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.
<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>WELCOME AND OPENING COMMENTS</td>
<td>6</td>
</tr>
<tr>
<td>DR. LEWIS WADE, DFO</td>
<td></td>
</tr>
<tr>
<td>OTHER RADIONUCLIDES</td>
<td>16</td>
</tr>
<tr>
<td>COMPLETENESS OF DATA</td>
<td>45</td>
</tr>
<tr>
<td>D AND D PERIOD</td>
<td>57</td>
</tr>
<tr>
<td>LOGBOOK ANALYSIS</td>
<td>62</td>
</tr>
<tr>
<td>DATA INTEGRITY AND SAFETY CONCERNS</td>
<td>70</td>
</tr>
<tr>
<td>1969 DATA GAP</td>
<td>81</td>
</tr>
<tr>
<td>NEUTRON ITEMS</td>
<td>96</td>
</tr>
<tr>
<td>SUPER S</td>
<td>102</td>
</tr>
<tr>
<td>MATRIX UPDATE</td>
<td>109</td>
</tr>
<tr>
<td>SC&amp;A FINAL REPORT</td>
<td>115</td>
</tr>
<tr>
<td>COURT REPORTER’S CERTIFICATE</td>
<td>125</td>
</tr>
</tbody>
</table>
TRANSCRIPT LEGEND

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-- (sic) denotes an incorrect usage or pronunciation of a word which is transcribed in its original form as reported.

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-- "uh-huh" represents an affirmative response, and "uh-uh" represents a negative response.

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

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

(By Group, in Alphabetical Order)

BOARD MEMBERS

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

MEMBERSHIP

GIBSON, Michael H.
President
Paper, Allied-Industrial, Chemical, and Energy Union
Local 5-4200
Miamisburg, Ohio

GRIFFON, Mark A.
President
Creative Pollution Solutions, Inc.
Salem, New Hampshire

MUNN, Wanda I.
Senior Nuclear Engineer (Retired)
Richland, Washington

PRESLEY, Robert W.
Special Projects Engineer
BWXT Y12 National Security Complex
Clinton, Tennessee
IDENTIFIED PARTICIPANTS

ALBERG, JEANETTE, SEN. ALLARD
BAKER, STEVE, ORAU
BARKER, KAY, ANWAG
BARRIE, TERRIE, ANWAG
BEHLING, HANS, SC&A
BRACKETT, LIZ, ORAU
BROEHM, JASON, CDC WASHINGTON
BUCHANAN, RON, SC&A
CHEW, MEL, ORAU
ELLIOTT, LARRY, NIOSH
FALK, ROGER, ORAU
FITZGERALD, JOE, SC&A
FIX, JACK, ORAU
HOFF, JENNIFER, ORAU
HOMOKI-TITUS, LIZ, HHS
HOWELL, EMILY, HHS
JESSEN, KARIN, ORAUT
LIPSZTEIN, JOYCE, SC&A
LITTLE, CRAIG, ORAU
LOPEZ, THERESA, ORAU
MAHIJANI, ARJUN, SC&A
MAURO, JOHN, SC&A
MCFEE, MATT, ORAU
NETON, JIM, NIOSH
POTTER, GENE, ORAU
RICH, BRYCE, ORAU
ROBERTSON-DEMERS, KATHY, SC&A
SCHOFIELD, PHILLIP, FUTURE ABRWH MEMBER
SHARFI, MUTTY, ORAU
SHIELDS, LASHAWN, NIOSH
SMITH, MATTHEW, ORAU
STAUDT, DAVID, CDC
ULSH, BRANT, NIOSH
PROCEDINGS

(10:30 a.m.)

WELCOME AND OPENING COMMENTS

DR. 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
know you’ll enjoy the task and the people that you undertake the task with.

MR. SCHOFIELD: That’s good. Glad to hear that.

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

MR. SCHOFIELD: I’m no longer with the lab. I’m actually on disability. I was with NMT Division out of 55.

MR. PRESLEY: Okay, that TA-55?

MR. SCHOFIELD: Right.

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

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

I guess I would ask that we go through our normal sort of introduction which would be
members of the NIOSH or ORAU team to identify themselves, and when they do to identify any conflicts that they have relative to Rocky Flats. And then SC&A team, then I would ask other federal employees who are on the call by virtue of their federal employment to identify themselves. I’d ask for workers, worker reps, members of Congress or their representatives to identify themselves, and anyone else who would like to identify themselves.

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

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

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

**MR. LITTLE:** Craig Little with the ORAU team, no conflicts.
MR. SHARFI: Mutty Sharfi, the ORAU team, no conflicts.

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

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

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

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

MR. CHEW: Mel Chew, ORAU team, no conflicts.

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

MR. POTTER: Gene Potter, ORAU team, conflicted.

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

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

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

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

DR. WADE: Anyone else from the NIOSH/ORA U team?
MS. LOPEZ: Theresa Lopez, ORAU team, no conflicts.

DR. WADE: Anyone else?
(no response)

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

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

DR. WADE: Welcome, John.

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

DR. WADE: Welcome, Joe.


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

MS. ROBERTSON–DeMERS: Kathy Robertson–DeMers, no conflicts.

DR. WADE: Someone just turned on a piece of machinery. There’s a printer in the background somewhere. Someone has a printer on, needs to mute their phone.

MS. MUNN: I’m amazed you can identify that
as a printer.

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

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

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

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

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

**MS. HOWELL:** This is Emily Howell with HHS.
DR. WADE: Welcome, Emily.

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

DR. WADE: Hi, Liz.

MR. KOTSCH: Jeff Kotsch, Department of Labor.

MR. BROEHM: Jason Broehm, CDC, Washington office.

DR. WADE: Welcome.

MS. SHIELDS: LaShawn Shields, NIOSH.

DR. WADE: Hello, LaShawn.

MR. STAUDT: David Staudt with CDC.

DR. WADE: Any other federal employees who are on the call by virtue of their employment? (no response)

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

MS. ALBERG: I’m Jeanette Alberg with Senator Wayne Allard’s office.

DR. WADE: Welcome. Thank you for joining us.

MS. BARRIE: Terry Barrie with ANWAG.

