

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

convenes the

TELEPHONIC WORKING GROUP MEETING

ADVISORY BOARD ON
RADIATION AND WORKER HEALTH

ABRWH WORKING GROUP MEETING

The verbatim transcript of the
Meeting of the Advisory Board on Radiation and
Worker Health held telephonically on April 20, 2006.

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April 20, 2006

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TRANSCRIPT LEGEND

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

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

P A R T I C I P A N T S

(By Group, in Alphabetical Order)

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Senior Science Advisor

National Institute for Occupational Safety and Health

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Washington, DC

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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

STAFF

LASHAWN SHIELDS, Committee Management Specialist, NIOSH

STEVEN RAY GREEN, Certified Merit Court Reporter

IDENTIFIED PARTICIPANTS

HHS :

HOWELL, EMILY

RAFKY, MICHAEL

NIOSH:

NETON, JIM

RUTHERFORD, LAVON

SUNDIN, DAVE

ULSH, BRANT

ORAUT:

CHEW, MEL

FALK, ROGER

JESSEN, KARIN

KENOYER, JUDSON

KERR, GEORGE

LANGSTED, JIM

MCFEE, MATT

MEYER, BOB

ROBINSON, AL

SHARFI, MUTTY

SMITH, MATTHEW

STEMPFLEY, DAN

TANKERSLEY, BILL

WOLFE, CRAIG

SC&A:

BEHLING, HANS

BUCHANAN, RON

FITZGERALD, JOE

LIPSZTEIN, JOYCE

MAKHIJANI, ARJUN

MAURO, JOHN

ROBERTSON-DEMERS, KATHY

OTHERS:

DEMAIORI, TONY

FRANK, LAURA

JONES, LARRY

LAWSON, HOWARD

P R O C E E D I N G S

(11:00 a.m.)

WELCOME AND OPENING COMMENTS**DR. LEWIS WADE, DFO**

1 **MR. GRIFFON:** I think it's probably 2:00 p.m.
2 eastern time, right, Lew? I figured we could
3 do from now until 1:00 and then break for lunch
4 at 1:00.

5 **DR. WADE:** Okay. And then --

6 **MR. GRIFFON:** And then pick up Rocky at 2:00
7 hopefully.

8 **DR. WADE:** Okay.

9 **MR. GRIFFON:** That's the tentative plan anyway.

10 **DR. WADE:** Okay.

11 **MR. GRIFFON:** That'll work.

12 **DR. WADE:** That's the plan.

13 **MR. GRIFFON:** All right. Okay. Thanks a lot.

14 **DR. WADE:** Okay. Thank you.

15 **MR. GRIFFON:** Bye.

16 **DR. WADE:** Okay. Well, I guess we have Mark
17 with us, Mike, Wanda, Ray. I think that's most
18 of what we need so maybe we can begin. This is
19 Lew Wade and I have the -- the pleasure of
20 serving as the designated federal official for

1 the Advisory Board. And this is a meeting of
2 the working group of that Advisory Board. This
3 working group has looked at many issues
4 including individual dose reconstruction
5 reviews, site profile reviews, procedures
6 reviews. Recently flowing from the working
7 group's efforts with regard to the site profile
8 reviews for Y-12 and Rocky Flats the Board
9 asked that this working group continue and look
10 at SEC-related issues with regard to Y-12 and
11 Rocky Flats. There have been a number of very
12 productive calls of this working group and
13 today we're meeting to discuss two issues, Y-12
14 as -- as Mark had mentioned and then followed
15 by Rocky Flats. I would like to just take a
16 brief moment to have the Board members identify
17 themselves. I know Mark, Mike and Wanda are on
18 the call. Are there any other Board members on
19 the call?

20 (No response.)

21 **DR. WADE:** Okay. Just checking to see that --
22 that we don't have a quorum. What I would like
23 to do is to go through our -- our conflict of
24 interest discussion. Let's have it relative to
25 Y-12 and then we will repeat that discussion.

1 Hello?

2 (Brief interruption)

3 **DR. WADE:** Somebody's at an airport getting
4 ready to board at Gate 43.

5 **UNIDENTIFIED:** Maybe I should sign off. Maybe
6 I'm too distracting.

7 **DR. WADE:** I think you're right. Yeah, I guess
8 it would be good.

9 **UNIDENTIFIED:** Okay.

10 **UNIDENTIFIED:** We're not going to be able to
11 hear him.

12 **DR. WADE:** All right. Yeah. Okay. We're back
13 to it. We'll go through and have Board
14 members, the NIOSH team, the SC&A team identify
15 themselves on the call and any conflicts they
16 have relative to Y-12. And then we'll go
17 around and let other government folks identify
18 themselves and anyone, petitioners and anyone
19 else who would like to be identified as being
20 on the call -- on the call. So I'll start.
21 I'm Lew Wade and I work for NIOSH and I have no
22 conflicts relative to Y-12. How about Board
23 members. Mark? Mike?

24 **MR. GIBSON:** This is Mike Gibson. I have no
25 conflicts.

1 **DR. WADE:** Wanda?

2 **MS. MUNN:** Wanda Munn. No conflicts.

3 **DR. WADE:** Okay. Mark, are you with us?

4 (No response)

5 **DR. WADE:** Okay. We'll listen for Mark. We'll
6 re-establish contact. How about the NIOSH ORAU
7 team?

8 **MR. RUTHERFORD:** This is LaVon Rutherford of
9 NIOSH. I have no conflicts with Y-12.

10 **DR. NETON:** This is Jim Neton. No conflicts.

11 **DR. WADE:** The ORAU team, please introduce
12 themselves.

13 **MR. KENOYER:** This is Judson Kenoyer, no
14 conflicts.

15 **MR. TANKERSLEY:** Bill Tankersley, no conflict.

16 **MR. KERR:** George Kerr. I have no conflicts.

17 **MR. CHEW:** Mel Chew. I have no conflicts.

18 **MR. MCFEE:** Matt McFee. No conflicts with Y-
19 12.

20 **DR. WADE:** Anyone else from NIOSH ORAU?

21 **MR. SMITH:** Yeah, this is Matthew Smith. No --
22 No comments, or conflicts, rather.

23 **DR. WADE:** Okay.

24 **MR. SUNDIN:** Dave Sundin. No conflict.

25 **DR. WADE:** Other NIOSH ORAU?

1 (No response)

2 **DR. WADE:** Okay. SC&A.

3 **DR. MAURO:** John Mauro, SC&A. No conflicts.

4 **DR. MAKHIJANI:** Arjun Makhijani, SC&A. No
5 conflicts.

6 **MR. GRIFFON:** Hi, Lew. It's Mark Griffon
7 again.

8 **DR. WADE:** Okay. We're just going through a
9 conflict identification, Mark.

10 **MR. GRIFFON:** Okay.

11 **DR. WADE:** You could do yours.

12 **MR. GRIFFON:** Okay.

13 **DR. WADE:** Relative to Y-12.

14 **MR. GRIFFON:** Relative to Y-12 I only have a
15 conflict in changes where (inaudible) Labor
16 Council, HELC (unintelligible), is the named
17 petitioner.

18 **DR. WADE:** Okay. We were continuing then with
19 SC&A. Anyone else?

20 **MR. BUCHANAN:** Ron Buchanan. No conflicts.

21 **DR. WADE:** Anyone else from SC&A?

22 (No response)

23 **DR. WADE:** Okay. Without the need for conflict
24 identification, are there any other federal
25 employees on the line?

1 **MS. HOWELL:** This is Emily Howell with HHS. I
2 have no conflict.

3 **MR. RAFKY:** Michael Rafky also with HHS. I
4 also have no conflict.

5 **DR. WADE:** Any petitioners or representatives
6 for Y-12?

7 (No response)

8 **DR. WADE:** Okay. I open up to anyone else who
9 would like to identify themselves as being on
10 the call. Not necessary, but if you'd like,
11 please.

12 **MS. FRANK:** Laura Frank from the
13 (unintelligible).

14 **DR. WADE:** Welcome.

15 **MS. FRANK:** Thank you. I'll probably hang up
16 and then come back when you all attend to the
17 Rocky Flats.

18 **DR. WADE:** Okay. Thank you.

19 **THE COURT REPORTER:** I'm sorry. This is the
20 court reporter. Could I get your name again,
21 please?

22 **MS. FRANK:** Laura, L-A-U-R-A, Frank, F-R-A-N-K.

23 **THE COURT REPORTER:** Okay. Thank you.

24 **MS. FRANK:** You're welcome.

25 **DR. WADE:** Anyone else who would like to be

1 identified?

2 **MR. LAWSON:** Howard Lawson and Larry Jones,
3 Labor Council at Y-12.

4 **DR. WADE:** Okay. Mark, back to you.

5 **MR. GRIFFON:** Okay. I guess we -- you're
6 getting ready to start the -- the agenda, Lew.

7 **DR. WADE:** Correct.

8 **MR. GRIFFON:** I missed a few minutes, so okay.

9 **DR. WADE:** We just did introductions --

10 **MR. GRIFFON:** Yeah.

11 **DR. WADE:** -- and we talked about quorum issues
12 and things like that.

13 **Y-12**

14 **MR. GRIFFON:** I think the best way to proceed
15 here -- I'm almost ready to get off my cell
16 phone and onto a hard line so I apologize for
17 that. But I think the best way to proceed is
18 probably to start with what Jim had provided.
19 I think Jim included most of the outstanding
20 actions that we had in the matrix as from
21 NIOSH's standpoint anyway. And I think maybe
22 Jim can give us an overview of that and then we
23 can start into the SC&A's review report of --
24 of the evaluation report if that -- if that
25 makes sense. And if Jim -- I assume Jim is on

1 the line?

