ready, Lew. I  
8 sent out an agenda, a very brief agenda, but  
9 the primary focus, I think, is the first  
10 several items which we've been, I think this  
11 is down to our primary action items that  
12 remain. And we've been going through this  
13 list in the last few meetings I believe.

14 The November 6<sup>th</sup> meeting I sent out a  
15 summary of these action items just so that we  
16 didn't have to deal with the entire matrix  
17 again. And then we did an update in Chicago  
18 on this.

19 **MS. MUNN:** I'm assuming it's your intention  
20 to go through that in the same general order  
21 that --

22 **MR. GRIFFON:** Yes, yeah, with one exception.  
23 NIOSH has requested that we actually start off  
24 with the other radionuclides because of some  
25 of their, I think they've got some people that

1           have to leave the call a little early. So if  
2           that's agreeable with everybody, I think we  
3           just move, start with 1-B and then go back in  
4           order on these items.

5           **OTHER RADIONUCLIDES**

6                       The other radionuclides and primarily  
7           I think this discussion is going to revolve  
8           around thorium at this point.

9                       **MS. MUNN:** Yeah.

10                      **MR. GRIFFON:** But I'll turn this over to  
11           maybe Joe or Brant. I'm not sure who wants to  
12           initiate the discussion.

13                      **MR. FITZGERALD:** This is Joe Fitzgerald,  
14           good morning. Let me just pick up on a little  
15           bit of history for those who haven't been  
16           following this as closely as we have. In both  
17           site profiles and SEC evaluations we focus on  
18           whether or not all sources of occupational  
19           radiation have been identified. And we look  
20           at in particular at secondary nuclides,  
21           radioactive sources that may have been handled  
22           at a particular site in a secondary vein,  
23           meaning not necessarily the primary mission of  
24           the site.

25                      And for Rocky Flats in the site

1 profile we did certainly look at some of these  
2 secondary nuclides like curium and thorium and  
3 sort of question the conclusions that were in  
4 the site profile that carry forward to the SEC  
5 evaluation where they were seen as not  
6 significant to internal dose potential. And  
7 we, frankly, just wanted to see more  
8 substantiation on that conclusion. And that's  
9 been the process that we've been going through  
10 is trying to, with NIOSH, validate that, even  
11 though these are secondary elements, and we  
12 agree that they certainly were going to rise  
13 to the significance of plutonium and uranium  
14 at the site, to more or less confirm the  
15 quantity and the level of handling at the  
16 site. And where this back and forth was left  
17 last was NIOSH did provide, toward the end of  
18 December, I think it was December 27<sup>th</sup>, a  
19 fairly comprehensive compendium of their  
20 research on the one remaining issue which is  
21 thorium at the site. And we have certainly  
22 over the last couple of weeks taken a good  
23 look at that and looked at other sources. And  
24 before I turn it over to Arjun let me clarify  
25 though that as Mark indicated, we have closed

1 out any SEC issues related to americium and  
2 other nuclides. Thorium is the remaining  
3 question. So Arjun, do you want to, frankly,  
4 bring us up to date on that?

5 **DR. MAKHIJANI:** Yeah, sure. Did NIOSH want  
6 to say something or was it simply that people  
7 have to leave early and we should present our  
8 view?

9 **DR. ULSH:** Arjun, this is Brant. It's Bryce  
10 Rich that has to leave in about 15 minutes.  
11 So I guess maybe if you could front load your  
12 remarks if there's anything that you need from  
13 Bryce if you could maybe get to those first.

14 One administrative issue though, Larry  
15 Elliott just visited my office and said he's  
16 trying to dial in but hasn't been successful  
17 yet because the phone lines are busy.

18 So, Lew, there might be an issue with  
19 some people who want to participate in the  
20 call and can't get through.

21 **DR. WADE:** Okay, thank you.

22 **MR. ELLIOTT:** I did just make it on. This  
23 is Larry Elliott, after several tries.

24 **DR. ULSH:** Sorry, go ahead, Arjun.

25 **DR. MAKHIJANI:** Thank you, Brant.

1                    Basically, our review of what you sent  
2                    on December 27<sup>th</sup> falls into three categories.  
3                    And to give you the bottom line, the first  
4                    category's the source term. We noted that in  
5                    your most recent review you have two new  
6                    source term. One is the 1960 processing of  
7                    three 80 kilogram ingots which are in total  
8                    being 240 kilograms. It's the largest single  
9                    annual source term identified today. And we  
10                   were somewhat surprised that there was a new  
11                   source term at this stage.

12                   And then the other source term that  
13                   was identified was not pure thorium but from  
14                   NIOSH's interviews regarding the Dow Madison  
15                   plant following questions that had been raised  
16                   about that by the Dow Madison petitioners.  
17                   That there were some up to three percent  
18                   thorium alloy alloyed with non-radioactive  
19                   magnesium that was apparently sent from Dow  
20                   Madison to Rocky Flats.

21                   So there were no quantitative details  
22                   on what was done with that. Now three percent  
23                   thorium, having higher dose conversion  
24                   factors, of course, could have, if the  
25                   quantities and depending on the quantities and

1 processing, could have implications for dose  
2 and may not have implications for dose. But  
3 there were no details provided as to the  
4 amounts and what was done with this magnesium  
5 alloyed with thorium.

6 So there were two new source terms and  
7 for a number of reasons including the fact  
8 that there was a new corporation, W.R. Grace  
9 not identified so far, that had sent the ingot  
10 to another new corporation, Dow Madison not  
11 identified so far, that it sent an alloy.  
12 More substantial processing than had been done  
13 before, which was the tanning and rolling of  
14 the thorium ingot, so Rocky Flats apparently  
15 had the capability to do that.

16 We did agree with NIOSH that this had  
17 been done in a short period of time, 25 hours,  
18 and also agreed that that ingot operation  
19 seemed to be well documented and there were  
20 concentration data. One of the bottom lines  
21 in relation to the new source term was that it  
22 didn't seem, there didn't seem to be an issue  
23 with dose reconstruction for that operation,  
24 the new operation that was identified.

25 A need arose after discovering a new

1 source term at this stage after, more than a  
2 year after we raised it in the TBD review, and  
3 while we don't, we're not aware of any other  
4 source terms, we're just not comfortable that  
5 everything's been identified so far. And to  
6 reiterate, we're not aware that there is  
7 anything out there, but we're made  
8 uncomfortable by the fact that there were two  
9 new source terms at this stage.

10 **DR. ULSH:** Perhaps I can speak to that --

11 **DR. MAKHIJANI:** One of them we don't know,  
12 we don't have any quantitative details.  
13 That's the bottom line.

14 **DR. ULSH:** Okay, perhaps I could speak to  
15 that. The first source term that you  
16 mentioned, the operation with the thorium  
17 ingots, that is not a new source term at all.  
18 It was mentioned in the first line of Cabel  
19 (ph), his write-up, including the quantity. I  
20 think it was 249 kilograms. That is not new.

21 What is new is the level of detail  
22 that we've provided because of the continuing  
23 questions that have arisen in the working  
24 group meetings. So we've gone back and  
25 obtained that report by Calabria that as you

1 mentioned gives a very detailed account of  
2 that. So that's not new.

3 Now the second item that you  
4 mentioned, the Dow Madison, yeah, you've  
5 accurately represented what the workers told  
6 Dow Madison's petitioner, and that is that  
7 they sent quantities of magnesium alloy of  
8 which up to three percent, one-to-two-to-three  
9 percent might be thorium as an alloying agent.  
10 Now the reason that that doesn't show up on  
11 the MBA ledgers or any of the other documents  
12 that we have that relate to source terms  
13 because that quantity is so, that  
14 concentration is so low that it wouldn't even  
15 be considered a radioactive material for  
16 purposes of tracking it.

17 We have very good confidence that any  
18 shipments of pure thorium, certainly that's a  
19 radioactive material and that would have been  
20 tracked in the MBA ledgers. But the  
21 radioactivity of a magnesium alloy that  
22 contains a small quantity of thorium as an  
23 alloying agent would be, I would say, not even  
24 distinguishable from background. But I'll let  
25 Bryce perhaps chime in on that.

1           **MR. RICH:** Well, I agree, Brant.

2           **DR. ULSH:** But I don't think that we would  
3 agree with the characterization of we've just  
4 identified some new source terms.

5           **DR. MAKHIJANI:** Yeah, just to clarify what I  
6 meant by that term, we do agree with NIOSH  
7 that the original October paper you gave us  
8 saying that the maximum stocks were on the  
9 order of 250 kilograms, that has been verified  
10 and documented, and we agree with that. And  
11 we've never had a dispute or difference or  
12 argument about that. The new thing that has  
13 been identified is the new processing and the  
14 fact that three ingots came from W.R. Grace  
15 and Company that were canned and rolled at  
16 Rocky Flats. And to my understanding that is  
17 new information.

18           **DR. ULSH:** Well, we might be talking  
19 semantics. It is certainly true that new  
20 information that provides additional levels of  
21 detail has been provided recently. That is  
22 certainly true. But --

23           **DR. MAKHIJANI:** But in regard to the  
24 processing and the operations as a concern,  
25 the doses, we don't have any new information

1 on maximum stocks held by Rocky Flats. I  
2 agree with that. Just so we get past the  
3 semantic issues. And at this stage we don't  
4 have a problem with your ability to calculate  
5 doses from ingot rolling because it appears to  
6 have been well documented. So we're not  
7 raising an issue about that.

8 The issue that we're raising is that  
9 new activities were identified and a new, one  
10 of which was quite substantial, and I would  
11 not agree that a three percent thorium, while  
12 you may not be able to measure the  
13 radioactivity, you know, as very large in  
14 terms of its specific activities, but curies  
15 per gram, that would certainly be quite small.  
16 But until we know the quantities of magnesium  
17 and what was done with them, I don't believe  
18 that you can assert that it was dosimetrically  
19 small because if you had three percent thorium  
20 and magnesium that became airborne in the  
21 course of, say, processing it or lining, well,  
22 I don't know what could have been done with it  
23 so I don't want to speculate.

24 But if it was processed in a way that  
25 became airborne with three percent thorium and

1           97 percent magnesium, its dosimetric  
2           implications for bone dose would be like  
3           having a hundred percent uranium. So I cannot  
4           agree that until we know what was done with it  
5           that it's dosimetrically insignificant even  
6           though I would agree that it's very low  
7           specific activity.

8           **DR. ULSH:** Well, I don't know. We might  
9           have to agree to disagree on that at this  
10          point. I mean, we calculated dose estimates  
11          from working with pure thorium metal at Rocky  
12          Flats. And I would certainly say that that  
13          would be the primary operation that you would  
14          be concerned about, but I don't know.

15                 Bryce, do you have any thoughts on  
16          that?

17          **MR. RICH:** Nothing definitive. The only  
18          issue is that we really do have no records of  
19          the magnesium-thorium blend or any detail of  
20          what the receipt of (unintelligible).

21          **MR. CHEW:** This is Mel. I'd just like to  
22          make a comment that normal welding rods  
23          contain about two percent thorium as a  
24          comparison for perspective here, and we  
25          certainly don't document welding rods as they

1                   come in. A lot of welding was done anywhere  
2 all over the entire industry here.

3                   **DR. MAKHIJANI:** In the nuclear weapons  
4 industry or generally in industry?

5                   **MR. CHEW:** Generally in industry.

6                   **MR. GRIFFON:** Brant, this is Mark. I was  
7 just wondering, and I might be a little behind  
8 on this issue. But do you know or is there  
9 any information on the quantity, how much of  
10 this alloy was sent according to those  
11 interviews?

12                   **DR. ULSH:** The only information I'm aware of  
13 at this point, Mark, is the testimony that the  
14 workers provided, that the Dow Madison workers  
15 provided to Dr. McKeel. And they  
16 characterized it as pretty large quantities.  
17 They were saying truckloads of magnesium  
18 alloy. So I mean, and I have no other  
19 independent information that would speak to  
20 it.

21                   **MR. GRIFFON:** And from the Rocky side we're  
22 not clear that it was even received, and, if  
23 so, what they would have done with it or how  
24 they would have processed it.

25                   **DR. ULSH:** I have no information from the

1 Rocky side. That's correct, Mark.

2 **MR. GRIFFON:** I don't know what else to say  
3 about that, Arjun. If we, at this point I'm  
4 not sure --

5 **DR. MAKHIJANI:** I also don't know. I mean,  
6 I'm not aware of the thorium in the welding  
7 generally in industry, but I don't think that  
8 that is particularly relevant in this  
9 situation. If it was used in Rocky Flats and  
10 if it became airborne in significant  
11 quantities, I can say that if you do the  
12 numbers and compare it to uranium, for some  
13 organs three percent thorium with 97 percent  
14 non-radioactive dust in mass loadings would  
15 produce the same dose to the bone surface as a  
16 hundred percent uranium dust.

17 So I just, I guess, I at least feel  
18 uncomfortable in dismissing it or even  
19 comparing it to the pure thorium. Because the  
20 amount of dust that's airborne depends on what  
21 you do with it, and we don't have any  
22 information. So I don't know how to come to  
23 any conclusion one way or another in the  
24 absence of information.

25 **MR. GIBSON:** This is Mike. Can I ask a

1 question? If the folks that have previously  
2 (unintelligible) at Rocky that are on the line  
3 don't have any data about the amount of this  
4 material that was delivered or processed, are  
5 we discounting what the workers said or are we  
6 taking that into account? My --

7 **DR. ULSH:** On the NIOSH side we're certainly  
8 not discounting what the workers said.

9 **MR. GIBSON:** Are we including that as far as  
10 say worst case, upper bounds on the dose  
11 reconstructions?

12 **MS. MUNN:** I thought we were basing this  
13 entire verification on what workers said, are  
14 we not?

15 **DR. ULSH:** Let me just, I don't know that I  
16 can answer your question directly, Mike. Let  
17 me tell you what we've done and maybe that  
18 will answer it. The issue that arose  
19 originally with the Dow Madison question was  
20 were they shipping large quantities of thorium  
21 metal to Rocky Flats. And I think a lot of  
22 the back and forth dealt with the failure to  
23 make a distinction between pure thorium metal  
24 and magnesium alloys that contain small  
25 quantities of thorium. There's certainly no

1 evidence that pure thorium metal went back and  
2 forth.