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

MS. BARRIE: Fine, thanks.

MS. BARKER: Kay Barker with ANWAG.
DR. WADE: Any others who wish to be identified as being on the call, for the record?
(no response)

DR. WADE: And Ray, you’re with us and up and ready to go I assume?

THE COURT REPORTER: Yes, sir, I’m here. I’m in my home office on my phone with a yelping Chihuahua, so I’m on mute.

DR. WADE: Well, thank you.

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

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

DR. WADE: Surely.

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

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

You know, not to get into all the
legalese of it, but I think we appreciate the fact that people with knowledge need to be heard. And if people have experience they share, we would like to hear that. But we’d like everyone to be able to identify that the people might be speaking with knowledge who might also bring bias to the table. And therefore, we’d like everyone to identify whether or not they have a personal conflict.

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

Relative to organizational conflicts, there again there are issues where there are conflicts and there needs to be organizational remedies put in place. I don’t think that is as affecting of these discussions as are the
personal conflicts. So again, we want everyone to identify whether or not they’re conflicted. We’ll not silence their voice, but their voice needs to be heard with that in mind.

MR. GIBSON: Okay, thank you.

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

The November 6th meeting I sent out a summary of these action items just so that we didn’t have to deal with the entire matrix again. And then we did an update in Chicago on this.

MS. MUNN: I’m assuming it’s your intention to go through that in the same general order that --

MR. GRIFFON: Yes, yeah, with one exception. NIOSH has requested that we actually start off with the other radionuclides because of some of their, I think they’ve got some people that
have to leave the call a little early. So if that’s agreeable with everybody, I think we just move, start with 1-B and then go back in order on these items.

**OTHER RADIONUCLIDES**

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

**MS. MUNN:** Yeah.

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

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

And for Rocky Flats in the site
profile we did certainly look at some of these secondary nuclides like curium and thorium and sort of question the conclusions that were in the site profile that carry forward to the SEC evaluation where they were seen as not significant to internal dose potential. And we, frankly, just wanted to see more substantiation on that conclusion. And that’s been the process that we’ve been going through is trying to, with NIOSH, validate that, even though these are secondary elements, and we agree that they certainly were going to rise to the significance of plutonium and uranium at the site, to more or less confirm the quantity and the level of handling at the site. And where this back and forth was left last was NIOSH did provide, toward the end of December, I think it was December 27th, a fairly comprehensive compendium of their research on the one remaining issue which is thorium at the site. And we have certainly over the last couple of weeks taken a good look at that and looked at other sources. And before I turn it over to Arjun let me clarify though that as Mark indicated, we have closed
out any SEC issues related to americium and other nuclides. Thorium is the remaining question. So Arjun, do you want to, frankly, bring us up to date on that?

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

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

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

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

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

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

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

**DR. MAKHIJANI:** Thank you, Brant.
Basically, our review of what you sent on December 27th falls into three categories. And to give you the bottom line, the first category’s the source term. We noted that in your most recent review you have two new source term. One is the 1960 processing of three 80 kilogram ingots which are in total being 240 kilograms. It’s the largest single annual source term identified today. And we were somewhat surprised that there was a new source term at this stage.

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

So there were no quantitative details on what was done with that. Now three percent thorium, having higher dose conversion factors, of course, could have, if the quantities and depending on the quantities and
processing, could have implications for dose and may not have implications for dose. But there were no details provided as to the amounts and what was done with this magnesium alloyed with thorium.

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

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

A need arose after discovering a new
source term at this stage after, more than a year after we raised it in the TBD review, and while we don’t, we’re not aware of any other source terms, we’re just not comfortable that everything’s been identified so far. And to reiterate, we’re not aware that there is anything out there, but we’re made uncomfortable by the fact that there were two new source terms at this stage.

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

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

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

What is new is the level of detail that we’ve provided because of the continuing questions that have arisen in the working group meetings. So we’ve gone back and obtained that report by Calabra that as you
mentioned gives a very detailed account of that. So that’s not new.

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

We have very good confidence that any shipments of pure thorium, certainly that’s a radioactive material and that would have been tracked in the MBA ledgers. But the radioactivity of a magnesium alloy that contains a small quantity of thorium as an alloying agent would be, I would say, not even distinguishable from background. But I’ll let Bryce perhaps chime in on that.
MR. RICH: Well, I agree, Brant.

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

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

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

DR. MAKHJANI: But in regard to the processing and the operations as a concern, the doses, we don’t have any new information
on maximum stocks held by Rocky Flats. I agree with that. Just so we get past the semantic issues. And at this stage we don’t have a problem with your ability to calculate doses from ingot rolling because it appears to have been well documented. So we’re not raising an issue about that.

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

But if it was processed in a way that became airborne with three percent thorium and
97 percent magnesium, its dosimetric implications for bone dose would be like having a hundred percent uranium. So I cannot agree that until we know what was done with it that it’s dosimetrically insignificant even though I would agree that it’s very low specific activity.

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

Bryce, do you have any thoughts on that?

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

MR. CHEW: This is Mel. I’d just like to make a comment that normal welding rods contain about two percent thorium as a comparison for perspective here, and we certainly don’t document welding rods as they
come in. A lot of welding was done anywhere all over the entire industry here.

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

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

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

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

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

**DR. ULSH:** I have no information from the
Rocky side. That’s correct, Mark.

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

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

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

**MR. GIBSON:** This is Mike. Can I ask a
question? If the folks that have previously
(unintelligible) at Rocky that are on the line
don’t have any data about the amount of this
material that was delivered or processed, are
we discounting what the workers said or are we
taking that into account? My --

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

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

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

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

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

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

Now magnesium alloy would have been considered a non-radioactive material, and so it would not have received the same degree of scrutiny as pure thorium coming in. So I don’t, there’s nothing that the workers have said that I’m saying is definitely not true
regarding this issue. It sounds plausible to me.

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

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

MS. MUNN: The interviews with the folks in Rocky Flats were pretty clear about the limited nature of the work that was done with
that material, were they not? My reading of that was that they were universal in their agreement that the amount of activity that would involve those materials was really very small.