2 **DR. NETON:** Yeah, I am. I'm on the line.

3 **MR. GRIFFON:** All right.

4 **DR. NETON:** I'm going to have to scramble and
5 sort of re-- recall from memory what I sent
6 out.

7 **MR. GRIFFON:** Okay.

8 **DR. NETON:** I thought we were going to go
9 through the report but --

10 **MR. GRIFFON:** I guess -- I guess it really
11 doesn't matter which order. I thought that
12 that would be the easier thing to -- to get a
13 handle on but --

14 **DR. NETON:** I think I can do it. Just give me
15 a second here to --

16 **MR. GRIFFON:** Okay, sure.

17 **DR. NETON:** The -- The issues -- The items
18 that I -- that I sent out which I think -- and
19 I think Mark is correct -- I did believe at
20 least we -- we were responsive to the closing
21 out the issues, you know, that were for you to
22 judge whether they're sufficient to close it
23 out, but we sent out the remaining dose
24 reconstructions. Those were for polonium,
25 plutonium, an extremity dose as well as there's

1 one other in there.

2 **MR. GRIFFON:** One of the exotics? Is that one
3 of the --

4 **DR. NETON:** Nuhytrogalian (ph) 67.

5 **MR. GRIFFON:** Yeah.

6 **DR. NETON :** That's correct. Thanks. And so
7 those -- those have been -- been put out there.
8 We also put out a table that compared the --
9 the databases from the CER for uranium
10 urinalysis versus the distribution of the data
11 that we observed in the uranium samples that
12 were in the delta view database. If you
13 remember, we determined that those uranium
14 samples were not in the CER database and yet
15 the issue was would those samples, if they were
16 added to the CER database pollute the co-worker
17 model to where it would not be an accurate
18 depiction of what the exposures were. And I
19 think the table is fairly self-explanatory in
20 that the -- the -- the delta view data actually
21 end up having a lower -- the distribution would
22 end up lowering the results for the uranium
23 urinalysis logs so therefore we don't believe
24 there is a significant effect on our co-worker
25 model that was developed from the CER data.

1 There was another issue --

2 **MR. GRIFFON:** I don't -- I don't know if we
3 have to comment on these but if SC&A, if you
4 guys have any comments on these, you know, or
5 need clarification on any of these items I
6 think it's probably appropriate to sort of
7 discuss it.

8 **DR. MAURO:** This is John Mauro. I think that a
9 lot of the items that were covered by Jim we've
10 sort of taken the next step forward in our
11 evaluation report. Those items will -- some of
12 those items will be revisited at -- at the next
13 tier so to speak during our discussion of our
14 draft evaluation report that went out yesterday
15 and that I presume most folks on the line have
16 copies of.

17 **MR. GRIFFON:** I think so, too. That's why I
18 chose this order because I think, yeah, it
19 makes sense to -- all right.

20 **DR. MAURO:** Okay.

21 **MR. GRIFFON:** Go ahead, Jim. I'm sorry that I
22 cut in there.

23 **DR. NETON:** That's fine. And then -- then
24 there -- there was an item I sent out that
25 dealt with the discussion of 1951 data that

1 appeared in delta view versus what was in the
2 CER database and we put that out, about a page
3 and a half document. And I'm very certain that
4 SC&A commented on that in their review so we'll
5 get into that later.

6 **MR. GRIFFON:** Yeah, we'll probably cover that
7 later, right.

8 **DR. NETON:** And then I also sent out a -- a
9 criticality -- a draft criticality -- a draft
10 report on criticality incident that occurred in
11 1958 that sections of, we believe, substantiate
12 the reasons why not all workers were monitored
13 at criticality incident and why is that not an
14 indication that, you know, the highest exposed
15 workers were monitored. That went out fairly
16 recently. I think that's -- that's -- that's
17 all the information I sent out.

18 **MR. GRIFFON:** Yeah, I think that does cover it.

19 **DR. NETON:** And all the --

20 **MR. GRIFFON:** I think given that -- the last --
21 well, most of the items as John said are going
22 to come up as we go into the review report so
23 if the -- unless there's any other questions or
24 comments or clarification by Jim I think we're
25 probably ready to go right into John's -- into

1 your report.

2 **DR. MAKHIJANI:** Yeah, Mark, this is Arjun.

3 **MR. GRIFFON:** Yeah.

4 **DR. MAKHIJANI:** I don't think the incident list
5 was part of the matrix -- the incident list
6 with the exotics was part of the matrix but --

7 **MR. GRIFFON:** Yeah. Jim, there was -- I -- I
8 thought, and -- and again we didn't have to
9 come back to and I know -- I know there's --
10 we've -- we've done a lot of these calls so
11 there's a lot -- a lot of work there but I
12 thought that you had mentioned as part of the
13 exotics dose reconstruction that there was --
14 there was incident data that you were going to
15 be calling on for the dose reconstructions
16 related to the exotics. And I don't know if
17 you -- if that is on the O-drive or if you
18 intended, you know -- I guess that's --

19 **DR. NETON:** No, we -- we can get into that
20 maybe when -- when we get to that issue but I --
21 I didn't recall if the incident list was one
22 of the closeout items in the matrix. But we --
23 we do intend to rely on incident reports that
24 we know are present, particularly on the delta
25 view system and there are over 4,000-something

1 images out there. Frankly we just have run out
2 of time to be able to catalog all those. We
3 just -- we know that there are -- there are a
4 lot of them out there and the ones that we
5 sampled definitely allow us to do dose
6 reconstructions. And that was the one intent
7 of the gallium example but --

8 **MR. GRIFFON:** Oh, okay. Okay.

9 **DR. NETON:** -- we didn't have time to
10 distribute the -- a complete compendium of all
11 the incidents. It would be -- it would be
12 quite an undertaking to do that.

13 **MR. GRIFFON:** Okay. Okay.

14 **DR. MAURO:** This is John Mauro. Along those
15 lines while we are discussing this, Arjun and I
16 have had an opportunity, of course, to discuss
17 a lot of these matters before this call. With
18 regard to the incident reports, one of our
19 observations as we're talking about it is that
20 the gallium report I guess represented a later
21 time period. As an example problem or maybe a
22 couple of example problems I think we're
23 basically looking for kinds of information in
24 the incident reports that are available during
25 the earlier years for some of these exotic

1 radionuclides. I guess just to provide an
2 example that shows here's typically the kind of
3 data that we have available to us in the
4 reports and how we would use that data to
5 reconstruct. Right now I guess you felt the
6 gallium was an example that was more of a -- a
7 later time period if I'm correct. And I guess
8 just so that I can close the loop on the -- on
9 this is I guess a little more reassurance that,
10 yes, even though in the earlier years when
11 these exotic radionuclides were handled and
12 there were incidents, the kinds of information
13 that are available in those numerous incidents
14 reports by and large give you the information
15 you need to reconstruct the inhalation doses.

16 **MR. GRIFFON:** But Jim -- Jim, did you say a --
17 a -- I -- I might have misunderstood this but
18 are the -- are the 6,000-page images or the
19 images that we have from the delta view
20 database, do they include some of these
21 incident reports that you're discussing or is
22 it another part of the delta view database?

23 **DR. NETON:** I don't know that they do, Mark.

24 **MR. GRIFFON:** Okay.

25 **DR. NETON:** That was not what we pulled the

1 database for at that point.

2 **MR. GRIFFON:** Right.

3 **DR. NETON:** The delta view database is
4 searchable by certain key words and fields and
5 when one searches the delta view database for
6 investigation slash incidents, you end up with
7 about 4,000 images that are -- that are
8 resident. And that was the intent of the delta
9 view database was to consolidate all these --
10 these reports and such into one -- one central
11 data system. We just have not had the time to
12 pull --

13 **MR. GRIFFON:** Yeah.

14 **DR. NETON:** -- all of these out and comb
15 through them although again we believe that
16 every indication that we have are that they are
17 there, available and we could use them. And
18 there's -- there's other pieces of information
19 that we'll be bringing to the table to
20 demonstrate how we can do exposures for the
21 Cyclotron but I don't know if we want to do
22 that now or wait until we get to the relevant -
23 -

24 **MR. GRIFFON:** Probably wait until we get to
25 their report but I -- I just, yeah, just to --

1 I just wanted to clarify that we -- that it
2 wasn't in what we had so okay. So that's --
3 that's understandable. Okay. Anything else
4 John or Arjun or should we -- Should we start
5 into your review report?

6 **DR. MAURO:** Yeah, this is John. You know, we
7 might as well get started.

8 **MR. GRIFFON:** Yeah.