3 And when you look at the transcripts  
4 that the Dow workers provided, they were  
5 clearly talking about magnesium alloy. So, I  
6 mean, I don't have any independent information  
7 that would speak to whether or not magnesium  
8 alloy was shipped to Rocky from Dow. It  
9 sounds plausible to me. You know, I have no  
10 reason to doubt it. So I would certainly not  
11 discount what they're saying.

12 With regard to the former Rocky  
13 workers, the question that we posed to them  
14 was were they aware of significant quantities  
15 of thorium metals. And now we're talking  
16 about thorium metal because that's clearly a  
17 radioactive material, and clearly there's no  
18 evidence that shipments of thorium metal came  
19 into Rocky Flats.

20 Now magnesium alloy would have been  
21 considered a non-radioactive material, and so  
22 it would not have received the same degree of  
23 scrutiny as pure thorium coming in. So I  
24 don't, there's nothing that the workers have  
25 said that I'm saying is definitely not true

1                   regarding this issue. It sounds plausible to  
2                   me.

3                   **MR. GIBSON:** No, I'm not saying that, but,  
4                   Arjun, unless I was mistaken, weren't you  
5                   asking that the workers identified either  
6                   large amounts of this stuff came in the plant?  
7                   And that was the basis of my question, has  
8                   this been considered into an upper bound on a  
9                   best estimate, worst case scenario dose  
10                  exposure?

11                  **DR. MAKHIJANI:** Mike, as I understand it,  
12                  NIOSH did take into account what the Dow  
13                  Madison workers said and reported on the  
14                  magnesium-thorium alloy being shipped to Rocky  
15                  Flats. Now they don't have any information on  
16                  the quantities and neither do we. So they  
17                  haven't made any estimates. We don't know  
18                  what was done with it so there's no further  
19                  information on that. But NIOSH did report  
20                  what was said by the workers and took it into  
21                  account in their December report, if that's  
22                  the particular thing you're asking about.

23                  **MS. MUNN:** The interviews with the folks in  
24                  Rocky Flats were pretty clear about the  
25                  limited nature of the work that was done with

1                   that material, were they not? My reading of  
2                   that was that they were universal in their  
3                   agreement that the amount of activity that  
4                   would involve those materials was really very  
5                   small.

6                   **DR. ULSH:** That dealt with pure thorium  
7                   metal. That didn't deal with magnesium alloy.  
8                   So you shouldn't draw any conclusions at all  
9                   from the Rocky workers' testimony about  
10                  magnesium alloy.

11                  **MS. MUNN:** Yes, I realize that. I realize  
12                  that. But I also got the impression that  
13                  there was not a feeling that, well, perhaps I  
14                  read something in there that I shouldn't have.  
15                  I had the impression that they were unaware of  
16                  any major activities that involved the  
17                  magnesium alloy, but I'll go back and read it  
18                  again.

19                  **DR. MAKHIJANI:** Ms. Munn, on the point that  
20                  thorium was a new radionuclide in terms of  
21                  quantities and processing, I don't, SC&A and  
22                  NIOSH are in agreement in that the maximum  
23                  amount that was stored at any one time was  
24                  about 250 kilograms. We're also in agreement  
25                  with that.

1           **MS. MUNN:** Yes, I think the record was  
2 fairly clear on that.

3           **DR. MAKHIJANI:** That's very well documented  
4 so there's no difference of opinion or  
5 argument about that.

6           **MS. MUNN:** Yeah, I guess somehow, perhaps I  
7 skimmed that part too quickly. I had the  
8 impression that at one juncture we, that had  
9 been addressed in a very vague manner, but  
10 perhaps I'm wrong. I'll go back and read it.

11           **MR. GRIFFON:** It's just a different  
12 material, mixed alloy.

13           **MS. MUNN:** Yeah, I understand that.

14           **MR. CHEW:** Brant, this is Mel. Can I  
15 suggest, propose a path forward on this issue  
16 about the thorium and the magnesium? We could  
17 go back and pull and talk to some of the key  
18 Rocky Flats operational people and scientists  
19 to see how much magnesium alloy there was and  
20 what was done with it.

21           **DR. ULSH:** We could, but I guess I would  
22 like maybe a feeling from the working group, I  
23 mean, given what we know and what we don't  
24 know, is this an issue that you want us to  
25 pursue further, the use of this magnesium

1 alloy?

2 **MR. GRIFFON:** My sense is if we're not sure  
3 anything about magnitude, it may be worth, and  
4 this is something that you can do on a phone  
5 interview with a few people.

6 **DR. ULSH:** I'm pretty good at that, Mark.

7 **MR. GRIFFON:** I think it would at least be  
8 helpful to say, you know, we concur. It did  
9 happen, but here's what we did with it or, you  
10 know, that may be able to close this issue.

11 **DR. MAKHIJANI:** We could get some magnitude  
12 on it.

13 **MR. GRIFFON:** Yeah, perhaps.

14 **MR. RICH:** It may be possible to at least  
15 determine if it was construction material or a  
16 small parts manufacturer or as Arjun  
17 indicated, it makes a difference whether it  
18 was machining material or whether it was  
19 construction material. If they're shipping it  
20 in by the truckload, it could very well have  
21 been a non-issue from the standpoint, just a  
22 simple putting in place and building  
23 something.

24 **MR. PRESLEY:** This is Bob Presley. Do we  
25 have any idea of the amount other than just

1                   somebody saying that it was truckloads?

2                   **MR. GRIFFON:** No, we don't.

3                   **MR. RICH:** There are no, we haven't been  
4                   able to find any inventory or shipping records  
5                   to --

6                   **MR. CHEW:** In our polling of the Rocky Flats  
7                   people we didn't really ask that specific  
8                   question, and I know magnesium is an  
9                   interesting material because, you know, you've  
10                  got to worry about the safety of handling  
11                  magnesium.

12                  I would imagine that if we polled  
13                  clearly some of the key people at Rocky Flats  
14                  and asked them what was magnesium used for and  
15                  how much material, I think though we probably  
16                  can get our arms around this. So I think this  
17                  is certainly a worthwhile attempt here.

18                  **MR. PRESLEY:** This is Bob Presley again. I  
19                  think we ought to let Mel do that, but I  
20                  wouldn't spend a whole lot of time on it.

21                  **MR. GRIFFON:** I agree. This has to be,  
22                  that's what I was saying, some follow up.  
23                  Yeah, that'd be great.

24                  **MR. CHEW:** Do you agree with him because you  
25                  need to tell me to do that here.

1           **DR. ULSH:** Mel, do it.

2           **MS. MUNN:** It seems unlikely to me that  
3 although it might not be considered  
4 radioactive material, it's unlikely that a  
5 hazardous material like the magnesium wouldn't  
6 have attracted some (unintelligible).

7           **MR. GRIFFON:** That's true.

8           **MR. CHEW:** I would be concerned with it,  
9 just to make sure knowing where it is just  
10 from the (unintelligible) standpoint.

11          **MS. MUNN:** Yeah, right.

12          **MR. GRIFFON:** Can I ask one more thing on  
13 source term before we move off of source term?  
14 In this thorium document, I think it's 1976,  
15 there was a mention of thorium used in place  
16 of plutonium or uranium for sort of mock-up  
17 assemblies. And it notes that -- do you  
18 recall this -- I mean --

19          **DR. ULSH:** Yes, Mark, I recall it.

20          **MR. GRIFFON:** And it's noted here that  
21 usually, I believe these were the quantities  
22 that fell under the mass balance sort of  
23 inventory.

24          **DR. ULSH:** Yes, that's true, Mark.

25          **MR. GRIFFON:** Is that true?

1           **DR. ULSH:** Yeah.

2           **MR. GRIFFON:** The only thing that I was  
3 wondering is do we have any sense of the  
4 magnitude of this use in the early years  
5 because this memo says, you know, at the time  
6 of the memo it would have been like seven  
7 kilograms of thorium but no large quantities  
8 at all. But it says prior to that it says  
9 that in the early years this operation  
10 occurred frequently in the past. And I didn't  
11 know if it was, you know, if anybody had any  
12 sense of was this done a lot more in the past.  
13 Would this be a significant source term?

14           **MR. RICH:** Mark, this is Bryce Rich. There  
15 was a standard operating procedure for  
16 inventory control was that they would round up  
17 500-gram quantities. If the quantities were  
18 less than 500 grams they would not show up in  
19 the inventory. If they were 501 grams they  
20 showed up as a kilogram.

21           **MR. GRIFFON:** Okay, so you're fairly  
22 confident that it would have been in the  
23 inventories.

24           **MR. RICH:** That's right.

25           **MR. GRIFFON:** Because it says each

1 individual use is too small for record keeping  
2 but it would have been aggregated in the  
3 inventory you're saying.

4 **DR. ULSH:** Mark, I recall that there was a  
5 statement in our report says this is in a form  
6 that would not present an exposure hazard.  
7 And also, the operations, I mean the handling  
8 of this material. This is the stuff that,  
9 yes, before when you take it out of a box and  
10 you put it in your model.

11 **MR. GRIFFON:** Okay, the way it was written I  
12 wasn't sure if this would have been in that  
13 mass balance inventory. Now, I knew it had  
14 been discussed before, but I just wanted to --

15 **MR. RICH:** Well, they considered it was in  
16 the mass balance and it was cumulative and  
17 documented on that rounding basis.

18 **MR. GRIFFON:** Okay, thank you. I think that  
19 clarifies that.

20 **DR. MAKHIJANI:** Could I ask Brant something  
21 about that now? Did you say that this was  
22 taken out of a box (unintelligible) less than  
23 500 grams? I didn't understand that less than  
24 500 grams were operations like that.

25 **DR. ULSH:** I think maybe Bryce can answer

1                   that.

2                   **MR. RICH:** We don't know a lot about that  
3                   other than the fact that parts were small,  
4                   less than 500 gram quantities, and a lot of  
5                   those parts were delivered as full parts from  
6                   Y-12.

7                   **DR. MAKHIJANI:** But the 1976 thorium use  
8                   document has identified several different  
9                   specific uses of the minor quantities that  
10                  then add up to something more than that. And  
11                  as I understood, I just want to understand the  
12                  response to Mark's question more clearly. So  
13                  suppose there were 15 activities involving 400  
14                  grams each, then that would add up to six  
15                  kilograms. And that six kilograms would be  
16                  logged in the total mass balance for that year  
17                  but the 400 grams will not show up anywhere or  
18                  would that six kilograms not appear in the  
19                  mass balance anywhere at all?

20                  **MR. RICH:** It would appear in the mass  
21                  balance.

22                  **MR. CHEW:** If it was 400 grams, it would  
23                  have showed up as a kilogram.

24                  **MR. RICH:** If it was 400 grams, it would not  
25                  show up in the inventory, but cumulatively

1                   they would account all of those units to go,  
2                   as Arjun's indicated, that there are 15 400  
3                   grams quantity so it would show up on the  
4                   inventory.

5                   **MR. GRIFFON:** So they sort of did a  
6                   cumulation site building or something or  
7                   another by area. And if you had more than 500  
8                   grams in an area, then it would trigger the  
9                   thing.

10                  **MR. RICH:** And then it would show up as a  
11                  kilogram.

12                  **MR. GRIFFON:** Arjun, is that --

13                  **DR. MAKHIJANI:** Okay, yeah.

14                  **DR. ULSH:** Okay, I think maybe if I can take  
15                  a stab at summarizing this --

16                  **MR. RICH:** Could I interrupt because I  
17                  really have to leave now.

18                  **DR. ULSH:** Thank you, Bryce.

19                                 There's a remaining question about the  
20                                 magnesium alloys and Mel is going to, Mel and  
21                                 Bryce Rich, are going to do some phone calls  
22                                 to try to find out some information about  
23                                 that. Other than that I think I heard Arjun  
24                                 say that you're comfortable with what we could  
25                                 calculate dose from the ingot operation in

1 1960 I think it was.

2 You see other remaining issues on  
3 thorium other than the magnesium alloy issue?

4 **DR. MAKHIJANI:** We didn't cover the dose  
5 issues yet. And some new things showing up at  
6 this stage that raise some questions of what  
7 else might be out there. But as I said, we  
8 don't have any evidence that there's anything  
9 else. And we do agree that the maximum amount  
10 of thorium is in stock, is well documented.

11 So as regards the dose side of things  
12 other than the ingots, we looked at the  
13 December 27<sup>th</sup> report and the comparison with  
14 the machining and grinding and the fact that  
15 the machining and grinding for bone surface  
16 actually showed up at several hundred times  
17 the previously calculated dose.

18 I did understand that the machining  
19 and grinding would be regarded as much greater  
20 overestimates as you presented, but it did not  
21 demonstrate that the (unintelligible) 1400 was  
22 a bounding dose. On the contrary, it  
23 demonstrated to the contrary. NIOSH stated  
24 that the amount of time for the light  
25 machining work with six kilogram pieces was

1 very short, and so the machining phase should  
2 be regarded as overestimate for some of that.

3 But I didn't see that. I couldn't  
4 agree with that because in the machining  
5 estimates that short amount of time already  
6 taken into account because it's considered as  
7 a ten-hour operation with a specified air  
8 concentration. So I don't think the time  
9 factor is a significant argument, and in our  
10 interpretation, the way we've reviewed it so  
11 far, it seems that the comparison that Jim  
12 Neton initially suggested at the November 6<sup>th</sup>  
13 working group meeting resulted in showing that  
14 1400 which is not a conservatively bounding  
15 estimate.

16 And so that then turned into a problem  
17 for the other application of (unintelligible)  
18 1400 for the thorium strikes as well. But to  
19 complete that the thorium strike intake  
20 estimate was given as one becquerel about, and  
21 the argument was made that if it had been a  
22 hundred, then the aligned would have deducted  
23 it. Even accepting that, that doesn't show  
24 that one is bounding in some way so I didn't  
25 understand the logic of that particular

1 argument.