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

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

**DR. MAKHIJANI:** Ms. Munn, on the point that thorium was a new radionuclide in terms of quantities and processing, I don’t, SC&A and NIOSH are in agreement in that the maximum amount that was stored at any one time was about 250 kilograms. We’re also in agreement with that.
MS. MUNN: Yes, I think the record was fairly clear on that.

DR. MAHKIJANI: That’s very well documented so there’s no difference of opinion or argument about that.

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

MR. GRIFFON: It’s just a different material, mixed alloy.

MS. MUNN: Yeah, I understand that.

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

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

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

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

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

**DR. MAHKIJANI:** We could get some magnitude on it.

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

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

**MR. PRESLEY:** This is Bob Presley. Do we have any idea of the amount other than just
somebody saying that it was truckloads?

MR. GRIFFON: No, we don’t.

MR. RICH: There are no, we haven’t been
able to find any inventory or shipping records
to --

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

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

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

MR. GRIFFON: I agree. This has to be,
that’s what I was saying, some follow up.
Yeah, that’d be great.

MR. CHEW: Do you agree with him because you
need to tell me to do that here.
DR. ULSH: Mel, do it.

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

MR. GRIFFON: That’s true.

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

MS. MUNN: Yeah, right.

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

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

MR. GRIFFON: And it’s noted here that usually, I believe these were the quantities that fell under the mass balance sort of inventory.

DR. ULSH: Yes, that’s true, Mark.

MR. GRIFFON: Is that true?
DR. ULSH: Yeah.

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

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

MR. GRIFFON: Okay, so you’re fairly confident that it would have been in the inventories.

MR. RICH: That’s right.

MR. GRIFFON: Because it says each
individual use is too small for record keeping but it would have been aggregated in the inventory you’re saying.

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

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

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

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

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

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

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

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

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

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

**MR. RICH:** If it was 400 grams, it would not show up in the inventory, but cumulatively
they would account all of those units to go, as Arjun’s indicated, that there are 15 400 grams quantity so it would show up on the inventory.

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

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

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

**DR. MAHKIJANI:** Okay, yeah.

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

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

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

There’s a remaining question about the magnesium alloys and Mel is going to, Mel and Bryce Rich, are going to do some phone calls to try to find out some information about that. Other than that I think I heard Arjun say that you’re comfortable with what we could calculate dose from the ingot operation in
1960 I think it was.

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

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

So as regards the dose side of things other than the ingots, we looked at the December 27th report and the comparison with the machining and grinding and the fact that the machining and grinding for bone surface actually showed up at several hundred times the previously calculated dose.

I did understand that the machining and grinding would be regarded as much greater overestimates as you presented, but it did not demonstrate that the (unintelligible) 1400 was a bounding dose. On the contrary, it demonstrated to the contrary. NIOSH stated that the amount of time for the light machining work with six kilogram pieces was
very short, and so the machining phase should
be regarded as overestimate for some of that.

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

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

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

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

MR. GRIFFON: Yeah, I was going to -- can I interject for one second, Brant, I’m sorry. Just a process notion here because I really want to try to be done by 2:00, and I’m thinking that this issue in particular and maybe follow up on the thorium source term as well or magnesium-thorium alloy source term, it might be useful to have a technical call like next week or something where we can have a more in-depth discussion on this particular
issue and the model, the new reg 1400 approach
to flesh this one out. Is that something, I
mean, I don’t want to cut it off completely,
but maybe we can save the technical details
for a phone call next week and not a work
group call, but just NIOSH/SC&A call to sort
of hash this one out a little further.

DR. ULSH: That’s fine from our end, Mark.

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

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

MR. GRIFFON: I should have said this up
front, but mainly I want today to be kind of
an update. Where are we at with different
actions? Whose court is the ball in now? And
what’s the next step forward? But I think now
we have a, for thorium, you know, we have the
one follow up that Mel offered on the thorium-
magnesium source term. I think we need to
maybe talk about, we can e-mail and get a
technical call sometime next week maybe to do
a follow up on the TR method using new reg
1400 if that’s agreeable.
DR. ULSH: That’s agreeable here, Mark. Do you want me to take the, I’ll take the lead and propose the time or whatever and call everyone.

DR. MAKHJANI: Sorry, Mark, my understanding of my charter from Joe was to provide the bottom line of where we are --

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

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

So you’ll hear from me. I’ll propose times or whatever and call everybody.

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

DR. ULSH: Joe mentioned, and I was going to get to this, too, Mark. In your summary of action items, the one that goes into a little bit more detail than the agenda, action item,
okay, number two is other radionuclides and under that point four what it currently says here, Mark, is that SC&A will further review information provided by NIOSH regarding neptunium and curium.

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

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

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

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

**DR. MAKHIJANI:** No.

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

**COMPLETENESS OF DATA**

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

**MR. FITZGERALD:** Yes, and in terms of background basically it became more apparent
that NIOSH was relying on the claimant file, the DOE original data, as compared with HIS-20 because of some -- HIS-20’s an electronic database -- I mean it’s in that database. We initiated sampling of that claimant file just to assure ourselves of the completeness of that file, given the fact that that would, in fact, be the basis for dose estimation.

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

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

**DR. MAKHIJANI:** We have, I can’t remember whether we transmitted any documents to NIOSH other than the claimant numbers in the (unintelligible) plant, but Ron did do a
check. We had two sets of completeness checks. One was on a set of 32 randomly selected files put together (unintelligible) we had selected them. And that is complete. The investigation analysis is complete. This morning I did send the four spreadsheets to Joe for forwarding to Emily as it says in action item number two, for Privacy Act review.

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

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

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

**DR. MAKHIJANI:** Yeah, and I guess you’ll be
sending them to Brant also, right?

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

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

**MR. FITZGERALD:** We’ll send it to all three of you.

**DR. MAHKIJANI:** So you’ll have all four spreadsheets today, and then you will see the write-up very shortly. It does not contain any Privacy Act material. It only has cumulative so many missing years, so many percent and so on. It has no individual information.