9 **DR. MAURO:** I will make a couple of prefatory
10 remarks before I hand the baton over to Arjun
11 who did the heavy lifting. One of these -- the
12 -- in our report I can't say for certain that
13 we've captured everything that came across in
14 the -- on the email from Jim. We were
15 certainly attentive to the material as it came
16 in, certainly the example problems, but I'm not
17 quite sure whether we -- how we reflect all of
18 the material that has come through as of the
19 time that we -- that we sent out our report.
20 So we may be a little bit behind the power
21 curve in terms of capturing everything that Jim
22 has provided. The second point I would like to
23 make is that you may have noticed that we have
24 not yet addressed the recycled uranium piece.
25 There is a placeholder in our report that we

1 are close to finishing up, and our intention is
2 that after this conference call and after we
3 sort of regroup we'll probably issue a revised
4 version of the report to sort of catch up on
5 those pieces of material that we have not
6 captured, address the recycled uranium issue;
7 and there's one more point that I feel needs to
8 be incorporated. I think our report in general
9 zeros in on all of the areas that we feel there
10 are deficiencies that need to be dealt with. I
11 also feel that we probably need to incorporate
12 some material in our report in areas where we
13 feel the case made by NIOSH is especially
14 strong. Right now there is -- there really is
15 very little of that. Now, the reason I say
16 that is I think it's important for the Board to
17 get a sense of giving the -- the issues and the
18 time periods of concern to -- to somewhat get a
19 bird's eye view of in the grand scheme of
20 things where -- where is the evaluation report
21 strong in terms of making its case or has made
22 its case and areas where we feel it's weak and
23 there are some problems that need to be
24 addressed. Right now I think our report really
25 zeros in on the problems but doesn't help the

1 Board too much in terms of letting them know
2 where we feel it's relatively strong. We're --
3 Our intention is to -- to issue a next draft of
4 this report as soon as possible and -- and
5 address many of the -- these -- these matters
6 that I'm describing. With that as a preface
7 I'd like to hand it over to -- to Arjun to go
8 through the -- the major points that we -- that
9 we have made in our -- our review of the
10 evaluation report.

11 **DR. MAKHIJANI:** Thank you, John. The -- John
12 and I talked this morning about some gaps and
13 one of the -- I'd just like to preface what I'm
14 saying about -- with a description of a couple
15 of those gaps. We didn't review the plutonium
16 dose reconstruction. It came in on Monday and
17 I think I was a little too overwhelmed to
18 review new material since it was typeset on
19 Tuesday and Wednesday. And the other -- The
20 other thing is that in reviewing the 147 worker
21 data I -- I focused on table 45-B but not on
22 table 45-A and in going back I felt that the
23 workers at Y-12 seemed to broadly have been
24 sorted into two large bins, low and --
25 relatively low and relatively high as reflected

1 in post-61 data. And -- And that -- that
2 overall idea there needs to be included in that
3 evaluation of that model. I -- I don't
4 believe that any other bottom line comments
5 would change but I think it will better reflect
6 what -- what NIOSH has done. So I just -- I
7 just wanted to give the working group a little
8 bit of an idea of a couple of things that John
9 and I had discussed before this call. That
10 said, the -- we -- I went through -- there was
11 a team of people that worked on the report.
12 Hans is unfortunately not on the call. Hans
13 and -- and Ron Buchanan worked on the external
14 dose stuff. I worked with John and Joe and
15 Kathy on various parts of this report and as we
16 -- so let me go -- there's one finding or one
17 comment on uranium with trace thorium where I
18 forgot to write a conclusion paragraph in the
19 text of the report so it didn't get pulled up
20 into the summary. I'm sorry about that. It
21 will be there in the final report. So start at
22 the top. Our main finding in regard to the SEC
23 evaluation recommendation about thorium workers
24 was that we agreed with NIOSH that there's not
25 enough data to reconstruct doses for workers

1 who were exposed or potentially exposed to
2 thorium or should have been monitored for
3 thorium during the SEC petition period. And we
4 did some research. Kathy Demers did some
5 research on buildings where whether the
6 buildings covered in the evaluation were --
7 were the only ones and -- and we found
8 evidence, documentation that there were
9 probably other buildings where thorium was
10 processed we think in the '50s. I want to
11 preface -- qualify this by saying, you know,
12 that we researched this very rapidly obviously
13 -- but I've listed the buildings there under
14 heading two in the summary where thorium also
15 appears to have been processed. Whether it was
16 always processed in the '50s there I think may
17 remain to be determined but this is the best of
18 our judgment.

19 **DR. MAURO:** Excuse me. This is John Mauro.
20 Just quickly, just to help orient, I don't know
21 if everyone is looking at the same page but
22 page 1 in our report at the very top says
23 attachment one. For the purpose of this
24 discussion it's probably convenient if you
25 folks have not already surmised this that we

1 have prepared -- we have listed a number of
2 findings and -- and Arjun is basically going
3 down items one, two, three, four, so forth in
4 that summary of principal conclusions. So that
5 may help a little bit for --

6 **DR. MAKHIJANI:** Thank you, John. Yeah, I'm
7 sorry. I apologize. I should have said that.

8 **DR. MAURO:** Yeah, just to -- yeah. So we'll
9 just be going through that and, of course, each
10 one of these principal findings, the main body
11 of the text gives the rationale behind it.

12 **DR. MAKHIJANI:** We looked at the internal and -
13 - and the CER database validation in the
14 internal and external --

15 **DR. NETON:** Arjun?

16 **DR. MAKHIJANI:** Yes?

17 **DR. NETON:** Mark, do you think it would be
18 better if we did these one by one or if we just
19 wait until all the issues have been discussed?
20 I mean it's up to you but --

21 **MS. MUNN:** This is Wanda. I'd prefer we did
22 them one by one, frankly.

23 **DR. WADE:** Is Mark on the call?

24 (No response)

25 **DR. WADE:** Oh, we lost Mark.

1 **MS. MUNN:** I think he must be moving from one
2 phone to the other again.

3 **DR. MAKHIJANI:** It would be fine by me to -- to
4 go one by one if that's the most convenient --

5 **DR. MAURO:** I think that is. It keeps the
6 story a little bit more continuous.

7 **DR. MAKHIJANI:** Okay.

8 **DR. MAURO:** I would also recommend one by one.

9 **DR. WADE:** Okay. So let's do that. Arjun has
10 gone over points one and two. Jim, do you want
11 to respond?

12 **DR. NETON:** Yeah. I -- I think so. With the
13 issue of thorium I mean we're -- we're
14 certainly gratified that SC&A agreed with our
15 position that thorium could not be
16 reconstructed although we're a little perplexed
17 at the -- at the issue raised that these other
18 buildings are involved. Even though I think
19 the report states something to the effect that
20 there's ample evidence or significant evidence
21 that it was processed at other buildings, the
22 only citation I could find that -- that they
23 relied on was out of this Chem-Risk report that
24 -- that says starting in the early 1950's the
25 Y-12 thorium began processing its weapons

1 components. And then they go on to cite the
2 buildings. We -- We take no issue with the
3 fact that production occurred, you know,
4 significant production operation that started
5 in the late '50s in our opinion, or early '60s
6 did occur in those buildings but I -- I -- I
7 scoured the entire 490 pages of the Chem-Risk
8 report and found no other indication as to
9 where that information starting in the '50s
10 came from. It's an un-cited text. They just
11 reference it. So it doesn't seem to be a
12 strong piece of evidence. We have relied on
13 reports directly from Y-12 personnel. There
14 are specifically several reports that we've
15 cited that state that the thorium operation
16 started in the '60s. So, you know, we don't
17 take exception to the fact that those buildings
18 that are cited in the Chem-Risk report were
19 where major productions occurred. But we
20 literally scoured hundreds and hundreds of
21 pages of health physics reports and frankly had
22 a lot of trouble coming up with the buildings
23 that we did. We're not even among ourselves
24 sometimes convinced that those buildings had
25 huge exposures. But -- So I -- I don't know

1 that we agree with the position that these
2 other buildings come into play.

3 **MS. MUNN:** This is Wanda. I question that
4 though the statement was on page 6, that there
5 was clear evidence that you had not adequately
6 explored the potential and I -- I questioned
7 what the clear evidence was because if we had
8 discussed any such evidence prior to this I
9 wasn't aware of it.

10 **DR. NETON:** And literally with the hundreds and
11 hundreds of pages we've gone through there is
12 not one shred of evidence to indicate that
13 thorium processing occurred in those other
14 buildings prior to 1957 --

15 **DR. MAKHIJANI:** Well --

16 **DR. NETON:** -- '58 so --

17 **DR. MAKHIJANI:** Well, if I might just respond I
18 -- as I said the -- we -- we've given the
19 citations I think for those buildings clearly,
20 you know. The people who worked there have
21 evidence and -- and their evidence should be
22 taken into account. But I think we've cited
23 the reports. Not, as I said, not all of the
24 reports give dates that are clear. But the
25 Chem-Risk report was very clear. And frankly I

1 was very surprised. But -- But I -- I haven't
2 read the whole Chem-Risk report but I do -- we
3 did think that it should be evaluated since --
4 since there were other reports as well that
5 mentioned other buildings. It's not -- It's
6 not really clear to us from reviewing this
7 other than the Chem-Risk thing that -- that
8 there were other buildings but when it is in an
9 official report that was prepared as a result
10 of access to all classified information and
11 production and there was a commission I
12 believe, was it by the Centers for Disease
13 Control? I -- I don't remember now. Then
14 that -- I -- I don't believe that that -- that
15 should be dismissed as -- as -- as flimsy
16 evidence or not --

17 **DR. NETON:** I'm not saying flimsy, Arjun, but
18 you could interpret this paragraph several
19 different ways. I mean they began thorium
20 processing and fabrication but now there were
21 fairly pilot operations going on. I don't
22 think what we're citing here is inconsistent
23 with the language in this report. We had -- we
24 take no exception to the fact that thorium was
25 being handled and moved about and -- and

1 operated on in those periods but the -- what
2 they say in the last sentence of this paragraph
3 that you cited is that the majority of the
4 thorium production scale operations. And we're
5 saying that production scale operations did not
6 begin until the end of 1950s. But it's not
7 inconsistent with that. And we have cited the
8 RCO report; it was called Atypical Radionuclide
9 Assessment of the Y-12 National Security
10 Complex that references the Wilcox report as
11 well as the Hap West report, that both confirm
12 that the -- that the production scale
13 operations occurred in the end of the 1950s.
14 And that's very consistent with seeing the
15 ramp-up of the fecal sampling program, the
16 ramp-up of the 90,000 hair samples that were
17 taken starting in those years and everything
18 else that we've looked at. I don't know that
19 this is an issue that -- that we can agree
20 with.