2 It could be two or four or ten, and  
3 given that there isn't an operational  
4 demonstration of the conservatism of one  
5 becquerel intake, we're again in the position  
6 of questioning whether new reg 1400 is the  
7 appropriate way to do this. We're not saying  
8 that these doses can't be calculated, and that  
9 therefore, we are convinced that this is an  
10 SEC issue; SC&A is not in that position.  
11 We're just saying that new reg 1400 is not the  
12 appropriate method to do it from what NIOSH  
13 has demonstrated so far.

14 **DR. ULSH:** I hesitate to get too much into  
15 detail because --

16 **MR. GRIFFON:** Yeah, I was going to -- can I  
17 interject for one second, Brant, I'm sorry.  
18 Just a process notion here because I really  
19 want to try to be done by 2:00, and I'm  
20 thinking that this issue in particular and  
21 maybe follow up on the thorium source term as  
22 well or magnesium-thorium alloy source term,  
23 it might be useful to have a technical call  
24 like next week or something where we can have  
25 a more in-depth discussion on this particular

1 issue and the model, the new reg 1400 approach  
2 to flesh this one out. Is that something, I  
3 mean, I don't want to cut it off completely,  
4 but maybe we can save the technical details  
5 for a phone call next week and not a work  
6 group call, but just NIOSH/SC&A call to sort  
7 of hash this one out a little further.

8 **DR. ULSH:** That's fine from our end, Mark.

9 **MR. GRIFFON:** Is that okay, is that making  
10 sense, Joe, Arjun?

11 **DR. MAKHIJANI:** Yeah, that's fine with me.  
12 Yeah, I think actually it would be better, and  
13 then we can keep notes and --

14 **MR. GRIFFON:** I should have said this up  
15 front, but mainly I want today to be kind of  
16 an update. Where are we at with different  
17 actions? Whose court is the ball in now? And  
18 what's the next step forward? But I think now  
19 we have a, for thorium, you know, we have the  
20 one follow up that Mel offered on the thorium-  
21 magnesium source term. I think we need to  
22 maybe talk about, we can e-mail and get a  
23 technical call sometime next week maybe to do  
24 a follow up on the TR method using new reg  
25 1400 if that's agreeable.

1           **DR. ULSH:** That's agreeable here, Mark. Do  
2 you want me to take the, I'll take the lead  
3 and propose the time or whatever and call  
4 everyone.

5           **DR. MAKHIJANI:** Sorry, Mark, my  
6 understanding of my charter from Joe was to  
7 provide the bottom line of where we are --

8           **MR. GRIFFON:** Oh, no, no, that's okay. I'm  
9 just looking at how, it took us almost an hour  
10 to get through the first item, and I'm just,  
11 as usual, we -- is that all right, Brant? I  
12 didn't want to cut your comments off  
13 completely if you had a --

14           **DR. ULSH:** No, actually, I was just going to  
15 say that it might be better to postpone the  
16 detailed discussions for when Bryce is  
17 available, so that's fine with me.

18                       So you'll hear from me. I'll propose  
19 times or whatever and call everybody.

20           **MR. GRIFFON:** Is there anything more on  
21 other radionuclides, thorium?

22           **DR. ULSH:** Joe mentioned, and I was going to  
23 get to this, too, Mark. In your summary of  
24 action items, the one that goes into a little  
25 bit more detail than the agenda, action item,

1                   okay, number two is other radionuclides and  
2                   under that point four what it currently says  
3                   here, Mark, is that SC&A will further review  
4                   information provided by NIOSH regarding  
5                   neptunium and curium.

6                   **MR. GRIFFON:** Yes, and in my matrix that I  
7                   sent out I think I indicated -- I know it just  
8                   came last night. I tried to update the matrix  
9                   -- but my understanding from the last meeting  
10                  was that SC&A had completed that, and they  
11                  were comfortable with that.

12                  **DR. ULSH:** Yeah, that's what I thought, too.

13                  **MR. GRIFFON:** I have complete on that, yes.

14                                 All right, anything else on our agenda  
15                                 on the thorium?

16                  **DR. MAKHIJANI:** No.

17                  **MR. GRIFFON:** So we'll save it for next  
18                  week's technical phone call.

19                  **COMPLETENESS OF DATA**

20                                 I think we should go back to the first  
21                                 item, the data completeness. And Joe, maybe  
22                                 I'll let you start off. I think this kind of  
23                                 is in SC&A's court right now.

24                  **MR. FITZGERALD:** Yes, and in terms of  
25                  background basically it became more apparent

1           that NIOSH was relying on the claimant file,  
2           the DOE original data, as compared with HIS-20  
3           because of some -- HIS-20's an electronic  
4           database -- I mean it's in that database. We  
5           initiated sampling of that claimant file just  
6           to assure ourselves of the completeness of  
7           that file, given the fact that that would, in  
8           fact, be the basis for dose estimation.

9                     And as we discussed in the last month  
10           or two, we did initially find some troublesome  
11           gaps in that data, and the discussion was the  
12           extent of those gaps and how widespread they  
13           were. And I think where we left it was to  
14           proceed with the sampling, detailed sampling  
15           exercise that SC&A would do in coordination  
16           with NIOSH in terms of identifying different  
17           groups.

18                     And I think we've accomplished that,  
19           and I'll just sort of again defer to Arjun  
20           since he and Ron Buchanan actually conducted  
21           that sampling.

22                     **DR. MAKHIJANI:** We have, I can't remember  
23           whether we transmitted any documents to NIOSH  
24           other than the claimant numbers in the  
25           (unintelligible) plant, but Ron did do a

1 check. We had two sets of completeness  
2 checks. One was on a set of 32 randomly  
3 selected files put together (unintelligible)  
4 we had selected them. And that is complete.  
5 The investigation analysis is complete. This  
6 morning I did send the four spreadsheets to  
7 Joe for forwarding to Emily as it says in  
8 action item number two, for Privacy Act  
9 review.

10 So we have completed the analysis of  
11 the random set. We also have completed the  
12 analysis of the 20 cases of the highly  
13 exposed, the ones that were judged to be  
14 highly exposed by Rocky Flats on a cumulative  
15 basis, ten from group three and ten from group  
16 four, categorized according to exposures. And  
17 we have also completed that.

18 So we should be forwarding shortly the  
19 completed analysis of both things to NIOSH I  
20 think in the next couple of days, right, Joe?

21 **MR. FITZGERALD:** I would say so, and just  
22 clarity's sake, we'll send the attachments to  
23 both Emily as well as Dave Staudt. Dave's  
24 also coordinating Privacy Act reviews.

25 **DR. MAKHIJANI:** Yeah, and I guess you'll be

1 sending them to Brant also, right?

2 **MR. FITZGERALD:** I certainly can. Again, I  
3 think the restricted distribution would just  
4 be NIOSH at this stage in terms of screening  
5 for Privacy Act.

6 **DR. ULSH:** Yeah, there's going to be an  
7 issue there since I'm NIOSH, so go ahead and  
8 please send it to me, too, so we --

9 **MR. FITZGERALD:** We'll send it to all three  
10 of you.

11 **DR. MAKHIJANI:** So you'll have all four  
12 spreadsheets today, and then you will see the  
13 write-up very shortly. It does not contain  
14 any Privacy Act material. It only has  
15 cumulative so many missing years, so many  
16 percent and so on. It has no individual  
17 information.

18 **MS. MUNN:** Arjun and Joe, you're leaving the  
19 rest of us here with a cliffhanger. I feel  
20 like I'm holding my breath thinking what is  
21 the bottom line. And I guess at this juncture  
22 can you at least say whether you feel this  
23 particular process has brought you any further  
24 to closure on the issue?

25 **DR. MAKHIJANI:** Yes, I mean, as with

1 permission, Mark, I can tell you where we are.

2 **MR. GRIFFON:** Yeah, yeah.

3 **DR. MAKHIJANI:** Okay, let me just open the  
4 file here so I can give you the accurate  
5 bottom line here. When we did external and  
6 internal separately, we do the minimal  
7 screening check for completeness. If there  
8 was even one entry, one badge entry, even a  
9 zero in any particular year, we did not count  
10 it as a year with missing data. So when we  
11 found a year that was completely blank and no  
12 guide information, we called it a missing  
13 data.

14 Similarly for internal dose if there  
15 was any internal dose measurement, either  
16 urine or fecal or in vivo, we called it that.  
17 We did not call that a year with missing data.  
18 So this is a minimal screening check for  
19 completeness.

20 **MS. MUNN:** I understand.

21 **DR. MAKHIJANI:** We did find that in the  
22 1950s in the random sample, about a third of  
23 the workers have at least one year of missing  
24 data and the cumulative missing years were 21  
25 percent. For the '64 to '92 period -- and

1           remember we divided this into two periods  
2           according to the universal badging, pre-  
3           universal badging and post-universal badging,  
4           there were about a third of the workers had a  
5           missing, at least one year with missing data.

6                        But that's a little bit misleading  
7           because we went up to 1992, and 1992 was a  
8           transition year. So if you omit 1992 actually  
9           that percentage drops to about 20 percent.  
10          Production stopped I believe in January 1992,  
11          so the badging policies would have changed at  
12          that time presumably with the transition year.  
13          And for cumulative years missing, cumulative  
14          missing years were ten percent. So in the  
15          second period there wasn't any, we overall did  
16          not discover a large gap in the random sample.

17                       In the internal data there was a  
18          considerable number of workers, almost three-  
19          fourths of the workers had at least one  
20          missing year of some internal dose data in the  
21          random sample. So that was the biggest gap  
22          that we discovered in the random sample.

23                       Then the highly exposed workers were  
24          examined for the coworker model question, and  
25          in the highly exposed workers we found

1           essentially no gaps in the internal data, and  
2           that is every worker practically had full -- I  
3           would change to that. Every worker had at  
4           least one internal dose measurement from the  
5           beginning to the end of employment.

6                        So we didn't think that there should  
7           be an issue in regards to the coworker models  
8           with internal dose for the radionuclides for  
9           which there are measurements. We didn't check  
10          for radionuclide-specific (unintelligible).

11                      In regard to the external dose of the  
12          cumulatively highly exposed workers, we did  
13          discover that there were significant gaps in  
14          monitoring from the 1950s, especially for the  
15          group three workers. And NIOSH also has  
16          documented there were a significant number of  
17          workers who were not monitored. So there's a  
18          separate analysis for the 1950s, and it seemed  
19          that in the initial years of employment there  
20          was a lot of missing years.

21                      We investigated in a very preliminary  
22          way the job cards of these workers and found  
23          that as one might have expected that there is  
24          an explanation for this, that the uranium  
25          workers in the non-plutonium areas tend to

1           essentially explain the gap. The gaps were  
2           not in the plutonium areas.

3                       Now this does, this is a little bit of  
4           a problem in terms of completeness for dose  
5           reconstruction purposes because the assumption  
6           was that the non-plutonium areas don't have  
7           high external dose potentials. That actually  
8           is not uniformly the case. The Rocky Flats  
9           history documents that in the depleted uranium  
10          areas, for example, the thorium and  
11          protactinium tended to flow to the surface,  
12          and so they were quite high shallow or beta  
13          dose potential in those areas.

14                      So there's an issue in terms of  
15          constructing an appropriate model for external  
16          dose for the 1950s in terms of period and  
17          types of workers. But I think the type of  
18          problem is identified, and so we haven't come  
19          to any conclusion that it can't be done. It's  
20          just an outstanding issue. It's not been  
21          addressed so far as I know in the coworker  
22          model that NIOSH has come up with  
23          specifically.

24                      **MS. MUNN:** That's good information, Arjun,  
25          thank you.

1           **DR. ULSH:** I have to chime in here, and I'm  
2 in a very great disadvantage because I'm  
3 trying to comment on a report that I haven't  
4 seen yet. But I feel compelled to because now  
5 the conclusions or at least the tentative  
6 conclusions are out there on the record.

7           First of all, the periods when there  
8 is no monitoring data has been characterized  
9 as missing, periods when the data is missing.  
10 And I caution everybody when you read about it  
11 in the Rocky Mountain News tomorrow, that  
12 NIOSH has not yet had a chance to evaluate  
13 this report, and we cannot concur or really  
14 even disagree. We can't offer any opinion on  
15 whether there are periods with missing data.

16           There are periods with no data, and in  
17 the past, in the first 12 we found a large  
18 number of instances when those periods with no  
19 monitoring data to be (telephonic  
20 interference) where the person worked and  
21 whether or not they would be expected to be  
22 monitored. So I would just ask everyone to  
23 reserve judgment on this until we have a  
24 chance to do it and weigh in.

25           **DR. MAKHIJANI:** May I just correct myself.

1 I'm quite sorry. You brought this up last  
2 time, and I used the word missing data  
3 inappropriately. I should have said gaps in  
4 the data. And when you see the write-up,  
5 actually it will reflect it that way. It does  
6 mean that the workers, so far as we've been  
7 able to discover, that the workers were not  
8 monitored at that time, that it isn't that the  
9 workers were monitored and some other data are  
10 missing.

11 **MS. MUNN:** Well, thank you for the concern  
12 with semantics. Certainly, especially taken  
13 out of context, a single word can be very  
14 misleading --

15 **DR. MAKHIJANI:** The write-up will reflect  
16 that these are data gaps. They're basically  
17 blanks in the data record.

18 **MR. GRIFFON:** And that's part of the reason  
19 that I was trying to stick mainly to an update  
20 was that I knew that NIOSH hadn't seen this  
21 yet, so I didn't want to get too much into,  
22 because it may be that as Brant says that some  
23 of these gaps can be explained by the programs  
24 or practices of the time.

25 **MS. MUNN:** Absolutely.

1           **MR. GRIFFON:** Yeah, what they were doing.

2           **MS. MUNN:** Thank you for the update. That's  
3 great.

4           **MR. GRIFFON:** Now in terms of the timing,  
5 then this report is going out to NIOSH, and  
6 then we should be in a position to hopefully  
7 discuss this at the face-to-face work group  
8 meeting, right, Brant? That's, I guess, what  
9 we're driving toward.

10          **DR. ULSH:** Right, yeah, as soon as we get  
11 it. I mean, we've already started looking at  
12 the files and SC&A has provided us with the  
13 identities of the cases they're looking at.

14          **MS. MUNN:** And with (unintelligible), right?

15          **MR. GRIFFON:** Yes, they said tentative. At  
16 least we can discuss that at the end, but I  
17 think the 26<sup>th</sup> was going to work for most  
18 people.