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

**DR. MAHKIJANI:** Yes, I mean, as with
permission, Mark, I can tell you where we are.

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

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

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

**MS. MUNN:** I understand.

**DR. MAHJIANJI:** We did find that in the 1950s in the random sample, about a third of the workers have at least one year of missing data and the cumulative missing years were 21 percent. For the ’64 to ’92 period -- and
remember we divided this into two periods according to the universal badging, pre-universal badging and post-universal badging, there were about a third of the workers had a missing, at least one year with missing data.

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

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

Then the highly exposed workers were examined for the coworker model question, and in the highly exposed workers we found
essentially no gaps in the internal data, and that is every worker practically had full -- I would change to that. Every worker had at least one internal dose measurement from the beginning to the end of employment.

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

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

We investigated in a very preliminary way the job cards of these workers and found that as one might have expected that there is an explanation for this, that the uranium workers in the non-plutonium areas tend to
essentially explain the gap. The gaps were not in the plutonium areas.

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

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

MS. MUNN: That’s good information, Arjun, thank you.
DR. ULSH: I have to chime in here, and I’m in a very great disadvantage because I’m trying to comment on a report that I haven’t seen yet. But I feel compelled to because now the conclusions or at least the tentative conclusions are out there on the record.

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

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

DR. MAKHIJANI: May I just correct myself.
I’m quite sorry. You brought this up last time, and I used the word missing data inappropriately. I should have said gaps in the data. And when you see the write-up, actually it will reflect it that way. It does mean that the workers, so far as we’ve been able to discover, that the workers were not monitored at that time, that it isn’t that the workers were monitored and some other data are missing.

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

**DR. MAHKIJANI:** The write-up will reflect that these are data gaps. They’re basically blanks in the data record.

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

**MS. MUNN:** Absolutely.
MR. GRIFFON: Yeah, what they were doing.

MS. MUNN: Thank you for the update. That’s great.

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

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

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

MR. GRIFFON: Yes, they said tentative. At least we can discuss that at the end, but I think the 26th was going to work for most people.

MR. FITZGERALD: But I certainly will forward these spreadsheets today after the call.

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

DR. MAKHIJANI: Yes, it’s essentially
complete, and so that’s why I was able, and
I’m very sorry that you don’t have it right
now, but it’s undergoing internal checks to
make sure that it’s all all right.

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

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

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

DR. ULSH: No, I understand. I just want to
make sure that no one’s experiencing any
issues.

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

DR. MAKHIJANI: Oh, yes, we’ve had complete
access.

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

MR. GRIFFON: Yes.

MS. MUNN: Three is done.

MR. FITZGERALD: I guess, Mark, before we
leave this issue, consistent with what you’ve indicated before, I mean, based on NIOSH’s review starting this week, if there’s any need, obviously, to schedule a call to clarify within the report or to ask questions, certainly we can do that in real time, not have to wait, I guess, until the 26th. I mean, we have a couple weeks we can use.

MR. GRIFFON: Is that agreeable, Brant?

DR. ULSH: Yes.

MR. GRIFFON: Call as necessary. We can get a technical call, yeah, that’d be great.

**D AND D PERIOD**

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

MR. FITZGERALD: Yeah, let me. I’ll take that up.

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

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

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

The last iteration was, and this was presented to us some weeks ago, was a comparison of what was called top-tier contractors in terms of their dose distribution with all subcontractors. I think that was like 206 subcontractors, and a subset which were identified as likely D&D subcontractors. It was a smaller group. I don’t remember the number of those, was it nine, something like that.
But in any case, the analysis showed very similar dose distributions in terms of those groups. Frankly, we thought that was persuasive, sufficiently persuasive that one could envelope these various groups, particularly the D&D subcontractors within a coworker model for a larger RFP worker population.

That was the question that we had, whether or not you needed a separate coworker model for D&D workers. We felt that was fairly persuasive, and NIOSH has developed an OTIB, OTIB-14, which extends the internal coworker model through, I believe, it’s 2005, which would encompass the D&D era. That was issued on December 7th.

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

But that involves the period of time when fecal sampling was used for a number of these termination bioassays versus lung counting, versus urinalysis, and just trying
to reconcile whether any bias may be introduced by the actual form of bioassay that was done for these termination bioassays. And we don’t have any real answer at this point.

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

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

And this work was turned over to the subcontractor teams later on; and therefore, actually there wasn’t a lot of the,
necessarily a lot of the dirty work
concentrated in any particular subcontractor
group. I think that’s a fair estimation for
that. That’s where we are on D&D at this
point. We’re finishing up the OTIB-14 review.
We should have something relatively soon. I
suspect maybe a brief issue-specific call
could resolve any remaining questions on that.

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

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

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

**MR. GRIFFON:** So the remaining action is,
Joe, you’re going to complete the review of
OTIB-14, but otherwise you feel pretty comfortable with the comparison of distributions?

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

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

**MS. MUNN:** That’s terrific.

**LOGBOOK ANALYSIS**

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

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

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

**DR. ULSH:** Yeah, that’s fine, Joe.
MR. FITZGERALD: But, Kathy, do you want to say a few words in terms of bottom lines relative to log book reviews that -- we’ve already sent you the pieces on the data integrity examples and before that on safety concerns. So this is sort of the third leg of the stool on data reliability.

MS. ROBERTSON–DEMERS: If you remember, NIOSH took names from the log book and did a comparison of any individual data that occurred in the log book with the actual health physics file where available. Then they did a second review of the log book which was extended to all the log books that had been recovered. The first one just from a single log book.

And overall, I got a lot of agreement as NIOSH did, pretty much the same percentage rates which were around 94 percent of the data that occurred in the log book agreed with the health physics file. Several components were looked at. If a person was sent for a body count, we looked at whether the health physics file had a record of that body count.

If a person’s badge was overexposed,
we looked -- and they recorded a dose number
in the log book, we looked for whether that
person had that dose value in as small an
increment as we could. Some of the dose
values were quarterly, so we did a direct
comparison.

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

MR. GRIFFON: That’s great.

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

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

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

DR. ULSH: If I could perhaps speak. I don’t want to interrupt, Kathy. Are you done or should I wait to speak or --

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

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

To go back to the history of how this all developed, it started with the, what we
affectionately call the Kittinger Log. That was identified as one that might be interesting, and I initially did a detailed analysis of that one and presented it at a working group meeting.