21 **MR. GRIFFON:** Arjun or Jim, does -- does the
22 Chem-Risk documents cite any source documents?

23 **DR. NETON:** It makes no reference at all.

24 **DR. MAKHIJANI:** Well, I -- I, you know, I had
25 very little time and I kind of parceled out to

1 the various pieces. Unfortunately Kathy is not
2 on the call. I -- I did collect -- I -- I
3 researched parts of this myself but parts of
4 this part I did not so I have not actually read
5 the Chem-Risk report. And I, you know I trust
6 Jim that there's no reference there but -- so I
7 -- I don't know where to go with this. I mean
8 obviously we had to cite -- we -- we were asked
9 to review the report and so we cited the
10 evidence that was available to us. You know,
11 there's -- I don't believe that we should take
12 a stand on any particular (inaudible) despite
13 contrary information but this is the
14 information that was available and I thought --
15 I was a little surprised as I said to see them
16 compare this to operations comparable to
17 uranium which -- which would indicate
18 significant operations.

19 **MR. GRIFFON:** Jim -- Jim, can I ask this to --
20 to try to resolve this? You mentioned several
21 documents that you had. Are some of those or
22 all of those on the O-drive or --

23 **DR. NETON:** I believe they are. Someone at
24 ORAU can help me with this.

25 **MR. GRIFFON:** I mean maybe if -- it doesn't

1 have to be done on this call but --

2 **DR. NETON:** Sure.

3 **MR. GRIFFON:** -- but maybe you can provide a
4 list of documents that --

5 **DR. NETON:** We can certainly provide the source
6 documents on the O-drive --

7 **MR. GRIFFON:** Yeah.

8 **DR. NETON:** -- that we related that are
9 referenced in our internal dosimetry TBD. I
10 guess that's where I take a little bit of
11 exception where, you know, the -- the report
12 cites ample evidence that we haven't clearly
13 identified it but it doesn't cite the evidence
14 that we cited. And -- And so, you know, they
15 found one exception to -- to the rule which is
16 unreferenced so --

17 **DR. MAKHIJANI:** But we -- Jim, we did not
18 disagree with your finding. What, you know --
19 there was no need to -- there was no need to --
20 to re-cite your references. And one -- one of
21 your references was not yet available to us
22 that was cited in the evaluation report. But
23 we didn't -- we didn't have -- we did look at
24 the references that you cited that were
25 available to us and had no disagreement with --

1 with what you said as regards to thorium
2 processing and all that. We were just
3 supplementing what we found about buildings
4 that you hadn't cited.

5 **DR. NETON:** Right, Arjun. But the TBD which
6 you did review cites that we believe it started
7 in the early '60s and those references are
8 listed there as well, and they were not
9 reviewed at all.

10 **MR. GRIFFON:** Okay. I think that -- that, you
11 know, I mean maybe a follow-up we can make sure
12 that -- that either in the TBD or the -- or,
13 you know, if there's others that -- that those
14 reference are just maybe told SC&A and the
15 Board, you know, the work group what those are,
16 where they are and, you know, you might
17 consider that in this, you know. Again I think
18 John, you're presenting -- and Arjun, you're
19 presenting this as a draft --

20 **DR. MAKHIJANI:** Yeah.

21 **MR. GRIFFON:** -- final draft report so --

22 **DR. MAKHIJANI:** Yeah, well, you know, it was --

23 **MR. GRIFFON:** There's other stuff that you
24 should consider in -- in assessing this issue.
25 I think you should, you know --

1 **DR. NETON:** Right.

2 **DR. MAURO:** In fact, this goes a little bit
3 toward -- this is John Mauro -- my prefatory
4 (ph) remarks in terms of capturing the bigger
5 picture in terms of for example, disclosing the
6 -- the arguments for when major thorium
7 activities may have taken place. However,
8 there is also perhaps some other information
9 such as the Chem-Risk report which would seem
10 to indicate that perhaps some important thorium
11 -- in other words, try to tell the story in a
12 way that is more inclusive as opposed to your
13 zeroing in on those particular delta pieces of
14 information that we've uncovered that probably
15 need to be run to ground. So I think the
16 report, our report, would benefit from that
17 type of discussion.

18 **MS. MUNN:** This is Wanda. Again, I zeroed in
19 on the specific language in the second
20 paragraph on page 6 that says there is clear
21 evidence that NIOSH has not adequately explored
22 the potentials of thorium work. And what I'm
23 hearing from NIOSH is that they have explored
24 that quite extensively. So the -- the
25 language, the way in which this question is

1 presented, raised an issue in my mind.

2 **DR. MAURO:** Wanda, fair enough. I hear you.

3 **MR. GRIFFON:** Yeah. Yeah, I think we have to,
4 you know, yeah. We -- We should look at all
5 the references that they -- that they cited or
6 -- and if there's additional ones that are not
7 cited in the TBD or otherwise I think, you
8 know, that does shed light on this. I think
9 you should --

10 **DR. MAKHIJANI:** We -- We did cite here that
11 the TBD says that processing with thorium began
12 in the '60s. I mean we -- we will go back, you
13 know, at the working group's direction, of
14 course, yeah, and -- and review the other
15 references.

16 **DR. NETON:** I might also add though that we did
17 reference the Chem-Risk report in the site
18 profile and clearly a weight of the evidence in
19 our mind did not include the early '50s based
20 on an evaluation of the data we had at hand.

21 **MR. GRIFFON:** All right.

22 **DR. NETON:** Yeah, Chem-Risk --

23 **MR. GRIFFON:** And I -- Jim, I agree with your
24 point that -- that you could interpret that one
25 paragraph, that last line especially, as a

1 little bit, you know --

2 **DR. NETON:** Right.

3 **MR. GRIFFON:** There's a little, you know, you
4 can interpret it either way, I suppose, you
5 know. But with your other evidence you're
6 saying, you know, you certainly don't think
7 it's inconsistent with what you found in all
8 those other documents so I think --

9 **DR. NETON:** Right.

10 **MR. GRIFFON:** I think we need, you know, SC&A,
11 we need to look at those other source documents
12 and weigh the prepon-- you know, weigh the
13 preponderance of the evidence I guess.

14 **DR. NETON:** Okay.

15 **MR. GRIFFON:** Can I ask one thing, Jim? Did --
16 I know Mel Chew talked about having all this
17 sort of receipt data or ledgers or whatever
18 that showed amounts of thorium coming in,
19 amounts of all those radionuclides. That was
20 probably just gross receipts to the site,
21 right? It didn't talk at all about
22 distribution to any buildings or -- is that
23 true?

24 **DR. NETON:** Mel's on the line.

25 **MR. CHEW:** Yeah, Mike (sic). I -- I'm glad

1 you brought that up because I was going to also
2 show that's another pieces of evidence here.
3 When we go back to the classified ledgers which
4 are still classified it does bring in the
5 receipts of the -- of the thorium that came
6 into Y-12 by year and by period. Now, if you
7 really dive down into the individual receipts
8 there, and we didn't have -- we didn't go there
9 exactly at the time, it also shows that in --
10 for instance that if they move it to another
11 materials accountability area and that
12 certainly could be by building. And I don't
13 want to quote that to be -- be exact. You
14 know, we could trace for instance, you know,
15 ten kilograms or five kilograms went to this
16 particular building, for the R&D work which
17 makes sense. But I only took the larger number
18 that came in for that period just to show the
19 quantity, total quantity that was at Y-12
20 available here. But I said -- I want to again
21 add to it that there is certainly evidence by
22 many of the reports that Jim has been talking
23 about where the processing of -- major
24 processing for the campaign of thorium did
25 occur. Now, thereby, I will also agree there

1 was thorium there. Remember they used some
2 thorium for the co-precipitation for the
3 Cyclotron. That -- That was there. And there
4 -- And there certainly was evidence that there
5 was small quantities of thorium that was used
6 for the R&D development of the processes, you
7 know, in -- in -- in anticipation of the major
8 program. We saw, you know, an air sample that
9 was cited in the health physics reports that
10 talk about that particular building. And then
11 also the -- the slow ramp-up as the R&D
12 activity occur. But I would like to say that
13 in looking at item number two, those particular
14 buildings that were cited in the last sentence,
15 those activities really started even -- even
16 past the 1979 in the FCC period but in the late
17 1959 into rough 1960s and --

18 **MR. GRIFFON:** Are you talking about --

19 **MR. CHEW:** -- that was documented.

20 **MR. GRIFFON:** Are you talking about Alpha 5 and
21 Beta 4. Are those -- 9201-5 and -- and 9204-4?

22 **MR. CHEW:** Yes. All the ones that are listed.

23 **MR. GRIFFON:** Okay.

24 **MR. CHEW:** And then -- And we can mention them
25 for evidence because when the -- when the

1 campaign really started then thousands -- many
2 air samples have showed up and you can just
3 show up -- you can actually go to show where
4 the air sampling started because that's where
5 the operation started, and those air samples
6 are by building.

7 **MR. GRIFFON:** Yeah. I think I probably know
8 the answer to this, Mel, but I'm going to ask
9 anyway. How difficult would it be to walk the
10 thorium data back, the ledger data back to the
11 buildings?