19          **MR. FITZGERALD:** But I certainly will  
20 forward these spreadsheets today after the  
21 call.

22                         And Arjun, I think the actual  
23 analysis, the written analysis, would be  
24 available in the next day or two.

25          **DR. MAKHIJANI:** Yes, it's essentially

1 complete, and so that's why I was able, and  
2 I'm very sorry that you don't have it right  
3 now, but it's undergoing internal checks to  
4 make sure that it's all all right.

5 **MR. GRIFFON:** Is there anything else on data  
6 completeness from Joe or Brant at this point?

7 **DR. ULSH:** Well, yeah, I do have a question,  
8 Mark, just related to sub-point number three  
9 that NIOSH will provide access to all Rocky  
10 Flats' claimants, both for designated SC&A  
11 staff. I think we've done that. Is anybody  
12 aware of any issues or problems?

13 **MR. GRIFFON:** No, not at this point. Like I  
14 said, this is an old summary of actions.

15 **DR. ULSH:** No, I understand. I just want to  
16 make sure that no one's experiencing any  
17 issues.

18 **MR. GRIFFON:** SC&A, you've had access to the  
19 files that you needed, right, the rad files?

20 **DR. MAKHIJANI:** Oh, yes, we've had complete  
21 access.

22 **MS. MUNN:** So we can call number three done?

23 **MR. GRIFFON:** Yes.

24 **MS. MUNN:** Three is done.

25 **MR. FITZGERALD:** I guess, Mark, before we

1 leave this issue, consistent with what you've  
2 indicated before, I mean, based on NIOSH's  
3 review starting this week, if there's any  
4 need, obviously, to schedule a call to clarify  
5 within the report or to ask questions,  
6 certainly we can do that in real time, not  
7 have to wait, I guess, until the 26<sup>th</sup>. I mean,  
8 we have a couple weeks we can use.

9 **MR. GRIFFON:** Is that agreeable, Brant?

10 **DR. ULSH:** Yes.

11 **MR. GRIFFON:** Call as necessary. We can get  
12 a technical call, yeah, that'd be great.

13 **D AND D PERIOD**

14 Okay, on to item three which would be  
15 the D and D worker approach.

16 **MR. FITZGERALD:** Yeah, let me. I'll take  
17 that up.

18 This issue was raised, I think, at the  
19 Denver Advisory Board meeting primarily  
20 because the timeframe for the petition class  
21 went to 2005, but the internal coworker model  
22 and some of the other characterization did not  
23 include the D&D era, which is '93 through the  
24 closure of the plant.

25 So we were concerned about the need to

1            simply characterize better, well, it may have  
2            been more contemporary, but also certainly not  
3            routine relative to the Rocky mission  
4            activities that were going on during the D&D  
5            phase where certainly we were concerned about  
6            elevated exposures for while the transient  
7            subcontractors came.

8            NIOSH has done a considerable amount  
9            of work. They have provided documentation in  
10           terms of policies, procedures. We've looked  
11           at those, have identified other issues, and  
12           where we come out, frankly, is trying to  
13           figure out how one can characterize dose  
14           distributions for D&D workers and trying to  
15           figure out who they worked for, what have you.

16           The last iteration was, and this was  
17           presented to us some weeks ago, was a  
18           comparison of what was called top-tier  
19           contractors in terms of their dose  
20           distribution with all subcontractors. I think  
21           that was like 206 subcontractors, and a subset  
22           which were identified as likely D&D  
23           subcontractors. It was a smaller group. I  
24           don't remember the number of those, was it  
25           nine, something like that.

1                   But in any case, the analysis showed  
2 very similar dose distributions in terms of  
3 those groups. Frankly, we thought that was  
4 persuasive, sufficiently persuasive that one  
5 could envelope these various groups,  
6 particularly the D&D subcontractors within a  
7 coworker model for a larger RFP worker  
8 population.

9                   That was the question that we had,  
10 whether or not you needed a separate coworker  
11 model for D&D workers. We felt that was  
12 fairly persuasive, and NIOSH has developed an  
13 OTIB, OTIB-14, which extends the internal  
14 coworker model through, I believe, it's 2005,  
15 which would encompass the D&D era. That was  
16 issued on December 7<sup>th</sup>.

17                   We're finishing up our review of that.  
18 We essentially have one question from that  
19 review, and we'll certainly provide Brant our  
20 comments when we complete that. That should  
21 be completed here relatively soon.

22                   But that involves the period of time  
23 when fecal sampling was used for a number of  
24 these termination bioassays versus lung  
25 counting, versus urinalysis, and just trying

1 to reconcile whether any bias may be  
2 introduced by the actual form of bioassay that  
3 was done for these termination bioassays. And  
4 we don't have any real answer at this point.

5 It's just a question that's come up as  
6 to does that perturb the coworker model for  
7 those individuals who may have received  
8 different bioassays? And that's again just  
9 for purposes of passing that along, and that's  
10 the only question that we've come up with in  
11 that evaluation at this point.

12 But in terms of the overall  
13 distribution I think we're satisfied that that  
14 tends to address the question that we had  
15 originally which was the difference between  
16 the dose distribution for the normal routine  
17 contractors and those that were doing D&D. I  
18 think a lot of it came down to the fact that  
19 the steelworkers in that would be considered  
20 part of the top-tier group actually did a lot  
21 of the initial radiologically dirty tear downs  
22 and what have you.

23 And this work was turned over to the  
24 subcontractor teams later on; and therefore,  
25 actually there wasn't a lot of the,

1 necessarily a lot of the dirty work  
2 concentrated in any particular subcontractor  
3 group. I think that's a fair estimation for  
4 that. That's where we are on D&D at this  
5 point. We're finishing up the OTIB-14 review.  
6 We should have something relatively soon. I  
7 suspect maybe a brief issue-specific call  
8 could resolve any remaining questions on that.

9 **DR. ULSH:** Okay, thanks, Joe. It's actually  
10 an OCAS TIB. Okay, I'm happy to hear a  
11 favorable review of the termination bioassay  
12 analysis that Gene Potter performed. That's  
13 gratifying.

14 Gene is on the call, so he heard your  
15 question there about the particular type of  
16 bioassay. We'll start thinking about that.  
17 And then I guess we'll just wait for your  
18 formal review of OTIB-14, but we'll go ahead  
19 and start thinking about the answer to that  
20 question.

21 **MR. FITZGERALD:** Right, and we should have  
22 something for you soon, and maybe we can  
23 schedule something.

24 **MR. GRIFFON:** So the remaining action is,  
25 Joe, you're going to complete the review of

1 OTIB-14, but otherwise you feel pretty  
2 comfortable with the comparison of  
3 distributions?

4 **MR. FITZGERALD:** Yeah, on the fundamental  
5 question that satisfies us, and I think we're  
6 just trying to make sure that we give OTIB-14  
7 a good review before we pass on it. That  
8 catch you up on your schedule?

9 **MR. GRIFFON:** Yeah, yeah, thank you. I  
10 think that's all we have on that item. I was  
11 going to get through that quickly.

12 **MS. MUNN:** That's terrific.

13 **LOGBOOK ANALYSIS**

14 **MR. GRIFFON:** And I think, actually, number  
15 four might be a fairly quick update, too, the  
16 log book analysis.

17 **MR. FITZGERALD:** Yeah, I'll turn to Kathy in  
18 a second, but that was the only one of the  
19 three chunks that we didn't quite get out, but  
20 that one does have some Privacy Act  
21 implications.

22 So we may, Brant, send it to you, but  
23 we may also have to have Emily take a look at  
24 it before we more broadly distribute it.

25 **DR. ULSH:** Yeah, that's fine, Joe.



1 we looked -- and they recorded a dose number  
2 in the log book, we looked for whether that  
3 person had that dose value in as small an  
4 increment as we could. Some of the dose  
5 values were quarterly, so we did a direct  
6 comparison.

7 Some of the values recorded in the log  
8 book were from a smaller period of time. So  
9 we looked at whether they were consistent,  
10 meaning that the quarterly dose that covered  
11 that period was at least equal to or higher  
12 than what was recorded in the log book.

13 **MR. GRIFFON:** That's great.

14 **MS. ROBERTSON-DeMERS:** The one question that  
15 is kind of outstanding is that we submitted a  
16 list of log books that we wanted pulled, at  
17 the request of the working group, probably  
18 back in the summer of this year. And several  
19 of those log books have not been discussed in  
20 the review that NIOSH did the second review,  
21 or the first review for that matter. And  
22 we're uncertain what the status on these log  
23 books are. Whether they were reviewed and  
24 seemed to be not pertinent or how NIOSH did on  
25 the remainder of, there were a number of log

1 books.

2 **MR. GRIFFON:** Were they similar types of log  
3 books, Kathy, or was it hard to tell based on  
4 your --

5 **MS. ROBERTSON-DeMERS:** It was hard to tell  
6 based upon the inventory.

7 **DR. ULSH:** If I could perhaps speak. I  
8 don't want to interrupt, Kathy. Are you done  
9 or should I wait to speak or --

10 **MS. ROBERTSON-DeMERS:** That's kind of the  
11 gist of it. Most of the log books that were  
12 reviewed I originally requested independent of  
13 NIOSH, the ones that are listed on the O  
14 drive, and that feeds into the question of  
15 whether these other log books were reviewed  
16 from the master list and what the turn out of  
17 the review was.

18 **DR. ULSH:** The short answer to your question  
19 is that all of the log books being reviewed  
20 are reflected in that log book report, you  
21 know, the report that we issued on the  
22 comparison. So if it's not in that report, it  
23 was not reviewed.

24 To go back to the history of how this  
25 all developed, it started with the, what we

1 affectionately call the Kittinger Log. That  
2 was identified as one that might be  
3 interesting, and I initially did a detailed  
4 analysis of that one and presented it at a  
5 working group meeting.

6 And then the next iteration along  
7 these lines was, okay, well, let's take it  
8 just a handful of data points from some  
9 representative types of log books that covered  
10 different facilities. In other words, the  
11 plutonium facilities, the uranium facilities  
12 and covered a span of time periods that  
13 reflect the operations of the site.

14 We never committed in the working  
15 group and the working group never asked us to  
16 review all log books that could be retrieved  
17 or even all of them that were listed. We just  
18 committed and were asked to review  
19 representative log books of the different  
20 types.

21 **MR. GRIFFON:** No, that's true. That's why I  
22 was asking Brant whether the log books that  
23 Kathy's talking about were consistent with the  
24 types and areas and, you know, because I think  
25 that's what we did ask you to do. You're

1 right.

2 **DR. ULSH:** And there were some types of log  
3 books, and I can't recall exactly that we  
4 initially discussed in the working group  
5 meeting, and then as we looked at them, we  
6 kind of jointly decided, jointly meaning we  
7 talked to the working group about it, and said  
8 that these types of log books are not really  
9 helpful. They don't contain the data that we  
10 can cross walk. They might have been the  
11 foreman's logs, but don't take that to the  
12 bank. I can't --

13 **MR. GRIFFON:** I recall that as well, yes.

14 **DR. ULSH:** There were a couple that we  
15 decided mid-process were not going to be  
16 helpful and so we focused on the other types,  
17 but that was kind of how this all evolved.

18 **MS. ROBERTSON-DeMERS:** Which brings me to  
19 the question of why was the focus put on log  
20 books that SC&A reviewed or quote from Rocky  
21 Flats independently of NIOSH? It's just a  
22 concern that there are other log books out  
23 there that we provided in the master list that  
24 probably were beneficial to look at.

25 **DR. ULSH:** I think we might -- I don't know.

1 Theresa, you're on line right?

2 **MS. LOPEZ:** Yes, I am.

3 **DR. ULSH:** Okay, I think we might agree --  
4 and Theresa, correct me if I'm wrong -- but  
5 there are probably other log books out there  
6 that could be looked at. But this, the ones  
7 that we looked at fulfilled our commitment to  
8 the working group and what they asked us to  
9 do.

10 Theresa, do you have anything to add  
11 on that?

12 **MS. LOPEZ:** No, I don't. Maybe just one  
13 thing. On some of those I have noticed that  
14 there are some naming conventions that make  
15 tracking a log book a little bit difficult  
16 between all the different lists floating out  
17 there. Some of the log books that you may  
18 think you haven't found have actually been  
19 renamed or were named differently when entered  
20 onto the O drive.

21 It took me awhile to find a few  
22 myself, and that might be part of the problem.  
23 I can, for example, there's one Kittinger log  
24 that is named Kittinger log number four, and  
25 then it is also called log book, for example,



1 we'll wait and see.

2 So the ball's in your court, Joe, to  
3 release this final report that you have.

4 **MR. FITZGERALD:** Yeah, and again, I think  
5 the only hesitation is there's Privacy Act  
6 considerations that we'd like to go ahead and  
7 screen out before wider distribution, but  
8 we'll certainly do what we're doing with the  
9 completeness review which is we'll send it to  
10 you, Brant, and we'll send it to Emily and get  
11 a reading before we do a broad distribution.

12 **MR. GRIFFON:** Brant, anything else on that  
13 topic?

14 **DR. ULSH:** No, nothing.

15 **MR. GRIFFON:** Until you see the report  
16 probably, yeah.

17 **DATA INTEGRITY AND SAFETY CONCERNS**

18 I'm going to insert two items in here,  
19 Joe, because you just prompted me that you did  
20 issue reports on the data integrity and safety  
21 concerns, and maybe I can insert that in, it  
22 seems to go along with the log book analysis  
23 all in this --

24 **MR. FITZGERALD:** Right.

25 **MR. GRIFFON:** -- analysis of data integrity.

1 Can you, I mean I know that NIOSH just  
2 recently received the report --

3 **MR. FITZGERALD:** The safety concern one went  
4 out about three or four weeks ago.

5 **MR. GRIFFON:** Oh, that went out a little  
6 longer ago.

7 **MR. FITZGERALD:** Data integrity examples was  
8 about ten days ago, so they're pretty lengthy.  
9 I don't know if we want to take a lot of time  
10 here, but, Kathy, can you say 30 seconds on  
11 each?