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

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

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

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

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

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

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

DR. ULSH: I think we might -- I don’t know.
Theresa, you’re on line right?

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

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

Theresa, do you have anything to add on that?

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

It took me awhile to find a few myself, and that might be part of the problem. I can, for example, there’s one Kittinger log that is named Kittinger log number four, and then it is also called log book, for example,
September of ’68 through ’69. And that might be part of the problem. Some of those log books have two names on the O drive.

MR. GRIFFON: Maybe I can ask Kathy and Joe if you can, in your report on the log book analysis, I mean, it sounds like you had, you found the same agreement that NIOSH did overall. That’s sort of the bottom line maybe. But also you might want to look at our original request to NIOSH and maybe offer an opinion on that.

Does it adequately cover the time periods and the operations of concern? I think if it does, I don’t know that we need much more on this. But it might be worth looking at to make sure that we covered the span of the operations adequately.

Does that make any sense, Joe?

MR. FITZGERALD: Yeah, well, we’ll certainly comment on the scope, but I agree that this has been pretty extensive so, you know, we’ll go take a look and make sure we put that in.

MR. GRIFFON: And we didn’t certainly expect NIOSH to review all of the log books that they identified. I think we can leave that as
we’ll wait and see.

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

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

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

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

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

**DATA INTEGRITY AND SAFETY CONCERNS**

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

**MR. FITZGERALD:** Right.

**MR. GRIFFON:** -- analysis of data integrity.
Can you, I mean I know that NIOSH just recently received the report --

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

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

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

MS. ROBERTSON-DEMERS: Okay, the safety concerns for the most part there was agreement between SC&A and NIOSH on whether they were relevant to the petition. There were some exceptions related to whether dosimetry investigations were actually conducted and documented prior to the first documentation I’ve run across since 1986.

But this is a contention that if there was a problem with the badge, the dosimetry investigation was conducted. And what we have right now is essentially the work of the former (unintelligible) staff that it was done and no documentation that we’ve found to date.
So that was one issue, and some of this overlaps between the two reviews. That happens to be an issue that overlaps between the data integrity and the safety concerns.

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

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

Those are really the two big issues that we didn’t have concurrence on. So both the safety concerns and the data integrity example.

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

**MR. GRIFFON:** You’re answering my questions before I ask them, Joe, very good. The focus was on the, or the reason for all this was to
look at that systemic question.

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

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

**MS. MUNN:** This is Wanda. I was very impressed with the quality of the two recent
reports in this regard and understand the
problem that still exists with some individual
cases. But insofar as satisfying what I
believe our original concern was, my sense was
that Joe and Kathy’s most recent report did
satisfy that concern. It might give us some
grief with respect to one or more individuals
when those dose reconstructions were
undertaken. But certainly I didn’t see
anything that would keep us from being able to
do valid coworker evaluations.

Did you, Mark?

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

MS. MUNN: Yeah.

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

MS. MUNN: This has been a very thorough
investigation. Both SC&A personnel and NIOSH
folks are to be congratulated from my point of
view. This has been an extremely defining --
MR. PRESLEY: This is Bob Presley. I agree one hundred percent. I think that we right now have enough data to make our decision on these.

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

MS. MUNN: Mike, it wasn’t my intent, certainly personally, to indicate that any of the individual concerns were not valid. That was not the thought that I was trying to convey. I was trying to convey the fact that it was a pleasure to see that there did not appear to be any pattern of real attempt to in any way change the reality of the data that
had been gathered at the time, that the
integrity of what was there was acceptable and
(unintelligible) basis that some individuals
may have to be treated differently. That was
what I was trying to convey.

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

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

But I think we’ve, the real question
we’ve got to try to get our hands around for
this entire class is that systemic question. And I think we’ve got a lot of material here to make our -- mainly what I’m saying now is I don’t think there’s any further action required of NIOSH at this point. We’ve got information here, another prong of our investigation to report back to the full Board with on this question of data integrity.

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

**MR. GRIFFON:** But I think we’ll, at this point there’s a primary remaining action is SC&A to get the log book report to NIOSH. And then these other three reports, we can do a
final discussion of these at the face-to-face work group. But I think we’ve got to keep in mind the systemic question, and I don’t see any need to have a follow up action on NIOSH’s behalf on the specific differences.

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

**MR. GRIFFON:** No, that’s a good distinction, thank you.

I think we, I mean, I think we’re through this item. All I was going to ask before we move on to the 1969 data gap, it is noontime. I could use at least a comfort break, and I don’t know if people, one, I don’t think we have a lot of time left to complete our agenda, but I would certainly be willing to take a short break and have people bring lunches to the phone or take a half hour
for lunch or what’s the pleasure of those primarily involved here? Joe, Brant, do you have a --

DR. ULSH: I’m okay with just a short comfort break, but I’ll defer to everyone else.

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

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

THE COURT REPORTER: Yes, sir.

DR. WADE: So we’ll get back together about 12:15, 12:20.

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

DR. WADE: You don’t have to hang up. Just stay on the line the rest of you.

MR. GRIFFON: Twelve:twenty we’ll reconvene.

DR. WADE: Twelve:twenty we’ll be back ready to work.

(Whereupon a break was taken from 12:10 p.m. until 12:20 p.m.)
MR. GRIFFON: All right, I think we’re ready to go into the 1969 data gap questions, and, Joe, maybe you can start us off.

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

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

And NIOSH subsequently pursued that, investigated it and came up with a number of possibilities including the implementation of
badging reading policy for non-plutonium workers which may have led to badges being received but not read for employees whose exposures were seen as not necessarily being high enough to report unless there were an accident or an incident, that kind of thing. Another possibility was perhaps a computer error or a computer programming switchover of some sort as a possibility.