12 **MR. CHEW:** It would probably mean that we have
13 --

14 **MR. GRIFFON:** A time-consuming effort?

15 **MR. CHEW:** Yeah, I mean it would be going -- go
16 back to Y-12 and go back into, pull the ledgers
17 which we know are there and then try to
18 reconstruct in how we would contract -- you
19 know, these are -- at that time they kept the
20 information in -- in the ledgers, you know,
21 according to like numbers or something like
22 that. You would have to find the corresponding
23 -- what MBA it is. I think it could be done
24 but I think it would be time-consuming.

25 **MR. GRIFFON:** Okay. I assumed that.

1 **DR. MAURO:** This is John Mauro. You're going
2 to see a little later on one of the other
3 items, one of our observations is that it
4 doesn't take very much thorium airborne to
5 contribute significantly to bone dose for
6 example, or other organs so -- and this -- it
7 may be related. It sounds to me that there is
8 a continuum of operations going from I guess
9 perhaps R&D to production where thorium is
10 being handled in various buildings. And it
11 sounds like we could run down, through what Mel
12 just described, that process in terms of
13 quantities delivered to various buildings.
14 Now, confounding this problem is the matter
15 that it doesn't take very much thorium airborne
16 to be an important contributor to the dose as
17 compared to uranium. As a result we've got
18 ourselves what we envision as a bit of a
19 dilemma. That is, even if it's a relatively
20 small quantity that might have been handled, it
21 doesn't take very much to be important.

22 **MR. CHEW:** Right, John. I'd like to have a
23 collegial discussion with you. I saw your
24 report on the -- about the contribution
25 attempts of one percent there, of doubling the

1 bone dose here.

2 **DR. MAURO:** Yeah.

3 **MR. CHEW:** You know, you -- you -- you clearly
4 mentioned that it was done by radioactivity and
5 I agree with that.

6 **DR. MAURO:** Yeah.

7 **MR. CHEW:** But you need to look at it from a
8 math standpoint here, okay?

9 **DR. MAURO:** Okay.

10 **MR. CHEW:** In other words, you tell me how much
11 you go back and recalculate if I had a gram of
12 uranium dust in the air how much more thorium I
13 would have to take to -- to add to that
14 contribution from a --

15 **DR. MAURO:** You're absolutely right.

16 **MR. CHEW:** -- from a math standpoint.

17 **DR. MAURO:** And that might be the answer.

18 **MR. CHEW:** Yes, exactly right. Yes. If that's
19 -- I think it's misleading to say -- I
20 shouldn't say that, John. Sorry. Don't take
21 offense at that.

22 **DR. MAURO:** Are you saying I'm misleading?

23 **MR. CHEW:** No, no. Don't take offense at that,
24 John.

25 **DR. NETON:** I'd like to -- I'd like to chime

1 in on this if I may. Mel is absolutely right
2 that, you know, it takes much more mass of
3 thorium than uranium to -- to get the
4 equivalent amount of intake. But that issue
5 notwithstanding I think, you know, in reading
6 SC&A's write-up on this issue, I think that
7 they might have missed the -- the concept here
8 in the sense that we didn't say thorium workers
9 are covered. We said workers who were
10 monitored or should have been monitored for
11 thorium, that is by today's standards. So
12 we're not -- we're not -- the SEC class is not
13 people who physically worked with thorium
14 material. It's people who may have been in
15 buildings that were nearby thorium and because
16 of exactly the reason SC&A cited there could
17 have been bleed-over of thorium into their
18 adjacent work areas and then they would be
19 covered as part of the class. There's a little
20 bit of a difference there I think if you look
21 at it from that perspective.

22 **DR. MAKHIJANI:** Yeah. This is -- This is
23 Arjun, and -- and, you know, this -- this -- I
24 -- I wrote that section so let me take
25 responsibility for that one at least.

1 **DR. NETON:** Okay.

2 **DR. MAKHIJANI:** I couldn't exactly explain the
3 other, all the details of the other one. The -
4 - I -- I did look at the work in the
5 evaluation report and I did think of the
6 possibility that -- that even trace amounts of
7 thorium exposure might be covered. When I
8 looked at the description of the air sampling
9 that involved thorium in the one building I
10 think I cited it. Only one of the 13 air
11 samplers was described as potentially an air
12 sampler for thorium where uranium and thorium
13 would be mixed and so it did raise a question
14 in my mind what -- as to what might happen to
15 uranium workers who were breathing trace
16 amounts of thorium and whose doses you might
17 think that you can calculate because you had
18 air monitoring data for alpha and uranium
19 bioassay data in the same way that say you were
20 -- you were trying to handle the Mallinckrodt
21 information. And actually I didn't conclude
22 that you could or couldn't do it. It was, in
23 the case of uranium workers who -- whom you
24 have bioassay and some air concentration data,
25 I'm not clear as to whether you can or can't -

1 - can't calculate their doses. And the point
2 of -- of raising that question was exactly
3 that. Is it -- Is it -- Are you including
4 the trace exposures in the uranium class -- in
5 the uranium class or in the should have been
6 potentially monitored class?

7 **DR. NETON:** I think we're getting into an issue
8 that the Department of Labor is going to
9 address for us at the Board meeting, which is
10 how do they determine or define who is a member
11 of the proposed class, in particular in light
12 of the fact that the definition says was
13 monitored or should have been monitored. That
14 -- That's not under our purview. You know, we
15 define the class as, you know, what we can and
16 they -- they make the determination. And
17 whether or not they take in, you know, account
18 for trace potentials or not I think we need to
19 hear -- hear them out.

20 **MR. GRIFFON:** Yeah. I -- I -- I think you're
21 -- I think we do need to hear them out, Jim.
22 I think you're right. I -- I mean I -- I've
23 been wondering about this issue myself that,
24 you know, my understanding was that it's up to
25 the Department of Labor to identi-- you know,

1 you define the class and then the Department of
2 Labor identifies claimants who meet the
3 definition of the class. And now, you know, to
4 me this -- the only concern I have is that does
5 the Department of Labor have enough information
6 to actually -- to understand the definition of
7 the class and how the claimants fit into that
8 class, you know, to -- I guess it's a different
9 scenario. You know, Larry, in the last call,
10 brought up the idea of -- of Paducah but really
11 it's -- it was, you know, monitored or should
12 have been monitored for the whole plant site
13 and they might exclude like administrative
14 assistants or something like that and send them
15 for dose reconstruction but I think it's a
16 little -- little harder for the Department of
17 Labor to discern who, within these large, you
18 know, production buildings might have been near
19 or nearby a thorium process when they don't
20 even know where these things took place.

21 **MR. ELLIOTT:** Well, let's just --

22 **MR. GRIFFON:** I don't know if we're giving them
23 enough -- enough information to do the job.
24 And then how do they deal with it, you know.

25 **MR. ELLIOTT:** Yeah, this is Larry Elliott. Let

1 me again make a comment here. We -- We, as
2 part of the process in developing the
3 evaluation report, when we arrive at a
4 recommended definition for the class we vet
5 that with DOL and there's a discussion about
6 does it -- is it suitable and does it give them
7 all that they need and do they have all -- all
8 that they need to determine eligibility of the
9 claim for inclusion in that class. And we
10 certainly had done this on Y-12 in this
11 particular case. Also, I would remark again
12 that this is not new to the Department of
13 Labor. They are -- Pete Turcic will be at the
14 Board meeting next week to provide you with a
15 presentation and examples on how they go about
16 doing this. It's not only just for -- they
17 don't determine just eligibility for a given
18 class but they determine eligibility of a
19 claim. In fact, if you look at like Chapman
20 Valve and Building 55, if you look at the Iowa
21 Army Ammunition Plant and line one, when you
22 get into those kinds of covered facility
23 designations, those have to be clearly and
24 carefully handled, and DOL has developed their
25 experience in that regard.

1 **MR. GRIFFON:** You're right, Larry. We need to
2 hear their presentation, so you're right.

3 **DR. MAURO:** But I think we're in a very
4 interesting grey area that in defining the
5 class effectively what we're saying is while
6 the class of thorium workers, and identifying
7 the buildings, but the implication that the
8 other buildings are, you know, limited to
9 uranium workers and therefore, we can do the
10 dose reconstruction. I think the key to
11 parsing the two and -- and bringing this issue
12 to ground goes to what Mel has just described.
13 I think -- I'm thinking about, you know, how
14 do you -- how do you get to grips with making
15 sure that the -- that the buildings we say we
16 can do the dose reconstructions for are in fact
17 buildings we can do the dose reconstructions
18 for. We need to go to somehow getting a handle
19 on, as Mel mentioned, how much material en
20 masse may have been transported to those
21 buildings at a given point in time. And --
22 And this becomes very much a technical health
23 physics kind of question. Is that enough
24 material to create -- in terms of mass now, to
25 create a situation where you could have

1 picocuries per cubic meter, that could
2 contribute significantly to the inhalation
3 dose. I mean this becomes -- I'm trying to
4 find a way to make sure that the boundary can
5 be found. And I think the -- the key to that
6 boundary lies with the information that Mel
7 just described.

8 **MS. MUNN:** There's also the question of what
9 form the thorium was in at the time. Later in
10 SC&A's recent report here there's a long list
11 of precisely what activities and therefore we -
12 - we know what form thorium was in in the '60s.
13 But in these early days when I believe I heard
14 expert comment from individuals who knew the
15 site well that all thorium use in these early
16 years that we're looking at for the SEC
17 petition revolved around its use as
18 precipitation in the Calutrons. Was that not
19 correct?