12 **MS. ROBERTSON-DeMERS:** Okay, the safety  
13 concerns for the most part there was agreement  
14 between SC&A and NIOSH on whether they were  
15 relevant to the petition. There were some  
16 exceptions related to whether dosimetry  
17 investigations were actually conducted and  
18 documented prior to the first documentation  
19 I've run across since 1986.

20 But this is a contention that if there  
21 was a problem with the badge, the dosimetry  
22 investigation was conducted. And what we have  
23 right now is essentially the work of the  
24 former (unintelligible) staff that it was done  
25 and no documentation that we've found to date.

1           So that was one issue, and some of this  
2 overlaps between the two reviews. That  
3 happens to be an issue that overlaps between  
4 the data integrity and the safety concerns.

5           Another one that overlaps is the fact  
6 that there were situations expressed where the  
7 individual did not believe their dosimeter  
8 readings based upon the work activities they  
9 were involved with for that particular  
10 timeframe. And in this case we felt that  
11 there was further explanations that needed to  
12 be provided by NIOSH. Brant can tell you the  
13 gist of their, where they came out on this.

14           The response, the dose rate varied by  
15 position of the workers relative to the floors  
16 and the claim that areas were posted as a  
17 maximum dose rate was in essence how they had  
18 answered that question. And if we're looking  
19 for more of how could this have happened, we  
20 have approximately 20 people bringing this  
21 issue up. Is there a problem with the badge?  
22 Is there a problem with the dosimetry  
23 investigations that occurred under their old  
24 situation? They're looking for more of an  
25 explanation rather than the area where this

1 posted maximum dose rate.

2 Those are really the two big issues  
3 that we didn't have concurrence on. So both  
4 the safety concerns and the data integrity  
5 example.

6 **MR. FITZGERALD:** I think in general, and we  
7 made this clear in our review, that we do not  
8 necessarily agree with some of the individual  
9 safety concern interpretations or evaluations  
10 that NIOSH has provided. The same thing with  
11 some of the data integrity examples, but taken  
12 as a whole, we still believe that these don't  
13 rise to a threshold where we believe there's a  
14 pattern or a systemic issue or a falsification  
15 issue that relates to the records or the  
16 database. So to some extent it's inconclusive  
17 on some of these issues, but we have not found  
18 evidence of a pervasive issue throughout the  
19 database. And that's kind of where we came  
20 out on the data reliability, very extensive,  
21 very extensive data reliability review that's  
22 been conducted.

23 **MR. GRIFFON:** You're answering my questions  
24 before I ask them, Joe, very good. The focus  
25 was on the, or the reason for all this was to

1 look at that systemic question.

2 **MR. FITZGERALD:** Right, right, if we could  
3 connect the dots, meaning that if we could  
4 find enough examples that taken together  
5 constituted a pattern of either falsification  
6 or discrepancies in the records, then that  
7 would lead us to be concerned about the  
8 records as a whole. But the issues we found  
9 were individual issues even though, as Kathy  
10 points out, we found in some cases several or  
11 more examples, we didn't find a pattern or  
12 systemic situations. And that's kind of where  
13 we came out.

14 **DR. ULSH:** I think Joe and Kathy have  
15 accurately summarized where we are, Mark. We  
16 don't necessarily agree on every individual  
17 example, but I think overall we are in general  
18 agreement. Given that, I guess I would like  
19 to get the pleasure of the working group.  
20 Should we dedicate more time to those  
21 instances where we haven't reached concurrence  
22 or is the working group satisfied on these  
23 issues?

24 **MS. MUNN:** This is Wanda. I was very  
25 impressed with the quality of the two recent

1 reports in this regard and understand the  
2 problem that still exists with some individual  
3 cases. But insofar as satisfying what I  
4 believe our original concern was, my sense was  
5 that Joe and Kathy's most recent report did  
6 satisfy that concern. It might give us some  
7 grief with respect to one or more individuals  
8 when those dose reconstructions were  
9 undertaken. But certainly I didn't see  
10 anything that would keep us from being able to  
11 do valid coworker evaluations.

12 Did you, Mark?

13 **MR. GRIFFON:** Yeah, I mean, my first review  
14 of these reports I agree. I think we have  
15 what we need --

16 **MS. MUNN:** Yeah.

17 **MR. GRIFFON:** -- in terms of making, you  
18 know, from an SEC standpoint here, you know,  
19 that I don't know that we need any more  
20 actions on NIOSH to have on the individual  
21 items.

22 **MS. MUNN:** This has been a very thorough  
23 investigation. Both SC&A personnel and NIOSH  
24 folks are to be congratulated from my point of  
25 view. This has been an extremely defining --

1           **MR. PRESLEY:** This is Bob Presley. I agree  
2 one hundred percent. I think that we right  
3 now have enough data to make our decision on  
4 these.

5           **MR. GIBSON:** And this is Mike. I'm going  
6 to, I'm going to somewhat disagree at this  
7 point only that I agree that there's been a  
8 lot of work put in on this site, but to  
9 categorically say that, you know, maybe one of  
10 the complaints was valid. Maybe ten of them  
11 weren't. There still could be an issue there  
12 that could amount to something. So I just,  
13 I'm not going to hold up further research, but  
14 I just want to go on the record as saying as  
15 one that's been out in the field, I don't  
16 think we can think these concerns are not  
17 valid.

18           **MS. MUNN:** Mike, it wasn't my intent,  
19 certainly personally, to indicate that any of  
20 the individual concerns were not valid. That  
21 was not the thought that I was trying to  
22 convey. I was trying to convey the fact that  
23 it was a pleasure to see that there did not  
24 appear to be any pattern of real attempt to in  
25 any way change the reality of the data that

1 had been gathered at the time, that the  
2 integrity of what was there was acceptable and  
3 (unintelligible) basis that some individuals  
4 may have to be treated differently. That was  
5 what I was trying to convey.

6 **MR. GIBSON:** I'm sorry, Wanda, I didn't mean  
7 that. What I meant was given the limited  
8 amount of complaints that were made, there may  
9 have been many more workers who had a  
10 complaint but weren't aware of the process of  
11 making a complaint. So again, I don't want to  
12 belabor the subject, but I'm just saying I  
13 don't agree for right now, but I'm just  
14 wanting the members to work through, but we'll  
15 let it go.

16 **MR. GRIFFON:** And then there's only one area  
17 in this group of concerns. I think that one  
18 of the areas, this no data available question  
19 might overlap with our data completeness  
20 review and some of those sort of that side of  
21 it. But I think, I mean certainly I agree  
22 that we're not taking away from any of these  
23 individual claims.

24 But I think we've, the real question  
25 we've got to try to get our hands around for

1           this entire class is that systemic question.  
2           And I think we've got a lot of material here  
3           to make our -- mainly what I'm saying now is I  
4           don't think there's any further action  
5           required of NIOSH at this point. We've got  
6           information here, another prong of our  
7           investigation to report back to the full Board  
8           with on this question of data integrity.

9           **MR. FITZGERALD:** Yeah, I'll just add the one  
10          rather significant caveat to this conclusion  
11          is obviously the 1969-'70 issue which we had  
12          parsed out in a sense as a separate issue, but  
13          obviously, it relates to the records  
14          integrity. And there we do think there is a  
15          problem. But again, it's not sort of part of  
16          this generic review or conclusion but more of  
17          a special issue that we felt deserved  
18          attention for its own sake. So there is one  
19          big caveat to that broad conclusion, and it's  
20          really the '69-'70 situation which we'll get  
21          to here shortly.

22          **MR. GRIFFON:** But I think we'll, at this  
23          point there's a primary remaining action is  
24          SC&A to get the log book report to NIOSH. And  
25          then these other three reports, we can do a

1 final discussion of these at the face-to-face  
2 work group. But I think we've got to keep in  
3 mind the systemic question, and I don't see  
4 any need to have a follow up action on NIOSH's  
5 behalf on the specific differences.

6 **MS. ROBERTSON-DeMERS:** This is Kathy. I  
7 just wanted to clarify something. When a  
8 concern was raised, I went about trying to  
9 determine if that concern had an impact on  
10 dose reconstruction. It was not a matter of,  
11 yes, I agree with the worker, or no, I agree  
12 with the worker, or I don't agree with the  
13 worker. So I just wanted to make that  
14 clarification.

15 **MR. GRIFFON:** No, that's a good distinction,  
16 thank you.

17 I think we, I mean, I think we're  
18 through this item. All I was going to ask  
19 before we move on to the 1969 data gap, it is  
20 noontime. I could use at least a comfort  
21 break, and I don't know if people, one, I  
22 don't think we have a lot of time left to  
23 complete our agenda, but I would certainly be  
24 willing to take a short break and have people  
25 bring lunches to the phone or take a half hour

1 for lunch or what's the pleasure of those  
2 primarily involved here? Joe, Brant, do you  
3 have a --

4 **DR. ULSH:** I'm okay with just a short  
5 comfort break, but I'll defer to everyone  
6 else.

7 **MR. PRESLEY:** This is Bob Presley, short  
8 comfort break is wonderful.

9 **MR. GRIFFON:** I really think we can wrap it  
10 up by 1:00. So let's take ten minutes then if  
11 that's okay, and Ray, I didn't ask you, but is  
12 that okay?

13 **THE COURT REPORTER:** Yes, sir.

14 **DR. WADE:** So we'll get back together about  
15 12:15, 12:20.

16 **MR. PRESLEY:** Hey, Lew, this is Bob. Since  
17 we're having problems with the phone, I'm just  
18 going to leave my phone muted.

19 **DR. WADE:** You don't have to hang up. Just  
20 stay on the line the rest of you.

21 **MR. GRIFFON:** Twelve:twenty we'll reconvene.

22 **DR. WADE:** Twelve:twenty we'll be back ready  
23 to work.

24 (Whereupon a break was taken from 12:10 p.m.  
25 until 12:20 p.m.)

1        1969 DATA GAP

2                    **MR. GRIFFON:** All right, I think we're ready  
3                    to go into the 1969 data gap questions, and,  
4                    Joe, maybe you can start us off.

5                    **MR. FITZGERALD:** Yeah, let me tee this thing  
6                    up. In the process of doing our data  
7                    reliability reviews that Kathy has done and  
8                    also in terms of what Ron Buchanan was doing  
9                    in terms of looking at dose distributions,  
10                   basically to hit 20 files and looking at  
11                   comparisons as part of the external dosimetry  
12                   look, we started noticing a discrepancy or a  
13                   pattern of discrepancies for a couple years  
14                   beginning in '69 and going into 1970.

15                                    And what we were noticing was an  
16                   increase in the number of zero readings that  
17                   were being recorded during that time period in  
18                   terms of the proportion of readings. And as  
19                   we have presented to NIOSH, and I think we did  
20                   get some agreement, yes, certainly the  
21                   prevalence of zero badge readings did go up  
22                   for those years.

23                                    And NIOSH subsequently pursued that,  
24                   investigated it and came up with a number of  
25                   possibilities including the implementation of

1 badging reading policy for non-plutonium  
2 workers which may have led to badges being  
3 received but not read for employees whose  
4 exposures were seen as not necessarily being  
5 high enough to report unless there were an  
6 accident or an incident, that kind of thing.  
7 Another possibility was perhaps a computer  
8 error or a computer programming switchover of  
9 some sort as a possibility.

10 NIOSH did a review which we received  
11 which went through these possibilities,  
12 provided some rationales and also got into the  
13 data a bit more in terms of which individuals  
14 had large, relatively large, larger gaps  
15 versus those that had fewer gaps, but gaps  
16 nonetheless.

17 We have since gone through a much more  
18 detailed analysis in terms of looking at the  
19 actual individual data files to actually  
20 ascertain the significance of the gaps for  
21 what the individual job categories were and to  
22 try to pin down better what seems to be the  
23 reason these gaps are arising. And we do  
24 believe these gaps are real for those periods,  
25 that particular period of time.

1                   And to that extent NIOSH, I think,  
2 agrees that certainly those gaps are real. So  
3 what we want to do is provide the perspective  
4 as to the origins of the gaps and what the  
5 implications of those gaps are from an SEC  
6 standpoint and select a second banana, but  
7 I'll turn it to Arjun, who has been spending a  
8 great deal of time with Kathy DeMers on this  
9 particular review.

10           **DR. MAKHIJANI:** Yeah, this is basically  
11 something that's been done by Kathy, and I've  
12 worked along with her mainly to make sure that  
13 the I's have been dotted and T's are being  
14 crossed. So I don't know how much in detail  
15 you want to go at this stage or give me some  
16 online guidance here, Joe.

17           **MR. GRIFFON:** This is Mark. I think, I  
18 mean, maybe an overview, but I also, you're in  
19 a position where NIOSH and the work group  
20 doesn't have the report, right?

21           **MR. FITZGERALD:** Right.

22           **MR. GRIFFON:** So I don't want to get into a  
23 position, where you put Brant in a position of  
24 having to respond to something that he's  
25 hearing now without seeing the report.

1           **MR. FITZGERALD:** This is in the same context  
2 to complete this report in the sense that  
3 there are some potential Privacy Act issues.  
4 So we will forward this in the next day or so  
5 and then also have Emily take a look.

6           **DR. MAKHIJANI:** Yeah, but there are Privacy  
7 Act issues here, and this is also undergoing  
8 more internal review on the file. Let me just  
9 say that where we agreed with NIOSH at first  
10 because that will be uncontroversial.

11                   We agreed on review of that these data  
12 gaps or blanks don't seem to be associated  
13 with a fire, but a large part seems to be  
14 associated with an earlier decision taken  
15 before the fire to not read three-month badges  
16 associated with non-plutonium areas. People  
17 who were not thought to be at risk of exposure  
18 over the ten percent, over ten percent of the  
19 applicable maximum in a given year, and a  
20 considerable number of badges were not read.

21                   We reviewed the NIOSH explanation also  
22 and believe that when the dosimetry logs and  
23 the one where the technicians measure the  
24 densities and enter the doses, one with the  
25 zeros and the arrows down the line for '69

1           seems to be associated with areas where the  
2           badges weren't read.