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

We have since gone through a much more detailed analysis in terms of looking at the actual individual data files to actually ascertain the significance of the gaps for what the individual job categories were and to try to pin down better what seems to be the reason these gaps are arising. And we do believe these gaps are real for those periods, that particular period of time.
And to that extent NIOSH, I think, agrees that certainly those gaps are real. So what we want to do is provide the perspective as to the origins of the gaps and what the implications of those gaps are from an SEC standpoint and select a second banana, but I’ll turn it to Arjun, who has been spending a great deal of time with Kathy DeMers on this particular review.

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

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

**MR. FITZGERALD**: Right.

**MR. GRIFFON**: So I don’t want to get into a position, where you put Brant in a position of having to respond to something that he’s hearing now without seeing the report.
MR. FITZGERALD: This is in the same context to complete this report in the sense that there are some potential Privacy Act issues. So we will forward this in the next day or so and then also have Emily take a look.

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

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

We reviewed the NIOSH explanation also and believe that when the dosimetry logs and the one where the technicians measure the densities and enter the doses, one with the zeros and the arrows down the line for ’69
seems to be associated with areas where the badges weren’t read.

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

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

Some of these people seem to have
significant exposure potential. We looked at their prior years’ data and they seem to be, at least in some cases, declined, having declined doses. So there are a lot of details to this analysis that NIOSH will get in the next day or two.

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

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

MR. GRIFFON: There’s still music in the background.

DR. WADE: Yeah, this is Lew. It’s going to fall on deaf ears I’m afraid, but I mean we are hearing background music. I would guess it’s someone has put us on hold. I don’t know what we can do about that other than again ask all of us to think about what happens when we’re here and when we’re not here in terms of... I don’t know how we can deal with it
otherwise. If it’s annoying enough, we could all hang up and call back and possibly establish a new contact point, but I’m not sure that would even work.

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

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

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

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

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

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

**MR. FITZGERALD:** Yeah, I think as Arjun pointed out, the report’s drafted along with
the accompanying spreadsheets. What we’re doing now is just some final QA.

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

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

MR. FITZGERALD: And I have the corrected spreadsheets for the completeness reel and the corrected spreadsheets for the ’69 as well?

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

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

Brant, I don’t know if you have any further information, but it might become important on this policy that we all found in the memo that you identified, or I’m not sure who identified it, but I think it was a 1969 memo in fact, a memo report where it indicated that this policy of badged people, but some of
the quarterly badged were not read out.

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

DR. MAKHJANI: No, Mark, actually Kathy DeMers found the ten percent --

MR. GRIFFON: In another statement? Okay.

DR. MAKHJANI: -- statement. Can I just mention that document?

MR. GRIFFON: Yeah, maybe you should mention it.

MS. ROBERTSON-DEMERS: That is a letter that was drafted right before the occurrence of the NIOSH statement in the progress report. It goes into a little bit more detail on who they were going to put into the category of non-plutonium workers. And that is where the ten percent, actually what it says is these people have been below ten percent of the in-plant guidelines during 1968. So it’s fair enough to say that we shouldn’t be reading these non-
MR. GRIFFON: All right, and that references in your report so that’s --

DR. MAHDIJANI: Yeah, because, you know, I haven’t been following this as you know, Mark. It’s been Kathy, and so in editing her work, I saw this and asked her to document.

MR. GRIFFON: I’m sorry. I hadn’t seen that.

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

MR. GRIFFON: But it didn’t have this ten percent reference which is a different thing.

DR. ULSH: Not in the monthly progress report.

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

MR. GRIFFON: Yes, yes. And the only thing I was going to say, my bottom line there or question to you, Brant, was do we know when that policy ended? That was a question I’ve
asked before, but I think it might become important here in our review of looking at.

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

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

   DR. ULSH: Well, there’s another thing, perhaps, it strikes me.

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

   DR. MAKHJANI: Mark, there is some circumstantial evidence in terms of how long this gap lasted. It seemed to go into 1970 and stop there. So there’s no document that we’ve come across either, and the gaps don’t
seem to last beyond, well, you know, there are
high zeros for different reasons later on, but
this particular episode of high zeros in the
HIS-20 seems to stop at 1970 sometime.

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

DR. MAKHIJANI: Yeah, it went through to
’73.

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

DR. MAKHIJANI: Yes.

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

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

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

DR. MAKHIJANI: Yeah, if that started in
1969.
This question may have some larger implications and does need some more investigation.

MR. GRIFFON: That’s why I’m asking about it, yeah.

DR. MAHDIANI: I agree with you on that.

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

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

DR. MAHDIANI: Right. Brant, the only thing that we looked at was to separate the zeros that were read from the zeros that were not.

DR. ULSH: Yeah, yeah.

DR. MAHDIANI: That’s where in the HIS-20 is a result the best we could determine from badges that had never been read.
DR. ULSH: Yeah, well, we’ll take a look and --

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

MR. PRESLEY: Hey, Mark, this is Bob Presley.

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

DR. MAKHIJANI: We did.

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

MS. ROBERTSON-DeMERS: Well, I’m not sure I understand your question, Bob.

MR. PRESLEY: Okay, and this is just something, is there a possibility that after the fire that some of the people were furloughed for a short time so that they could go back and clean up and get back on because
of they would not have need for a lot of
production workers if, you know, when the
buildings and things were down. And I just
wondered if there was a possibility that Rocky
Flats furloughed these people for a short
period of time.

MS. ROBERTSON-DeMERS: Okay, so you’re
talking about going from non-plutonium areas
to plutonium areas?

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

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

MR. GRIFFON: The external data.

MS. ROBERTSON-DeMERS: Yes, the external,
sorry.

DR. MAKHIJANI: A more direct answer to your
question, Mr. Presley. All of the people that
we looked at were assigned areas, their job
description was in areas other than plutonium. So they were not working, they were not production workers in the plutonium area. They were production workers in other areas like depleted uranium for example. And they do appear to have been issued badges in every one of the quarters. So from that I guess, and there’s no notation in their job cards that they were furloughed.

MR. PRESLEY: Thank you, Arjun, I appreciate that.

MR. GRIFFON: Yeah, that’s good, and we’ll look at the details and NIOSH will get the report soon by the 11th we’re saying.