20 **MR. CHEW:** No.

21 **MS. MUNN:** Okay.

22 **MR. GRIFFON:** Not all -- Not all of it.

23 **DR. NETON:** In the very early years --

24 **MR. GRIFFON:** Oh, very early years. Okay.

25 **MS MUNN:** Right. Right. And -- And that's

1 what we're looking at here.

2 **MR. GRIFFON:** But not all during the SEC
3 period.

4 **DR. NETON:** No. In the later years, in the '56
5 time frame in particular there is evidence of
6 people working with thorium.

7 **MS. MUNN:** It was starting to ramp up.

8 **DR. NETON:** In the research building, right.

9 **MS. MUNN:** Right. But -- But early on we,
10 perception and perhaps it's my lack of
11 understanding of the Calutron process but my
12 perception was that that would have been a wet
13 process? Yes? No?

14 **DR. NETON:** It was a co-precipitation process;
15 that's correct.

16 **MS. MUNN:** All right. So -- So extreme
17 concern over airborne would seem to be
18 questionable.

19 **MR. GRIFFON:** But see, and I don't -- I don't
20 necessarily disagree with you, Wanda, here.
21 The question I have more is could -- defining
22 that potential, you know. It seems to me that
23 -- that, you know, exposed or could have been
24 exposed; well, now it's in DOL's court and they
25 have to determine, you know, geez, what kind of

1 processes were in these buildings, what kind of
2 -- who is making that determination as to a --
3 a real, significant potential for exposure.

4 **DR. NETON:** I really think, though, we need to
5 hear the Department of Labor out.

6 **MR. GRIFFON:** Yeah, I agree, Jim.

7 **DR. NETON:** Especially in all the areas of how
8 they --

9 **MR. GRIFFON:** No, no, no. I agree and Larry --
10 Larry's right on that point so --

11 **DR. MAKHIJANI:** Yeah. This -- Okay, this is
12 Arjun, just to say why I wrote that part is the
13 -- the evaluation report distinguishes between
14 uranium workers or those who were exposed to
15 uranium and those who should be monitored for
16 thorium. And the point I was raising is the
17 dose reconstructibility for those who worked
18 with uranium and may unknowingly to them or to
19 the people who were involved at that time in
20 monitoring. In that building where they had 13
21 monitors they only defined one as a thorium-
22 uranium mixed area. So unknown to them -- so
23 these workers -- there's a group of workers
24 that would be defined as uranium workers which
25 would fall within the purview of NIOSH's

1 assertion that you can calculate dose. It's of
2 course agreed there's quite a lot of uranium
3 bioassay data. And that's the group of workers
4 that I raised the question about and -- and it
5 may be possible or not possible to calculate
6 their doses. I -- I don't have a judgment
7 about that.

8 **DR. NETON:** Arjun, again the definition is not
9 uranium or thorium worker.

10 **DR. MAKHIJANI:** I agree.

11 **DR. NETON:** I mean, so, you know, you can't
12 presume what we're going to do here.

13 **DR. MAKHIJANI:** Okay.

14 **MR. GRIFFON:** We have to wait on this. Yeah,
15 we -- I think, I mean we're discussing one and
16 two, right? We sort of went on to seven a
17 little bit I think but -- or not seven but
18 section seven.

19 **DR. MAKHIJANI:** Section seven.

20 **MR. GRIFFON:** Yeah. But anyway, is there
21 anything else on one and two that we can
22 resolve now? I mean I think one thing as a
23 follow-up, Jim, it would be good to make sure
24 we have all the references if -- and you can
25 just say if they're as -- as cited in the TBD

1 and -- and maybe just to expedite things if you
2 can kind of point us in the right direction
3 where they are in the O-drive that would be,
4 you know, helpful. And then SC&A should
5 consider them in the final draft of this
6 section on the -- the other buildings, the ones
7 particularly cited in Chem-Risk doc.

8 **DR. MAKHIJANI:** Will do.

9 **MR. GRIFFON:** And then is there anything else
10 on one and two? I'm looking at the time, too,
11 at 12:00 o'clock here. I'd like to get through
12 most of this before lunch, take -- taking lunch
13 at 1:00 again I think. Is there any more on
14 that -- those two sections or any --

15 **DR. NETON:** Not from our end, no.

16 **MR. GRIFFON:** Okay.

17 **DR. NETON:** Okay.

18 **MR. GRIFFON:** And the big thing I think we're
19 going to have to wait for is DOL's, you know --
20 we need to hear what DOL has to say on that so
21 okay.

22 **DR. NETON:** I guess -- I guess I do have one
23 more thing just -- just for completeness is
24 there was an issue raised about the ponds and
25 the exposure out there and we have to track

1 this down but I -- I've got to believe that I
2 haven't been able to definitively define this
3 this morning but those ponds were -- were being
4 dredged after the SEC period. It makes no
5 sense that they would be dredging ponds for
6 thorium when they had such limited use and
7 there was huge concentrations of thorium that
8 they were finding in the bottoms. You know,
9 while the material was being discharged in the
10 pond we don't feel there's any credible
11 exposure scenario to the workers.

12 **MR. GRIFFON:** Okay.

13 **MR. CHEW:** Jim and Mark. This is Mel. I'd
14 like to just make one more comment to John
15 Mauro. John?

16 **DR. MAURO:** Yeah.

17 **MR. CHEW:** I think -- and I appreciate -- I
18 appreciate your expertise and I did a backup
19 (unintelligible) calculation here. It would
20 take about a hundred grams of thorium to -- in
21 addition to one gram of uranium to equal the
22 amount of radioactivity that would be present
23 and so -- so please look at it from a math
24 standpoint to make -- to come to your
25 conclusion, okay?

1 **DR. MAURO:** Yeah.

2 **DR. MAKHIJANI:** Did you use enriched uranium or
3 natural uranium or DU?

4 **MR. CHEW:** I think I used nata-- probably just
5 the -- what the concentration in natural
6 uranium at that particular time. And this is
7 just a rough calculation here.

8 **DR. MAKHIJANI:** It would be about a factor of
9 six or seven if you take the half-lives. When
10 you throw in thorium 228 it's about a factor of
11 five, not a factor of a hundred.

12 **MR. GRIFFON:** Anyway, you can -- you can
13 consider that in your final draft, right?

14 **DR. MAKHIJANI:** Sure.

15 **MR. GRIFFON:** On a math basis, yeah.

16 **DR. MAKHIJANI:** Sure.

17 **MR. GRIFFON:** All right. Thanks, Mel. Go
18 ahead, Arjun. You're going to go on to number
19 three?

20 **DR. MAKHIJANI:** Number three.

21 **MR. GRIFFON:** Yeah.

22 **DR. MAKHIJANI:** We thought NIOSH had done a lot
23 of work on the internal dose verification of
24 the CER, of the verification -- validation of
25 the CER database on the internal dose point of

1 view from 1952 onwards. There had been a
2 suggestion in the working group meetings that
3 there were some raw data from the SEC period to
4 which it could be compared and I don't know
5 what happened, what was the status of that.
6 There was some raw data comparison from -- from
7 the 1970s. I'm just looking at my summary if I
8 remember correctly, and I think that there is a
9 lot more confidence in -- in the -- in the
10 database from 1952 onward but we thought there
11 were still some gaps. 1950 and '51 served
12 different issues in the sense that there's --
13 there's not been an effort that we saw for
14 validation in those two years and we had a
15 concern about those two years particularly
16 because in the external database there were a
17 lot of problems. Didn't find a parallel
18 problem of zeros for the record in -- in the --
19 in the internal dose database but did think
20 that specific -- specific verification of -- of
21 those two years to some extent or some -- some
22 part, some piece of -- modest piece of that
23 should -- should be done.

24 **DR. NETON:** This is Jim. I'm a little confused
25 because -- not confused -- What SC&A is now

1 asking for us to validate '50 and '51 when in
2 fact we have not been able to find any raw data
3 to my recollection in the -- in the SEC period.
4 You know, we had to rely on secondary, you
5 know, analyses of -- of looking at -- at data
6 outside the period. I think we need to keep in
7 mind a couple things here. One is that at the
8 outset we determined that the CER database or
9 we -- it was our belief and we were provided
10 some at least secondary evidence to the fact
11 that the CER database was accepted by the
12 Department of Energy as being the data of
13 record for exposures of workers. And in that
14 sample a lot of work went into making sure the
15 data accurately represented what, you know,
16 what the samples, you know, measured. So in
17 that sense, you know, we believe that we've got
18 -- we're a little bit above the bar here
19 because it has been validated to a certain
20 extent. But at least I feel we were not able
21 to establish, you know, show the pure
22 documentation but at some point one needs to --
23 to accept it as it is for these dose
24 reconstructions. We tried to validate it
25 against various pieces of information, the

1 delta view data, punch cards and that sort of
2 thing. And in fact in some cases as SC&A
3 points out we were successful in demonstrating
4 that the data are reasonable. However, there
5 are discrepancies. I would point out that the
6 discrepancies that we've observed both in the
7 internal and the external areas have
8 consistently provided data that would -- that
9 would bias the results low, in my opinion
10 anyway, especially if you're -- if you're using
11 them for developing co-worker data. In other
12 words, the data in the '51 time period for
13 external with a significant portion of zero
14 results, you know, that sort of thing. The
15 delta view database that had uranium had lower
16 results than what the averages that were for
17 the CER database. So given that, we believe
18 the data that are -- are present in the -- in
19 the CER database are reasonable to use for dose
20 reconstructions and reasonable to use for co-
21 worker development. We see no reason, and SC&A
22 asserts, that the data in '50 and '51 are
23 invalid in the CER database. I don't think
24 anyone has come to that conclusion.