3                       We looked at the different databases  
4           that are associated with external dose just to  
5           see what happened with those blanks or gaps in  
6           the data when the badges weren't read, and we  
7           found that the some, there were four other  
8           databases, the occupational dose reports, the  
9           dosimetry history by individual, the HPERER --  
10          and if you push me, I'll read out the acronym  
11          -- and the HIS-20 database. And we found on  
12          the occupational dose reports and the  
13          dosimetry history by individual, generally --  
14          no -- and the HPERER, the occupational dose  
15          reports and the HPERER databases the  
16          (unintelligible) carried over.

17                      We also found that the HIS-20  
18          database, and we looked at 19 different  
19          individuals, and in the dosimetry history by  
20          individuals, the blanks tended to turn into  
21          zeros so that in the HIS-20 database now  
22          you've got zeros from less than detectable  
23          limits that appear to be mixed up with zeros  
24          of badges that were not read.

25                      Some of these people seem to have

1 significant exposure potential. We looked at  
2 their prior years' data and they seem to be,  
3 at least in some cases, declined, having  
4 declined doses. So there are a lot of details  
5 to this analysis that NIOSH will get in the  
6 next day or two.

7 **MR. GRIFFON:** I think this is one we  
8 certainly may want to reserve a space for a  
9 technical call next week because I think, like  
10 you said, there are some details here that  
11 NIOSH needs a chance to look at and be in a  
12 position to respond to.

13 **DR. MAKHIJANI:** Yeah, there are some pretty  
14 significant details I think that NIOSH will  
15 need to look at.

16 **MR. GRIFFON:** There's still music in the  
17 background.

18 **DR. WADE:** Yeah, this is Lew. It's going to  
19 fall on deaf ears I'm afraid, but I mean we  
20 are hearing background music. I would guess  
21 it's someone has put us on hold. I don't know  
22 what we can do about that other than again ask  
23 all of us to think about what happens when  
24 we're here and when we're not here in terms  
25 of... I don't know how we can deal with it

1 otherwise. If it's annoying enough, we could  
2 all hang up and call back and possibly  
3 establish a new contact point, but I'm not  
4 sure that would even work.

5 **MR. GRIFFON:** I think we can talk over it  
6 right now. It's not too bad.

7 **DR. WADE:** I'll come on periodically and  
8 make a comment about it.

9 **MS. MUNN:** As long as somebody's talking  
10 otherwise we're all going to sleep.

11 **MR. PRESLEY:** Somebody's using a computer,  
12 too, that's close to wherever their phone is,  
13 and that's more annoying than the music.

14 **DR. WADE:** I could just hear it just before  
15 you stopped speaking. So again, good  
16 etiquette for all of us. I mean, all of us  
17 are guilty at one point in time of not doing  
18 this right. So mute unless you're speaking,  
19 and while we appreciate the music, it would be  
20 nicer if it could stop.

21 **MR. GRIFFON:** So Joe, just a sense of when  
22 is this report going to get to Brant and just  
23 in terms of timing I'm trying to --

24 **MR. FITZGERALD:** Yeah, I think as Arjun  
25 pointed out, the report's drafted along with

1 the accompanying spreadsheets. What we're  
2 doing now is just some final QA.

3 Arjun, is it fair to say, today is  
4 Tuesday, maybe sometime Thursday?

5 **DR. MAKHIJANI:** Yes, I think by Thursday you  
6 should have both reports. The spreadsheets  
7 you will have today. I went back and changed  
8 the word missing to a more appropriate word.  
9 So you will see the spreadsheets today from  
10 Joe as Joe has sent you the corrected ones.

11 **MR. FITZGERALD:** And I have the corrected  
12 spreadsheets for the completeness reel and the  
13 corrected spreadsheets for the '69 as well?

14 **DR. MAKHIJANI:** Yeah, I don't think there  
15 are any problems with '69, but I will review  
16 that before I send it to you.

17 **MR. GRIFFON:** I guess a couple questions I  
18 had that just might be important here.

19 Brant, I don't know if you have any  
20 further information, but it might become  
21 important on this policy that we all found in  
22 the memo that you identified, or I'm not sure  
23 who identified it, but I think it was a 1969  
24 memo in fact, a memo report where it indicated  
25 that this policy of badged people, but some of

1 the quarterly badged were not read out.

2 And I think, Arjun, I'm not sure if  
3 your statement was accurate. I don't think it  
4 was based on the ten percent criteria. I  
5 think it was based on just a lower likelihood  
6 of risk of exposure. I don't think it was  
7 still that ten percent criteria. At any rate,  
8 it was --

9 **DR. MAKHIJANI:** No, Mark, actually Kathy  
10 DeMers found the ten percent --

11 **MR. GRIFFON:** In another statement? Okay.

12 **DR. MAKHIJANI:** -- statement. Can I just  
13 mention that document?

14 **MR. GRIFFON:** Yeah, maybe you should mention  
15 it.

16 **MS. ROBERTSON-DeMERS:** That is a letter that  
17 was drafted right before the occurrence of the  
18 NIOSH statement in the progress report. It  
19 goes into a little bit more detail on who they  
20 were going to put into the category of non-  
21 plutonium workers. And that is where the ten  
22 percent, actually what it says is these people  
23 have been below ten percent of the in-plant  
24 guidelines during 1968. So it's fair enough  
25 to say that we shouldn't be reading these non-

1 plutonium building badges.

2 **MR. GRIFFON:** All right, and that references  
3 in your report so that's --

4 **DR. MAKHIJANI:** Yeah, because, you know, I  
5 haven't been following this as you know, Mark.  
6 It's been Kathy, and so in editing her work, I  
7 saw this and asked her to document.

8 **MR. GRIFFON:** I'm sorry. I hadn't seen  
9 that.

10 **DR. ULSH:** Yeah, Mark, what we had was from,  
11 as Kathy mentioned, it was from a monthly  
12 progress report. It mentioned that people on  
13 quarterly badges at non-plutonium areas, the  
14 coworkers they identified.

15 **MR. GRIFFON:** But it didn't have this ten  
16 percent reference which is a different thing.

17 **DR. ULSH:** Not in the monthly progress  
18 report.

19 Kathy, if you wouldn't mind, could you  
20 please send that over to me? I'd be very  
21 interested to see that.

22 **MR. GRIFFON:** Yes, yes. And the only thing  
23 I was going to say, my bottom line there or  
24 question to you, Brant, was do we know when  
25 that policy ended? That was a question I've

1                   asked before, but I think it might become  
2                   important here in our review of looking at.

3                   **DR. ULSH:** I wish I could say yes, Mark, but  
4                   I really can't because I don't know when it  
5                   ended. Frank, do you have anything to add?

6                   **UNIDENTIFIED SPEAKER:** No, I don't know when  
7                   that is either. That's a good question. I  
8                   guess one thing we can do is just look at the  
9                   files we have on hand and see if we can find a  
10                  notation of that.

11                  **DR. ULSH:** Well, there's another thing,  
12                  perhaps, it strikes me.

13                  Kathy, when you send over that letter  
14                  I might look and see who the author is and do  
15                  a search on anything that that author might  
16                  have written. Now, if it's a, or he writes a  
17                  lot, that's going to be a needle in a haystack  
18                  kind of the thing, but if there's a subsequent  
19                  letter in '72 or something, that might be a  
20                  place to --

21                  **DR. MAKHIJANI:** Mark, there is some  
22                  circumstantial evidence in terms of how long  
23                  this gap lasted. It seemed to go into 1970  
24                  and stop there. So there's no document that  
25                  we've come across either, and the gaps don't

1                    seem to last beyond, well, you know, there are  
2                    high zeros for different reasons later on, but  
3                    this particular episode of high zeros in the  
4                    HIS-20 seems to stop at 1970 sometime.

5                    **MR. GRIFFON:** Well, anyway, I think that  
6                    might be, because I'm recalling your one  
7                    example in the first 12 cases that you did.  
8                    And if my memory serves me, that individual  
9                    had a gap from more than just '69 to '70. It  
10                   went though three or four years.

11                   **DR. MAKHIJANI:** Yeah, it went through to  
12                   '73.

13                   **MR. GRIFFON:** Yeah, and then albeit that  
14                   individual certainly probably was on quarterly  
15                   monitoring --

16                   **DR. MAKHIJANI:** Yes.

17                   **MR. GRIFFON:** -- clearly they had gaps  
18                   there. So that would not have fallen under a  
19                   policy that ended in 1970, correct?

20                   **DR. MAKHIJANI:** Right, but that gap also  
21                   started in 1964.

22                   **MR. GRIFFON:** Okay, so that might have been  
23                   a different --

24                   **DR. MAKHIJANI:** Yeah, if that started in  
25                   1969.

1                   This question may have some larger  
2 implications and does need some more  
3 investigation.

4           **MR. GRIFFON:** That's why I'm asking about  
5 it, yeah.

6           **DR. MAKHIJANI:** I agree with you on that.

7           **MR. GRIFFON:** It's certainly got to impact  
8 how we interpret your data completeness  
9 analysis as well as the '69 data gap, you  
10 know, or it could. I mean, the more we know,  
11 the better we can understand.

12           **DR. ULSH:** There is one further confounder  
13 I'd like to remind everyone about and that is  
14 the '69 fire essentially brought plutonium  
15 production to a halt. So you would expect to  
16 see higher incidences of zeros on the badges  
17 that were read.

18           **DR. MAKHIJANI:** Right. Brant, the only  
19 thing that we looked at was to separate the  
20 zeros that were read from the zeros that were  
21 not.

22           **DR. ULSH:** Yeah, yeah.

23           **DR. MAKHIJANI:** That's where in the HIS-20  
24 is a result the best we could determine from  
25 badges that had never been read.

1           **DR. ULSH:** Yeah, well, we'll take a look and  
2           --

3           **MR. GRIFFON:** I guess that's as far as we  
4           can go now. And we might want to, like I  
5           said, reserve a spot for a technical call on  
6           this one. It seems like three of the ones  
7           that might require some time next week are the  
8           --

9           **MR. PRESLEY:** Hey, Mark, this is Bob  
10          Presley.

11                   Arjun, have you all looked at the  
12          possibility that after the fire these people  
13          were furloughed for a short time, and that  
14          that's one reason that there's some data gaps  
15          in there in their badges?

16          **DR. MAKHIJANI:** We did.

17                   Kathy, can you fill in the detail on  
18          what we did for employment records?

19          **MS. ROBERTSON-DeMERS:** Well, I'm not sure I  
20          understand your question, Bob.

21          **MR. PRESLEY:** Okay, and this is just  
22          something, is there a possibility that after  
23          the fire that some of the people were  
24          furloughed for a short time so that they could  
25          go back and clean up and get back on because

1 of they would not have need for a lot of  
2 production workers if, you know, when the  
3 buildings and things were down. And I just  
4 wondered if there was a possibility that Rocky  
5 Flats furloughed these people for a short  
6 period of time.

7 **MS. ROBERTSON-DeMERS:** Okay, so you're  
8 talking about going from non-plutonium areas  
9 to plutonium areas?

10 **MR. PRESLEY:** Even sending them home for  
11 awhile. If there was a --

12 **MS. ROBERTSON-DeMERS:** There were two  
13 examples in our comparison where the  
14 individual was technically assigned to a cold  
15 building. However, they were involved with  
16 either the fires or the cleanup. And we have  
17 evidence in their files that they received  
18 body count data or urinalysis around the time  
19 of the fire, but the 1969 data is null.

20 **MR. GRIFFON:** The external data.

21 **MS. ROBERTSON-DeMERS:** Yes, the external,  
22 sorry.

23 **DR. MAKHIJANI:** A more direct answer to your  
24 question, Mr. Presley. All of the people that  
25 we looked at were assigned areas, their job

1 description was in areas other than plutonium.  
2 So they were not working, they were not  
3 production workers in the plutonium area.  
4 They were production workers in other areas  
5 like depleted uranium for example. And they  
6 do appear to have been issued badges in every  
7 one of the quarters. So from that I guess,  
8 and there's no notation in their job cards  
9 that they were furloughed.

10 **MR. PRESLEY:** Thank you, Arjun, I appreciate  
11 that.

12 **MR. GRIFFON:** Yeah, that's good, and we'll  
13 look at the details and NIOSH will get the  
14 report soon by the 11<sup>th</sup> we're saying.

15 **NEUTRON ITEMS**

16 Okay, let's moving right on, have  
17 neutron, have the outstanding neutron action  
18 items. I think, I've listed several, the  
19 original list actually is still in the matrix  
20 --

21 **MR. FITZGERALD:** Yeah, and we have  
22 reaffirmed some of those issues, certainly one  
23 or two are closed. But basically there's  
24 agreement that these were outstanding items  
25 and we were --

1           **MR. GRIFFON:** Just for reference, Joe -- I'm  
2 sorry, just for reference matrix item 23 in  
3 the updated matrix that I sent out lists all  
4 these. Now some have been completed  
5 certainly, but go ahead, Joe. I'm sorry.

6           **MR. FITZGERALD:** I'm saying we're certainly  
7 simply awaiting NIOSH response to some of  
8 those information needs. They're essentially  
9 information needs that would complete our  
10 analysis.

11          **DR. ULSH:** Yeah, I have an update there.  
12 Well, late yesterday, OTIB-58, the revision  
13 was signed, and I just sent that out this  
14 morning. I'm sure that you guys don't have it  
15 yet due to the time it takes for replication.

16                 It's my belief that that will respond  
17 to a lot of these action items, but take a  
18 look and feel free to direct questions to Matt  
19 Smith, just copy me since Matt's the author of  
20 OTIB-58. We tried to get that done earlier,  
21 but the holidays really, and the snow storms  
22 in Colorado, really put a ding in our  
23 schedule. But it's out there if you look.

24          **MR. GRIFFON:** Now are these, Joe, from your  
25 side once you have this report you're going to

1 include your final comments on this in your  
2 full report or are you going to give a  
3 separate response in any way or what do you  
4 anticipate, I guess?

5 **MR. FITZGERALD:** Well, I certainly will  
6 defer to Ron. But basically these were data  
7 needs that we've identified early on that  
8 would make it possible just to be conclusive  
9 about some of the findings that we were  
10 developing.

11 And Ron, would you say if we got the  
12 SEC information that would enable you to  
13 complete your report, but it wouldn't probably  
14 necessarily evoke the new issues of SEC  
15 significance or what's your perspective?