NEUTRON ITEMS

Okay, let’s moving right on, have neutron, have the outstanding neutron action items. I think, I’ve listed several, the original list actually is still in the matrix --

MR. FITZGERALD: Yeah, and we have reaffirmed some of those issues, certainly one or two are closed. But basically there’s agreement that these were outstanding items and we were --
MR. GRIFFON: Just for reference, Joe — I’m sorry, just for reference matrix item 23 in the updated matrix that I sent out lists all these. Now some have been completed certainly, but go ahead, Joe. I’m sorry.

MR. FITZGERALD: I’m saying we’re certainly simply awaiting NIOSH response to some of those information needs. They’re essentially information needs that would complete our analysis.

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

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

MR. GRIFFON: Now are these, Joe, from your side once you have this report you’re going to
include your final comments on this in your full report or are you going to give a separate response in any way or what do you anticipate, I guess?

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

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

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

That does give a new table and that we were concerned with; however, we still lack the information on the detailed information on
the neutron badges in the ‘50s especially. That part of the request for data has not been received yet and analyzed.

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

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

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

DR. ULSH: I’ll check into that, Ron.

MR. BUCHANAN: Okay, thank you.

MR. GRIFFON: Are there any other outstanding deliverables from NIOSH that were awaiting response other than TIB-58 obviously. I see it on the O drive now, but any other outstanding items, Joe or Brant that you, out
of this list here, the original list was seven items here.

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

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

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

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

MR. GRIFFON: Maybe the other thing I was going to ask is for the meeting on the 26th if SC&A can come prepared and in a position to also discuss if there are any remaining issues with SEC implications or if there’s some outstanding issues, but they may not be SEC,
you know, they may be more of a, you know, we need, this may need fine tuning. We’re not sure about this, but it shouldn’t impact the SEC decision process. I mean, if you can maybe report out in that fashion if it’s possible.

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

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

**Mr. Griffon:** Good, Joe, thanks. I think this goes for any of these items. If we need
a technical call in the next few weeks, let’s,
between you and Brant, Joe, you can --

MR. FITZGERALD: Yeah, I just think it’s
good exposure on this.

MR. GRIFFON: Yeah, we don’t want to hold it
up.

MR. FITZGERALD: This new revision gets us
pretty close. I’d just as soon see if we can
achieve closure.

MR. GRIFFON: That sounds good.

MR. BUCHANAN: We’re talking January 26th?

MR. GRIFFON: Yeah, between now and the 26th
we’re hoping --

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

MR. BUCHANAN: Okay.

SUPER S

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

MR. FITZGERALD: Yeah. Well, you know, this
is going back to June when Joyce -- and Joyce
is on the phone -- briefed the Advisory Board
and presented her analysis on OTIB-49 which
was in draft. But certainly our conclusion
was that it certainly was an acceptable way,
the empirical approach, was an acceptable way
and provided dose estimates that were claimant
favorable.

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

I think where we stand there, and I’ll
certainly defer to Joyce if she wants to add
anything, is that we’ve completed some of that
review and looked at some of the cases that
were available to us. But the other cases
that we would want to examine to see if in
fact they were encompassed by the model were
not claimant cases but ones that were from the
DOE file. And we’ve been working with Sam
Glover to obtain these remaining cases. And I
think that’s the, that is certainly the key outstanding issue on the high fired review right now. It’s just that aspect of it. Joyce, do you want to add anything to that?

DR. LIPSZTEIN: Yes, the only other thing is that there is a lung correction factor that was applied to the data of all of the design cases, and NIOSH, we’re waiting for NIOSH to send us what is the correction factor that is being applied to the design cases, the lung data.

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

And actually we think if this factor was applied to correct for the design cases, that the factor should be applied to all the claimants, to all the workers. And somewhat we have been seeing with the claimant cases
they haven’t been applied.

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

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

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

MR. LITTLE: Yes.

DR. ULSH: As soon as I get an answer from Scott I’ll send it out.

MR. GRIFFON: And as soon as you get them you’ll post them, right?

DR. ULSH: Oh, absolutely.

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

Joyce, is that in the white paper or is that something separate that you’re talking about?

DR. LIPSZTEIN: No, no, that was told by us
in a telephone call that there was a
difference between the numbers that were used
for lung in the design cases and the one from
HIS-20 because there was a correction factor
that was applied to the lung results in HIS-20.

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

MR. GRIFFON: I remember that came up
because of the discrepancy in the data versus
the HIS-20, so that’s kind of how we, how
Joyce found that.

DR. LIPSZTEIN: And I checked that this
correction factor would be the same one that
OTIB on occupational internal dosimetry,
Attachment B, talks about, but it’s not the
same.

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

Anything else on Super S, Joe? I
think that’s the main --

MR. FITZGERALD: No, that’s pretty much it.
MS. MUNN: This is Wanda. Let me understand clearly on this the real, the only real outstanding issue is the lung correction factor, Super-S, or is that too simplistic?

MR. GRIFFON: Excuse me?

MS. MUNN: Is that too simplistic?

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

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

MR. GRIFFON: Correct.

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

MR. GRIFFON: That’s correct. That’s the way I understand it, yeah.

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

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

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

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

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

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

**MR. GRIFFON:** Appreciate it.

**MR. GIBSON:** This is Mike. From a complex-
wide issue there may be some other issues regarding Super S rather than just the ones we’re looking for in this case, I think.

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

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

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

**DR. ULSH:** I don’t have anything additional, Mark.

**MR. FITZGERALD:** Same here.

**MATRIX UPDATE**

**MR. GRIFFON:** The second big item I had on the agenda was the, Roman numeral number two, was the update of the matrix. And I just sent that out actually this morning very early so I don’t know if everyone received it yet. But
it's the full matrix, and what I tried to do
was put these items from the summary action
item list into the matrix, and I should
cautions everyone that this is draft form. In
putting these action items back into the
original matrix, it was apparent to me that
there was some overlap with action items so
you'll see sometimes that I have action items
referencing each other. And also, the last
thing I would note is that the yellow
sections, while at one point I was using them
just for the new action, sometimes I left the
yellow because I wasn't sure if items had been
completely resolved. It doesn't necessarily
mean they haven't been resolved. It's just
that my notes weren't good, my memory wasn't
good on that item so I left it in yellow. I'd
ask that Brant and Joe and the work group,
everyone, take a look at this and maybe if you
see any errors, I'll make a final correction
of this matrix for us to use in the face-to-
face meeting.