25 **DR. MAKHIJANI:** I don't believe we said that

1 about the internal dose. We did say that about
2 the external dose and I -- and I thought that
3 you agreed with us that there was some kind of
4 problem that you couldn't identify. But that -
5 - that's a separate -- the term invalid was not
6 applied I believe either in the fine print or
7 in the summary in regard to the internal dose.

8 **DR. NETON:** Well, I think there are statements
9 made though, Arjun, that says that we could not
10 use them for dose reconstructions for --

11 **DR. MAKHIJANI:** Well --

12 **DR. NETON:** -- or by inference because of
13 issues with the external you -- you have
14 equated that to issues with the internal.

15 **DR. MAKHIJANI:** Well --

16 **DR. NETON:** That's what it says.

17 **DR. MAKHIJANI:** Well, yeah, we did feel that
18 the 1950 and '51 -- I mean if you take -- if
19 you take the statement that the DOE
20 certification of this as the dose -- as the
21 database of record at face value, then you have
22 to take that statement in its entirety both for
23 internal and external and it is very clear that
24 for 1950 and 1951 the -- the CER database is
25 wrong because it contains all zeros contrary to

1 the information in the raw data --

2 **DR. NETON:** Well you have --

3 **DR. MAKHIJANI:** -- for external dose. Please.

4 The -- The -- The -- It also contains

5 information that at least to us felt that when

6 shallow and penetrating dose did not seem to

7 make scientific sense in that neutron seemed to

8 be included in shallow dose but not in

9 penetrating dose. So because you're trusting

10 the DOE statement in regard to the whole

11 database, not for internal or external, I -- I

12 -- I think that some verification for -- for

13 the years 1950 and '51 is needed, especially

14 because as discussed in another section, the

15 types of work done in three buildings in those

16 years were different and were terminated in

17 1951. So you need the data from those years to

18 reconstruct for dose -- for those workers.

19 **DR. NETON:** Are you talking about the internal
20 exposures?

21 **DR. MAKHIJANI:** Internal and -- and external.

22 **DR. NETON:** Well, let's -- let's --

23 **DR. MAKHIJANI:** Unless --

24 **DR. NETON:** I think George wanted to say
25 something.

1 **MR. KERR:** Yeah, I -- I want to say something
2 because there's a misstatement up here in the
3 front as well as back on page 11. And the fact
4 is that in the early years the beta doses were
5 more concern than the gamma doses.

6 **DR. MAKHIJANI:** Okay.

7 **MR. KERR:** And if you look back at '50 and '51
8 there are beta dose data that are not zeros.
9 There are significant beta dose exposures in
10 '50 and '51 among employees. In '50 there is
11 one gamma dose in -- or '50 there's one person
12 that has a recorded gamma dose that's not zero.
13 In '51 there are -- there are no recorded. But
14 keep in mind there is beta dose data in the CER
15 database.

16 **DR. MAKHIJANI:** I don't believe -- I believe
17 that gamma and beta in the CER database are all
18 zeroing.

19 **MR. KERR:** No --

20 **DR. MAKHIJANI:** Maybe I'm --

21 **MR. KERR:** -- no, no. That's wrong. That's
22 wrong on page 11.

23 **DR. MAKHIJANI:** Well --

24 **MR. GRIFFON:** Okay. Can I -- Can I ask one
25 thing? Can we go back to number three and --

1 and focus on the internal just for one second
2 and then we'll do more on -- we'll come back to
3 the external.

4 **MR. KERR:** Okay.

5 **MR. GRIFFON:** I'm sorry. I just -- Jim, can
6 you tell me just -- just as a summary specific
7 items that you did? I mean I'm trying to think
8 of -- of the various items that you did to
9 check the reliability. We've got the letter,
10 of course, that's your -- that's your
11 overriding thing here. But then you have the
12 HP reports percentile data mainly.

13 **DR. NETON:** Right.

14 **MR. GRIFFON:** And then you have if I'm not
15 mistaken 8 -- 8 or so or 8 or 20 -- I don't
16 know if --

17 **DR. NETON:** There were 20 -- I think there were
18 20 workers who we found that had reference to
19 bioassay results in the health physics report
20 and they were cross-walked to the database in -
21 -

22 **MR. GRIFFON:** Twenty individuals.

23 **DR. NETON:** -- virtual 100 percent agreement
24 with the exception of one bioassay.

25 **MR. GRIFFON:** Right. Twenty individuals so

1 from the HP report again.

2 **DR. NETON:** Correct.

3 **MR. GRIFFON:** And then you have the -- the --
4 the --

5 **DR. NETON:** The punch cards.

6 **MR. GRIFFON:** -- so urine cards, right?

7 **DR. NETON:** Right, the punch cards which were
8 in a later time period where the samples
9 matched up. We weren't able to reconstruct the
10 bioassay results very well because we didn't
11 have all the background.

12 **MR. GRIFFON:** Right.

13 **DR. NETON:** Now --

14 **MR. GRIFFON:** Now, can -- can you tell me
15 'cause I -- I remember bringing up this
16 question and I -- I don't think it was a
17 follow-up action but you were going to -- or --
18 or there was a question as to whether you had -
19 - no, you didn't have punch cards from the --
20 from the time period in question, right?

21 **DR. NETON:** That's correct.

22 **MR. GRIFFON:** Okay. So that was --

23 **DR. NETON:** So we -- we really were not able to
24 establish any -- any direct validation or
25 reliability check of -- of the data in the SEC

1 period. But -- But getting back to the 1950
2 and '51 era, you know, I think there's a
3 misunderstanding -- we'll get into this later
4 in one of the questions -- about how NIOSH has
5 modeled the internal exposures in 1949 and '50.
6 We have no bioassay data in that period. But
7 what we did is we didn't assume that the
8 bioassay would have been excreted to the same
9 level as 1951 and '52. We took the excretion
10 in 1952 and said, what could these workers have
11 possibly inhaled in '49, '50 and early '51 and
12 still be excreting what they are today in 1952.
13 That's a very different analysis. In other
14 words, we used the workers as long term
15 integrators of their exposure in the earlier
16 years. And we believe that sufficiently
17 brackets the exposures in those areas and
18 actually does a fairly nice job at it. So we
19 did not assume that they were excreting the
20 same amount in their urine. We used them as
21 actual predictors to back calculate what the
22 maximal exposures could have been from a
23 chronic exposure scenario.

24 **DR. MAURO:** Jim, that's -- this is John.
25 That's very helpful.

1 **MR. GRIFFON:** That's a good clarification, yes.

2 **DR. MAURO:** (Unintelligible) strategy.

3 **DR. NETON:** Yeah, I felt --

4 **DR. MAURO:** Perhaps I should have known that
5 but I didn't.

6 **DR. NETON:** This will answer a couple questions
7 I think where SC&A was -- was -- had some
8 serious issues with those time periods.

9 **DR. MAURO:** So in effect what you're saying --
10 what you're effectively saying is what you're
11 seeing in the urine of workers when you do have
12 the bioassay data -- I'm looking at your table
13 3 now, for example. In table 3 you have --
14 well, I'm looking at table 3 in our report on
15 page 15. What I'm hearing you saying is for
16 urinalysis we have 166 employees measured and
17 you're seeing certain concentrations. The
18 assumption is being made that what you're
19 observing there in those workers is the result
20 of chronic intake, as an integrated intake that
21 the workers experienced prior to that date.

22 **MS. MUNN:** Is it my phone or is John fading
23 away?

24 **MR. GRIFFON:** Prior to that date maybe all the
25 way back to 1950 is what you're saying, right,

1 Jim? Depending on the workers' circumstance I
2 guess. Hello?

3 **DR. NETON:** Prior to that date and all the way
4 back to 1948.

5 **MR. GRIFFON:** Oh, '48. Yeah, yeah.

6 **DR. NETON:** Yeah, we're saying --

7 **MR. GRIFFON:** Right.

8 **DR. NETON:** We're saying --

9 **MR. GRIFFON:** Right.

10 **DR. NETON:** -- what could these workers have
11 inhaled on a chronic basis and be excreting
12 what we're measuring in that time frame in the
13 early '50s.

14 **MR. GRIFFON:** Okay.

15 **DR. NETON:** And so that -- that we believe --

16 **MR. GRIFFON:** That --

17 **DR. NETON:** -- provides a bounding analysis of
18 what the exposures were in those years.

19 **MR. GRIFFON:** That wasn't clear to me so that's
20 helpful, yeah.

21 **DR. MAURO:** Excuse me.

22 **MR. GRIFFON:** It should have been but it
23 wasn't.

24 **DR. MAURO:** Yes, that's -- that's very helpful.

25 **DR. NETON:** I have to admit that the TIB -- I

1 think it's in there but, you know, it's those
2 dosimeters sometimes use shortcut language and
3 it's not obvious I don't think.

4 **MR. GRIFFON:** Okay. Well, that's helpful. And
5 Jim, can you tell me one other clarifying point
6 here?

7 **DR. NETON:** Sure.

8 **MR. GRIFFON:** And without having to look it up?
9 In your evaluation report the HP reports that
10 you looked at the percentiles for, was it --
11 was it multiple years? Was it one year? What
12 --

13 **DR. NETON:** I -- I think it was only for one
14 year. Bill Tankersley did that analysis.
15 Bill, could you --

16 **MR. GRIFFON:** It was like '53, wasn't it?