16 **MR. BUCHANAN:** I can't find the new OTIB  
17 issued yesterday. I have an electronic form  
18 of it and glanced through it, and I, of  
19 course, have not had time to analyze that.  
20 That will take some time, and I'm not sure  
21 that we'll get it in this interim report. In  
22 fact, we probably won't in the near future.

23 That does give a new table and that we  
24 were concerned with; however, we still lack  
25 the information on the detailed information on

1 the neutron badges in the '50s especially.  
2 That part of the request for data has not been  
3 received yet and analyzed.

4 **MR. FITZGERALD:** That information is  
5 particularly pertinent to finishing the  
6 validation on the coworker model which, I  
7 think, would be the one item that would  
8 certainly bear on the SEC.

9 **DR. ULSH:** I think I'll have to check with  
10 my team after this call. I think that might  
11 be my oversight. I put a bunch of supporting  
12 files on the O drive along with the OTIB, but  
13 I might have inadvertently not put that one  
14 there. I'll check on that.

15 **MR. BUCHANAN:** As of this morning I checked  
16 and the last data that was entered, I think,  
17 was like April of '06. So the data that was  
18 with the OTIB-58 was not a recent entry.

19 **DR. ULSH:** I'll check into that, Ron.

20 **MR. BUCHANAN:** Okay, thank you.

21 **MR. GRIFFON:** Are there any other  
22 outstanding deliverables from NIOSH that were  
23 awaiting response other than TIB-58 obviously.  
24 I see it on the O drive now, but any other  
25 outstanding items, Joe or Brant that you, out

1 of this list here, the original list was seven  
2 items here.

3 **DR. ULSH:** Not from my end, Mark. What do  
4 you think, Joe?

5 **MR. FITZGERALD:** Well, I think that original  
6 list has been pretty consistent. I mean, I  
7 think those were the items. We haven't really  
8 added to those. I think those are it.

9 Ron, is there anything else beyond  
10 that original list that we've had on the books  
11 for the last four or five months?

12 **MR. BUCHANAN:** No, I'll have to see how much  
13 the revised OTIB-58 covers, how many of those  
14 original five questions, and then we added two  
15 more, to see if the OTIB-58 and then if they  
16 do post that other data and their future, I  
17 think that probably covers most of them. I'll  
18 just have to see if there's any remaining  
19 after I review it.

20 **MR. GRIFFON:** Maybe the other thing I was  
21 going to ask is for the meeting on the 26<sup>th</sup> if  
22 SC&A can come prepared and in a position to  
23 also discuss if there are any remaining issues  
24 with SEC implications or if there's some  
25 outstanding issues, but they may not be SEC,

1           you know, they may be more of a, you know, we  
2           need, this may need fine tuning. We're not  
3           sure about this, but it shouldn't impact the  
4           SEC decision process. I mean, if you can  
5           maybe report out in that fashion if it's  
6           possible.

7           **MR. FITZGERALD:** We certainly will. I would  
8           say though once we have a chance to get into  
9           OTIB-58 certainly would want to discuss it  
10          with NIOSH and if there were some loose ends  
11          certainly see if we could take care of those  
12          in an intervening couple weeks. Because I  
13          think this is one where we're just simply  
14          missing information to complete the analysis.

15                 We don't have any clear issues, but we  
16                 can't, frankly, finish these conclusions with  
17                 these holes. So it would be very helpful just  
18                 to see if that new information satisfies that  
19                 need or not, and then we'll report on it on  
20                 the 26<sup>th</sup>. But if there's any questions or  
21                 issues, Brant, we'll certainly talk to the TBD  
22                 author and maybe even schedule a call if we  
23                 can somehow take care of this in the meantime.

24           **MR. GRIFFON:** Good, Joe, thanks. I think  
25           this goes for any of these items. If we need

1 a technical call in the next few weeks, let's,  
2 between you and Brant, Joe, you can --

3 **MR. FITZGERALD:** Yeah, I just think it's  
4 good exposure on this.

5 **MR. GRIFFON:** Yeah, we don't want to hold it  
6 up.

7 **MR. FITZGERALD:** This new revision gets us  
8 pretty close. I'd just as soon see if we can  
9 achieve closure.

10 **MR. GRIFFON:** That sounds good.

11 **MR. BUCHANAN:** We're talking January 26<sup>th</sup>?

12 **MR. GRIFFON:** Yeah, between now and the 26<sup>th</sup>  
13 we're hoping --

14 **MR. FITZGERALD:** Ron, this would be maybe,  
15 you know, once we have OTIB-58 the revision,  
16 going through, talking to Matt Smith, and then  
17 seeing where we stand maybe sometime next week  
18 and deciding at that point if we need to have  
19 a phone call or something.

20 **MR. BUCHANAN:** Okay.

21 **SUPER S**

22 **MR. GRIFFON:** All right, and I think the  
23 last item is the Super S question. Joe, this  
24 should be a brief update I imagine here.

25 **MR. FITZGERALD:** Yeah. Well, you know, this

1 is going back to June when Joyce -- and Joyce  
2 is on the phone -- briefed the Advisory Board  
3 and presented her analysis on OTIB-49 which  
4 was in draft. But certainly our conclusion  
5 was that it certainly was an acceptable way,  
6 the empirical approach, was an acceptable way  
7 and provided dose estimates that were claimant  
8 favorable.

9 So we, I guess the bottom line is that  
10 we were in agreement with the NIOSH approach,  
11 and we went further to actually validate the  
12 cases that were the basis for OTIB-49 which,  
13 again, we were concerned about looking at the  
14 derivation of the OTIB, and Joyce has spent  
15 some time doing that.

16 I think where we stand there, and I'll  
17 certainly defer to Joyce if she wants to add  
18 anything, is that we've completed some of that  
19 review and looked at some of the cases that  
20 were available to us. But the other cases  
21 that we would want to examine to see if in  
22 fact they were encompassed by the model were  
23 not claimant cases but ones that were from the  
24 DOE file. And we've been working with Sam  
25 Glover to obtain these remaining cases. And I

1 think that's the, that is certainly the key  
2 outstanding issue on the high fired review  
3 right now. It's just that aspect of it.

4 Joyce, do you want to add anything to  
5 that?

6 **DR. LIPSZTEIN:** Yes, the only other thing is  
7 that there is a lung correction factor that  
8 was applied to the data of all of the design  
9 cases, and NIOSH, we're waiting for NIOSH to  
10 send us what is the correction factor that is  
11 being applied to the design cases, the lung  
12 data.

13 Because there is all these differences  
14 between the numbers that were used in the  
15 design cases for lungs and the ones from HIS-  
16 20, and there was one claimant that was  
17 between the design cases. And so we looked at  
18 the data from this claimant, and it's the same  
19 factor that is applied so we are waiting for  
20 this factor.

21 And actually we think if this factor  
22 was applied to correct for the design cases,  
23 that the factor should be applied to all the  
24 claimants, to all the workers. And somewhat  
25 we have been seeing with the claimant cases

1                   they haven't been applied.

2                   **DR. ULSH:** I can give you an update on at  
3                   least one of those. The 25 case files that  
4                   you were working with Sam to get, we have  
5                   given those names to the folks at the DOE  
6                   Mountain View Center, and they are pulling the  
7                   files now. As soon as we get them we'll  
8                   forward them on to you.

9                   **MR. GRIFFON:** What do you think on a  
10                  timeline on that, Brant?

11                  **DR. ULSH:** Craig, can you perhaps check with  
12                  Scott and get a ETA on that?

13                  **MR. LITTLE:** Yes.

14                  **DR. ULSH:** As soon as I get an answer from  
15                  Scott I'll send it out.

16                  **MR. GRIFFON:** And as soon as you get them  
17                  you'll post them, right?

18                  **DR. ULSH:** Oh, absolutely.

19                                 The lung correction factor,  
20                                 unfortunately, Jim had to leave. He's kind of  
21                                 our lead on the OTIB-49, too.

22                                 Joyce, is that in the white paper or  
23                                 is that something separate that you're talking  
24                                 about?

25                                 **DR. LIPSZTEIN:** No, no, that was told by us

1 in a telephone call that there was a  
2 difference between the numbers that were used  
3 for lung in the design cases and the one from  
4 HIS-20 because there was a correction factor  
5 that was applied to the lung results in HIS-  
6 20.

7 **DR. ULSH:** I'll check into that, too. I'll  
8 run it by Jim and get back to you on that.

9 **MR. GRIFFON:** I remember that came up  
10 because of the discrepancy in the data versus  
11 the HIS-20, so that's kind of how we, how  
12 Joyce found that.

13 **DR. LIPSZTEIN:** And I checked that this  
14 correction factor would be the same one that  
15 OTIB on occupational internal dosimetry,  
16 Attachment B, talks about, but it's not the  
17 same.

18 **MR. GRIFFON:** All right, well, that's  
19 probably a question Jim can help us with. And  
20 again, you know, all these items, if we need  
21 some correspondence in the next two weeks to  
22 help expedite this stuff would be great.

23 Anything else on Super S, Joe? I  
24 think that's the main --

25 **MR. FITZGERALD:** No, that's pretty much it.

1           **MS. MUNN:** This is Wanda. Let me understand  
2 clearly on this the real, the only real  
3 outstanding issue is the lung correction  
4 factor, Super-S, or is that too simplistic?

5           **MR. GRIFFON:** Excuse me?

6           **MS. MUNN:** Is that too simplistic?

7           **MR. GRIFFON:** Well, it's the correction  
8 factor and the case data, the cases. This  
9 question has been hanging out for awhile was  
10 the question of whether the OTIB-49 actually  
11 was bounding of all those 25 cases from the  
12 fire.

13           **MS. MUNN:** Yes, but the cases and the lung  
14 correction factor?

15           **MR. GRIFFON:** Correct.

16           **MS. MUNN:** The two issues are the only  
17 remaining ones.

18           **MR. GRIFFON:** That's correct. That's the  
19 way I understand it, yeah.

20           **DR. ULSH:** I don't want to put words into  
21 anybody's mouth, but it seems to me though  
22 that these two issues, while it certainly is  
23 important to resolve them, I think it might be  
24 one of those tractable issues. I don't know.  
25 I'll give SC&A a chance to disagree with that,

1 but --

2 **MR. GRIFFON:** I think for me the more  
3 important one is the correction factor I  
4 suppose. However it was selected, I think  
5 it's something that can be modified, and it's  
6 not probably an SEC issue. But the cases, you  
7 know, this has been the one hanging out for  
8 awhile.

9 We just want to make sure that the  
10 selection of the cases was appropriate and  
11 bounding, and, you know, that's the reason for  
12 that. That might be the more important of the  
13 two. From a technical standpoint probably  
14 we'd still want to understand this correction  
15 factor. But from an SEC standpoint I think  
16 it's the question of OTIB-49 being bounding.

17 **MS. MUNN:** And from a complex-wide issue  
18 this really is crucial for us to get tied  
19 down.

20 **MR. GRIFFON:** Yeah, yeah.

21 **DR. ULSH:** All right, we'll check on the  
22 status of those case files, Mark, and let you  
23 know as soon as we have an answer.

24 **MR. GRIFFON:** Appreciate it.

25 **MR. GIBSON:** This is Mike. From a complex-

1 wide issue there may be some other issues  
2 regarding Super S rather than just the ones  
3 we're looking for in this case, I think.

4 **MS. MUNN:** Oh, there's no question about  
5 that, but this certainly is not going to be  
6 the only time we're going to look at it. If  
7 we don't have our approach and our full  
8 understanding, I doubt by the time we're  
9 finished with this, then we'll have to go  
10 through this again.

11 **MR. GRIFFON:** Right, it's certainly going to  
12 help us down the line.

13 I think that's the primary items. Joe  
14 or Brant, is that accurate? I mean the ones  
15 we've been discussing lately. I'll turn to  
16 the matrix in a second.

17 **DR. ULSH:** I don't have anything additional,  
18 Mark.

19 **MR. FITZGERALD:** Same here.

20 **MATRIX UPDATE**

21 **MR. GRIFFON:** The second big item I had on  
22 the agenda was the, Roman numeral number two,  
23 was the update of the matrix. And I just sent  
24 that out actually this morning very early so I  
25 don't know if everyone received it yet. But

1           it's the full matrix, and what I tried to do  
2           was put these items from the summary action  
3           item list into the matrix, and I should  
4           caution everyone that this is draft form. In  
5           putting these action items back into the  
6           original matrix, it was apparent to me that  
7           there was some overlap with action items so  
8           you'll see sometimes that I have action items  
9           referencing each other. And also, the last  
10          thing I would note is that the yellow  
11          sections, while at one point I was using them  
12          just for the new action, sometimes I left the  
13          yellow because I wasn't sure if items had been  
14          completely resolved. It doesn't necessarily  
15          mean they haven't been resolved. It's just  
16          that my notes weren't good, my memory wasn't  
17          good on that item so I left it in yellow. I'd  
18          ask that Brant and Joe and the work group,  
19          everyone, take a look at this and maybe if you  
20          see any errors, I'll make a final correction  
21          of this matrix for us to use in the face-to-  
22          face meeting.

23                **MS. MUNN:** Thank you for getting that out,  
24                Mark. I'll have to admit, although I haven't,  
25                trying to read through it I was confused as to

1                   whether or not, you're right. I don't know  
2                   how one can simplify this. It's an extremely,  
3                   we have so many issues here, extremely  
4                   cumbersome to deal with.

5                   **MR. GRIFFON:** Yeah, I think part of the  
6                   problem is in this case some of the issues  
7                   came sort of from two sources, you know?

8                   **MS. MUNN:** Yeah.

9                   **MR. GRIFFON:** We have the petitioners' items  
10                  that we added onto the matrix so we already  
11                  had a general item which sort of covered the  
12                  same topic. And so then action items got kind  
13                  of, you know, had two bases to be contained  
14                  within, so I think we've been working from the  
15                  summary the last couple meetings.

16                  But I think we need to reflect back to  
17                  that original and make sure that we didn't  
18                  overlook anything important coming down to, I  
19                  hope, our final work group meeting on the 26<sup>th</sup>.  
20                  I'd like to make sure, just go back after one  
21                  more time and make sure we have had answers,  
22                  adequate answers, responses, whatever, for all  
23                  the items.