MS. MUNN: Thank you for getting that out,
Mark. I'll have to admit, although I haven't,
trying to read through it I was confused as to
whether or not, you’re right. I don’t know how one can simplify this. It’s an extremely, we have so many issues here, extremely cumbersome to deal with.

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

**MS. MUNN:** Yeah.

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

But I think we need to reflect back to that original and make sure that we didn’t overlook anything important coming down to, I hope, our final work group meeting on the 26th. I’d like to make sure, just go back after one more time and make sure we have had answers, adequate answers, responses, whatever, for all the items.

**MR. FITZGERALD:** Yeah, I guess one item that’s sort of invoked by your matrix item 26,
Mark, I think in terms of OTIB-38 we had a very productive, issue-specific phone call with Brant, Jim and I think Dave Allen regarding that. And I think we’ve reached closure on OTIB-38 from a conceptual standpoint.

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

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

I think we were able to reach closure on that. And we do have certainly the consideration that was offered that the 95\textsuperscript{th} percentile distribution was certainly (unintelligible) we agree and that be applied, but that’s not an SEC issue per se. And we just, I think, will leave it at that.

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

**MR. FITZGERALD:** Yeah, we’re going to cover
that in our overall review report, but we did come out that way.

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

MR. FITZGERALD: There’s multiple issues on the coworker model, and --

MR. GRIFFON: I mean, I should say you’ve closed on the conceptual part of this --

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

This is looking at it conceptually without getting into some of the issues of the data itself or how the data’s applied, just looking at it conceptually, its derivation, and I think we were able to get a certain
comfort level with the derivation that we
didn’t have initially.

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

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

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

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

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

Anything else on the matrix? I will
certainly also make, if I could ask for any
comments on the matrix maybe by the end of
this week, then I will try to pull in all the
comments and get a final edit of the matrix
middle of next week. And then we’ll have it
ready for the meeting on the 26th, and I’ll get it out to all interested parties as well through NIOSH. We’ll make that available. I apologize to anyone on the phone that got this very early this morning. I’m assuming that you did receive it, but I will try to get it to you a little earlier so you have a chance to review it as well.

MS. MUNN: It’s a hard thing to deal with.

MR. GRIFFON: It’s a beast at this point.

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

MR. GRIFFON: The hard part was getting back up.

**SC&A FINAL REPORT**

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

And Joe, my sense is that at least you’re going to have work products or pieces that are delivered to NIOSH at this point for all these items we’ve discussed or many of these items. At some point you’re going to
assemble your full report on the review of the evaluation report and provide those. Do you have any sense, I know that it somewhat depends on this iterative process, but what are your thoughts on the timeline on that?

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

But in doing this in real time if we can reach closure on issues and reflect that in the pieces that we’re actually working off of, we should be able to have this revised report available to the work group certainly in advance of the Board meeting and certainly toward the end of this month in and around the 26th. So it’s really more of a question of how the iterative discussions go on these several key SEC issues that determines when the report would be generated.

The material itself has been prepared.
We are sending all the attachments to, through Dave Staudt and also certain ones to Emily for Privacy Act screening this week, in fact, starting today. So we’re positioning to have this report ready certainly in advance of the work group.

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

MR. GRIFFON: Yeah, I think I had asked, I had talked with Joe about this a little bit, and I had sort of asked for, you know, at this point I thought it’s better to distribute pieces in advance and get full discussion on those. I was a little nervous about having several iterations of a draft SC&A final
report going out until we come to better
closure on these key items. And then I think
you can roll your pieces back into your full
report. I guess the intent though would
certainly be, and I don’t think there is going
to be any surprise in the data. We’re seeing
all the pieces so when it gets pulled into the
full report there shouldn’t be any things we
haven’t discussed in full.

MR. FITZGERALD: Or have seen in full.

MR. GRIFFON: Right.

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

MR. FITZGERALD: Right.

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

MR. FITZGERALD: Certainly one on
completeness --

MR. GRIFFON: And the ’69 issue.

MR. FITZGERALD: -- the ’69 issue. Those
three certainly have SEC implications so
you’ll see those this week.

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

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

DR. ULSH: Okay, that’s great. Thanks.

MR. GRIFFON: All right, and the last -- I’m
sorry, Wanda.

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

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

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

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

MR. GRIFFON: So I think we’re ready to
close. The last item I had was the work group
meeting. I think I get from informal surveys was the 26th was going to be the best date we could do. I mean, Lew is not available, but key staff personnel for NIOSH and ORAU would be available on that day and only that day, so I think we probably need to stick with the 26th. Do people agree with that?

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

MR. GRIFFON: I’d like to start that at 9:30 if we could.

MS. MUNN: Since I’m going to be in Cincinnati, that’s not a problem.

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

MR. GRIFFON: Yes, I think we’ll do the same --

MR. PRESLEY: That will be good.

MR. GRIFFON: So 9:30 a.m. on the 26th.

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

MR. GRIFFON: Yeah, better leave it till five.

DR. WADE: Okay, we’ll get it set up.

MR. GRIFFON: And any final remarks? Any
comments from others on the line representing
the petitioner or the, I think there’s some
Congressional staff.

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

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

**DR. WADE:** Correct.

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

**DR. WADE:** We’ll do it.

**MR. GRIFFON:** I think there’s a lot on the
line here.

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

**MR. GRIFFON:** Anything else?

**DR. WADE:** Just again, this is Lew. Thank
you again for your leadership and for the work
group and all those involved. It’s been a
long process, but it’s a process that’s being undertaken appropriately in my opinion with the correct attention to detail, and we appreciate everyone’s hard work.

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

**DR. WADE:** Thank you.

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

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

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

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

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

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

Joe, you haven’t necessarily --

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

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

MR. GRIFFON: Good point, good point.

DR. MAKHIJANI: Joe, we can also call them issue memoranda working draft, to distinguish
from draft of a report.

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

    **MR. PRESLEY:** Appreciate that.

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

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

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