24                  **MR. FITZGERALD:** Yeah, I guess one item  
25                  that's sort of invoked by your matrix item 26,

1 Mark, I think in terms of OTIB-38 we had a  
2 very productive, issue-specific phone call  
3 with Brant, Jim and I think Dave Allen  
4 regarding that. And I think we've reached  
5 closure on OTIB-38 from a conceptual  
6 standpoint.

7 **MS. MUNN:** You said that was item 28?

8 **MR. FITZGERALD:** I think 26 actually. You  
9 know, there's been questions raised regarding  
10 OTIB-38, its derivation, and its application.  
11 And we had some questions on MDA values, and I  
12 think we had a pretty good, issue-specific  
13 phone call walking through that very  
14 carefully. And we issued some minutes which  
15 were circulated around.

16 I think we were able to reach closure  
17 on that. And we do have certainly the  
18 consideration that was offered that the 95<sup>th</sup>  
19 percentile distribution was certainly  
20 (unintelligible) we agree and that be applied,  
21 but that's not an SEC issue per se. And we  
22 just, I think, will leave it at that.

23 **MS. MUNN:** Well, we're essentially at the  
24 point where we can say this one is okay.

25 **MR. FITZGERALD:** Yeah, we're going to cover

1 that in our overall review report, but we did  
2 come out that way.

3 **MR. GRIFFON:** I think, I don't want to,  
4 there's a couple coworker models, and I held  
5 off on the questions on the coworker models  
6 because we all remember the history of this,  
7 but --

8 **MR. FITZGERALD:** There's multiple issues on  
9 the coworker model, and --

10 **MR. GRIFFON:** I mean, I should say you've  
11 closed on the conceptual part of this --

12 **MR. FITZGERALD:** Yeah, that's the  
13 clarification. It's just for clarity's sake  
14 on the completeness issue, completeness-slash-  
15 data integrity. There's various facets to  
16 that issue as there are various facets to the  
17 coworker model issue. And in the course of  
18 the review, we come at it from several  
19 directions. And I think you've gotten the  
20 picture on the completeness for coworker.

21 This is looking at it conceptually  
22 without getting into some of the issues of the  
23 data itself or how the data's applied, just  
24 looking at it conceptually, its derivation,  
25 and I think we were able to get a certain

1                   comfort level with the derivation that we  
2                   didn't have initially.

3                   So that's the aspect of this that's  
4                   covered in item 26. It is a little confusing  
5                   because we do treat different aspects of the  
6                   coworker model at various places.

7                   **MR. GRIFFON:** I just wanted to make that  
8                   clarification. Thank you, Joe.

9                   Anything, I don't expect responses now  
10                  on the items, but Brant, I'm almost sure  
11                  there's some that are in yellow that should no  
12                  longer be in yellow so don't be surprised to  
13                  see that.

14                 **MS. MUNN:** I'm so glad to hear you say that.

15                 **MR. GRIFFON:** There's highlighting, you  
16                 know, where I know we have moved passed that,  
17                 but so I would appreciate comments on that,  
18                 what was closed out and, you know, that would  
19                 be helpful.

20                 Anything else on the matrix? I will  
21                 certainly also make, if I could ask for any  
22                 comments on the matrix maybe by the end of  
23                 this week, then I will try to pull in all the  
24                 comments and get a final edit of the matrix  
25                 middle of next week. And then we'll have it

1 ready for the meeting on the 26<sup>th</sup>, and I'll get  
2 it out to all interested parties as well  
3 through NIOSH. We'll make that available. I  
4 apologize to anyone on the phone that got this  
5 very early this morning. I'm assuming that  
6 you did receive it, but I will try to get it  
7 to you a little earlier so you have a chance  
8 to review it as well.

9 **MS. MUNN:** It's a hard thing to deal with.

10 **MR. GRIFFON:** It's a beast at this point.

11 **MR. GIBSON:** Appreciate you staying up until  
12 one o'clock in the morning to do it, too.

13 **MR. GRIFFON:** The hard part was getting back  
14 up.

15 **SC&A FINAL REPORT**

16 The SC&A final report, next item. I  
17 just put that on there because I was trying to  
18 think of our timeline toward the next, to the  
19 work group meeting and the meeting in  
20 February.

21 And Joe, my sense is that at least  
22 you're going to have work products or pieces  
23 that are delivered to NIOSH at this point for  
24 all these items we've discussed or many of  
25 these items. At some point you're going to

1 assemble your full report on the review of the  
2 evaluation report and provide those. Do you  
3 have any sense, I know that it somewhat  
4 depends on this iterative process, but what  
5 are your thoughts on the timeline on that?

6 **MR. FITZGERALD:** We have drafted pretty much  
7 all of the analyses and conclusions on the  
8 data that we have available to date, meaning  
9 that we effectively have the material in hand.  
10 What we will do is provide those pieces as  
11 we've discussed to drive these issues forward  
12 and revise those pieces as we go along in real  
13 time over the next week or two.

14 But in doing this in real time if we  
15 can reach closure on issues and reflect that  
16 in the pieces that we're actually working off  
17 of, we should be able to have this revised  
18 report available to the work group certainly  
19 in advance of the Board meeting and certainly  
20 toward the end of this month in and around the  
21 26<sup>th</sup>. So it's really more of a question of how  
22 the iterative discussions go on these several  
23 key SEC issues that determines when the report  
24 would be generated.

25 The material itself has been prepared.

1 We are sending all the attachments to, through  
2 Dave Staudt and also certain ones to Emily for  
3 Privacy Act screening this week, in fact,  
4 starting today. So we're positioning to have  
5 this report ready certainly in advance of the  
6 work group.

7 One consideration is clearly this is a  
8 big report and there's a lot of material. So  
9 we've been trying to circulate pieces of this  
10 in advance so it will be fairly complex, and  
11 once we report -- the attachments themselves  
12 are probably a few hundred pages and the main  
13 body is certainly almost two hundred. So we  
14 certainly want to get those to the extent we  
15 can to the work group and to the Board soon  
16 enough so there's a chance to digest it. And  
17 we've already started digesting pieces of it,  
18 and you'll see other pieces as we go.

19 **MR. GRIFFON:** Yeah, I think I had asked, I  
20 had talked with Joe about this a little bit,  
21 and I had sort of asked for, you know, at this  
22 point I thought it's better to distribute  
23 pieces in advance and get full discussion on  
24 those. I was a little nervous about having  
25 several iterations of a draft SC&A final

1 report going out until we come to better  
2 closure on these key items. And then I think  
3 you can roll your pieces back into your full  
4 report. I guess the intent though would  
5 certainly be, and I don't think there is going  
6 to be any surprise in the data. We're seeing  
7 all the pieces so when it gets pulled into the  
8 full report there shouldn't be any things we  
9 haven't discussed in full.

10 **MR. FITZGERALD:** Or have seen in full.

11 **MR. GRIFFON:** Right.

12 **DR. ULSH:** May I ask a question? We've seen  
13 the pieces that deal with safety concerns, the  
14 piece that deals with the data integrity  
15 examples. The log book piece is coming. I  
16 assume there's going to be a piece on the  
17 other radionuclides including thorium and  
18 others?

19 **MR. FITZGERALD:** Right.

20 **DR. ULSH:** Are there other major pieces,  
21 Joe?

22 **MR. FITZGERALD:** Certainly one on  
23 completeness --

24 **MR. GRIFFON:** And the '69 issue.

25 **MR. FITZGERALD:** -- the '69 issue. Those

1 three certainly have SEC implications so  
2 you'll see those this week.

3 **MR. GRIFFON:** I think those are the main  
4 ones, right?

5 **MR. FITZGERALD:** Those are the main ones,  
6 right. We will be reviewing OTIB-58, but  
7 really the ones that strike us as SEC issues,  
8 you'll have our written analysis this week.

9 **DR. ULSH:** Okay, that's great. Thanks.

10 **MR. GRIFFON:** All right, and the last -- I'm  
11 sorry, Wanda.

12 **MS. MUNN:** Well, I was just going to say on  
13 the Super S, who has the action now?

14 **MR. GRIFFON:** Well, we're waiting on these  
15 cases, I guess, and Jim Neton's or NIOSH's  
16 response on that conversion factor. So I  
17 think NIOSH has the action right now.

18 **MR. FITZGERALD:** Joyce has evaluated the  
19 cases that were available to her already,  
20 model cases, and just needs to obtain those  
21 additional ones to finish.

22 **MS. MUNN:** Okay, just wanted to make sure I  
23 knew where the action was.

24 **MR. GRIFFON:** So I think we're ready to  
25 close. The last item I had was the work group

1 meeting. I think I get from informal surveys  
2 was the 26<sup>th</sup> was going to be the best date we  
3 could do. I mean, Lew is not available, but  
4 key staff personnel for NIOSH and ORAU would  
5 be available on that day and only that day, so  
6 I think we probably need to stick with the  
7 26<sup>th</sup>. Do people agree with that?

8 **DR. WADE:** Yeah, that's fine with me. I can  
9 have someone cover for me. Do you have a  
10 sense of time, time of day?

11 **MR. GRIFFON:** I'd like to start that at 9:30  
12 if we could.

13 **MS. MUNN:** Since I'm going to be in  
14 Cincinnati, that's not a problem.

15 **MR. PRESLEY:** Yeah, are we going to be out  
16 at the airport?

17 **MR. GRIFFON:** Yes, I think we'll do the same  
18 --

19 **MR. PRESLEY:** That will be good.

20 **MR. GRIFFON:** So 9:30 a.m. on the 26<sup>th</sup>.

21 **DR. WADE:** Nine-thirty to five just be --

22 **MR. GRIFFON:** Yeah, better leave it till  
23 five.

24 **DR. WADE:** Okay, we'll get it set up.

25 **MR. GRIFFON:** And any final remarks? Any

1                   comments from others on the line representing  
2                   the petitioner or the, I think there's some  
3                   Congressional staff.

4                   **MS. BARRIE:** Mark, this is Terry Barrie, and  
5                   I was wondering if you could forward me the,  
6                   if it's possible, forward me the report from  
7                   SC&A when it's released?

8                   **MR. GRIFFON:** Yeah, Lew, once we're in a  
9                   position where they're releasable to the  
10                  public, we can do that, correct?

11                  **DR. WADE:** Correct.

12                  **MR. GRIFFON:** So I'll coordinate that  
13                  through NIOSH through Lew Wade, and, Lew, if  
14                  you could make sure that they get out, too.

15                  **DR. WADE:** We'll do it.

16                  **MR. GRIFFON:** I think there's a lot on the  
17                  line here.

18                  **MS. ALBERG:** And that was my request as  
19                  well. This is Jeanette with Senator Allard's  
20                  office. I was just going to see if that  
21                  report was shareable, so thank you.

22                  **MR. GRIFFON:** Anything else?

23                  **DR. WADE:** Just again, this is Lew. Thank  
24                  you again for your leadership and for the work  
25                  group and all those involved. It's been a

1 long process, but it's a process that's being  
2 undertaken appropriately in my opinion with  
3 the correct attention to detail, and we  
4 appreciate everyone's hard work.

5 **MR. GRIFFON:** And we're getting there I  
6 think. We're making good headway.

7 **DR. WADE:** Thank you.

8 **MR. GRIFFON:** And thank everyone on the  
9 line. We'll be in touch soon and look for  
10 some e-mail notices on the technical phone  
11 calls. But they are not work group calls so I  
12 just want to keep the ball moving so that we  
13 can be really close to closure on the 26<sup>th</sup>.

14 **MS. MUNN:** And I guess I have to make one  
15 comment with respect to the issue of whether  
16 to see this piecemeal or all in one lump. And  
17 even though we've seen most of it before, my  
18 personal thanks goes to all who can provide me  
19 this 12-course dinner in small bites. It's  
20 very helpful for me to deal with that.

21 **MR. GRIFFON:** I think it's better as it  
22 comes out, too, instead of waiting until the  
23 big report at the end.

24 **MS. MUNN:** Yeah, trying to handle a full  
25 meal deal is just almost more than anyone has

1 breath to do.

2 **MR. PRESLEY:** And Mark, this is Bob Presley.  
3 I think we probably ought to ask one request  
4 that as we do get this piecemeal, and I think  
5 that's great, that there be some type of a  
6 caveat put on it that this is a draft or not a  
7 complete report so that if this does get out,  
8 it does have something on it.

9 **MR. GRIFFON:** Right, I think, how are these,  
10 I mean, we've shared a lot of these materials  
11 in the past already, and it's not SC&A's final  
12 report. And none of this, and we've had these  
13 comments going back and forth, so I don't know  
14 what our protocol is on that.

15 Joe, you haven't necessarily --

16 **MR. FITZGERALD:** The material, we can  
17 certainly make sure that it does say draft.  
18 We'll put working draft or draft for work  
19 group discussion. That's the way we have it  
20 on the matrix.

21 **MR. PRESLEY:** Yeah, something like that that  
22 distinguishes it from the final.

23 **MR. GRIFFON:** Good point, good point.

24 **DR. MAKHIJANI:** Joe, we can also call them  
25 issue memoranda working draft, to distinguish

1 from draft of a report.

2 **MR. FITZGERALD:** Yeah, we'll make sure it's  
3 clear that these are working drafts for  
4 discussion in the working group. Now once  
5 they get reviewed for Privacy Act  
6 considerations by NIOSH, and we get these  
7 things back then we would forward them to  
8 certainly the, to Terry and Senator Salazar's  
9 staff. Basically -- or NIOSH would do that --  
10 and it would still have that proviso, but it  
11 would then be certainly out there, but it will  
12 be stamped draft.

13 **MR. PRESLEY:** Appreciate that.

14 **MR. GRIFFON:** All right, I think we're ready  
15 to close unless there's any remaining items.

16 **DR. WADE:** Thank you all again.

17 (Whereupon, the working group meeting  
18 concluded at 1:30 p.m.)

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**CERTIFICATE OF COURT REPORTER****STATE OF GEORGIA****COUNTY OF FULTON**

I, Steven Ray Green, Certified Merit Court Reporter, do hereby certify that I reported the above and foregoing on the day of January 9, 2007; and it is a true and accurate transcript of the testimony captioned herein.

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

WITNESS my hand and official seal this the 22nd day of February, 2007.

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