17 **MR. TANKERSLEY:** Yes, it was for one year, and
18 Mark, it was for 1952 for all 26 weeks I think,
19 the latter part of '52.

20 **DR. NETON:** So if it was only one year I mean I
21 -- I fully admit that we've had limited success
22 in -- in demonstrating the reliability of the
23 data, you know, particularly in the SEC period.
24 But again I went back and looked at our -- our
25 discussion, Mark, that we had back in November

1 of last year about this exact issue and in the
2 -- in re-reading the transcripts of that
3 meeting it was clear to me that we were
4 concerned more with -- with -- with reliability
5 when there were issues raised particularly by
6 petitioners about, you know, certain activities
7 that may have occurred. And secondly, if these
8 were secondary databases such as CEDR data
9 which were -- were summary data obtained from
10 epidemiologic studies. And so here we have
11 what we think is about as close as we're going
12 to get to a -- a -- a very good quality
13 database. And the fact is, and I've raised
14 this issue back in November, that for 50 years
15 later it's very difficult for us to obtain raw
16 data to validate all these individual points.
17 And the working group and the Board are going
18 to have to decide what level of -- of proof
19 they're -- they're comfortable with.

20 **MR. GRIFFON:** Well, I -- I also think, and I'll
21 -- I'll offer this up as -- as a -- maybe a bit
22 more to support the reliability case, that
23 there's other HP reports that have the same
24 percentile data and I think I've done back --
25 and I admit back of the envelope sort of

1 calculations on -- on those other periods and I
2 think they would bolster your argument so --
3 But I -- But I think just to present one in
4 the evaluation, you know, at least -- at least
5 you might have that in your -- in your hip
6 pocket to -- to better defend. And it would
7 also, you know, say that because we're, you
8 know -- I think that is probably one of the
9 most powerful arguments because that's --
10 that's the summary data for that whole half a
11 year. I think it's about half a year on most
12 of the reports.

13 **DR. NETON:** Right.

14 **MR. GRIFFON:** And it -- It virtually agrees,
15 you know, pretty dead on with the numbers in
16 the database.

17 **MR. TANKERSLEY:** Excuse me.

18 **MR. GRIFFON:** But just to present one half year
19 of it, I think, you know, makes a less powerful
20 argument.

21 **MR. TANKERSLEY:** This is Bill Tankersley.
22 Mark, I was just about to add, and I appreciate
23 your comment there. It sounded like an
24 inference a moment ago was that this was the
25 only analysis that -- that we found to match.

1 That -- That's not the case. It's the only
2 one we tried, and the reason why is because it
3 takes quite a bit of work to extract the
4 percentiles from their graphs and then to
5 calculate the percentiles, you know, by week
6 for these things among all of the other things
7 that, you know, the team is doing.

8 **MR. GRIFFON:** Yeah. No, I see --

9 **MR. TANKERSLEY:** All other -- Not in every one
10 of the reports, but there are other of those
11 graphs that could be done. I'm not in a
12 position to say what the match would be. It
13 sounds like you've done the matching.

14 **MR. GRIFFON:** Well, and again, I -- I did a
15 quick and dirty but I didn't have to put it in
16 the report either so -- so I understand you'd
17 have to be a little more precise and it takes a
18 little more time, yeah.

19 **DR. NETON:** Yeah, I hear what --

20 **MR. GRIFFON:** But I think it would bolster your
21 argument and that's the reason I bring it up is
22 that what's before the Board is an evaluation
23 report with one, you know, where that was done
24 through one half a year. And it suggests to,
25 you know, all my colleagues on the Board and

1 the public that, you know, that's the piece of
2 evidence you had so I don't know. I think that
3 might be worth pursuing if it wasn't going to
4 be a tremendous amount of person hours, you
5 know.

6 **DR. NETON:** Appreciate that, Mark, and we'll --
7 we'll take that to heart and do the best we can
8 prior to the Board meeting.

9 **DR. MAKHIJANI:** Mark, this is Arjun.

10 **MR. GRIFFON:** Yeah.

11 **DR. MAKHIJANI:** Guide -- Guide me here a
12 little bit. And guide the SC&A team. We took
13 our cue from the Board's decision on criteria
14 for -- for approaching SEC evaluations in
15 preparing our review. But that's the one --
16 that's the one Board approved document that we
17 have. We don't have approved procedures but we
18 do have that.

19 **MR. GRIFFON:** Yeah, I think that's appropriate.
20 I think we agreed to that.

21 **DR. MAKHIJANI:** And -- And data validation so
22 it's -- so data validation and -- and
23 representativeness -- those are separate issues
24 -- are very prominent and central in that
25 document and -- and are kind of limited to what

1 you can show. And I think -- And I think I --
2 I -- I don't disagree with Jim in that a lot of
3 effort has been made and I think of -- to the -
4 - to the extent that the validation has been
5 done from '52 onward there appear to be matches
6 and so on. But we did, if you take your cue
7 from the Board's document then you do have to -
8 - then you do, in our review, do have to
9 reflect that the validation was partial. If
10 you don't want us to do that, of course, then -
11 - then that -- that -- that we will -- it will
12 be at your pleasure.

13 **MR. GRIFFON:** No, I -- I think those are our
14 guidelines and -- and that's what I'm saying,
15 you know, NIOSH has -- has -- has pulled a lot
16 of different information. This is my -- my
17 point of view anyway. NIOSH has pulled a lot
18 of information. Came up short in some cases as
19 Jim just said but -- but, you know, they have a
20 fairly strong case, you know, for the internal
21 section especially, and I think they put that
22 forward. I think that you, Arjun -- I think
23 SC&A appropriately should say, you know, that
24 this is what it was. Is it, you know, and --
25 and you know, maybe to be careful with

1 adjectives but describe it as -- as what it is,
2 as what you per--, you know --

3 **DR. MAKHIJANI:** Yeah.

4 **MR. GRIFFON:** -- perceive it to be. And, you
5 know, that it clearly wasn't, you know -- there
6 -- there wasn't data, you know. There just
7 wasn't raw data available for every time period
8 for every, you know -- So I think present it
9 as is and then the Board has to weigh the
10 evidence I guess. You know, okay, it is
11 partial but there are powerful arguments made
12 here, you know. So I think we have to weigh
13 that evidence so -- but I -- I don't think you
14 addressed, you know, from our policy document I
15 think you approached it correctly. Other
16 people may disagree with me. I don't know.

17 (No response)

18 **MR. GRIFFON:** I guess not.

19 **DR. MAKHIJANI:** Thank you.

20 **MS. MUNN:** This is Wanda. We have to at some
21 juncture come to grips with the issue revolving
22 around the original wording of our charter
23 which is more or less the definition of how
24 much is enough. There's no question we're
25 never going to have perfect information. Since

1 we're not going to have perfect information the
2 issue is how much information can be considered
3 relative to the overall issue so that we can
4 define an acceptable limit. We're not going to
5 be able to define acceptable limits in each
6 case. I don't believe that's possible. So
7 we're back to the same question, how much is
8 enough? And you're right.

9 **MR. GRIFFON:** Right.

10 **MS. MUNN:** I believe this is a question that
11 the Board has to face every time we have an SEC
12 and this one is probably more difficult than
13 some other decisions the Board must make.

14 **MR. GRIFFON:** Yeah, you're right, Wanda. And -
15 - And, yeah, I think we can -- we're probably
16 only going to be able to take the policies so
17 far but then -- then there -- there are going
18 to be sort of site-specific things that have to
19 weigh into that definition of how much is
20 enough. But yeah, you're -- I don't disagree
21 with that at all. So can we move on to number
22 four? Have we -- Arjun or Jim?

23 **DR. MAKHIJANI:** Sure.

24 **MR. GRIFFON:** I think we touched on this a
25 little. I'm sorry to cut you off, George. I -

1 - I just was trying to keep going item by
2 item.

3 **MR. KERR:** That -- that's really -- that's
4 fine. I just wanted to clarify the fact that
5 there was some dose -- beta dose in -- in '50
6 and '51.

7 **DR. MAKHIJANI:** Yeah, we -- We looked at the
8 external dose, the database and the internal
9 one. I at least -- I -- I at least did not
10 find any non-zero entries, and there may be
11 one. I can't say that I looked at every single
12 one but I did not find any non-zero entries in
13 -- in the gamma or beta entries in the CER
14 database.

15 **MR. KERR:** Well, I --

16 **DR. MAKHIJANI:** There are non-zero entries in
17 several ones, all -- all of which happened to
18 be for 1951 so I don't know about 1950 in the
19 delta view database that some of which I put in
20 a table. There are also non-zero beta doses in
21 the delta view database which -- which I did
22 not compile but I just mentioned them --
23 mentioned them in the text. And -- And so
24 there -- and I -- and I believe in the -- in
25 the communication that NIOSH sent us this week

1 NIOSH did acknowledge that there are these
2 zeros and -- and had some kind of preliminary
3 idea of where they might be coming from
4 although they said the origin of these zeros is
5 unknown, and that maybe that maybe they're due
6 to some computer glitch. That -- That
7 particular thing did -- did -- we discussed it
8 and that -- that raises the bigger question,
9 because that was a little bit of a surprise I
10 have to say in that the -- the later years'
11 validation seemed -- seemed to work from '52
12 onward to the extent for the various things.
13 There are some differences and as NIOSH has
14 pointed out, most of those differences appear
15 to be claimant favorable. I think I cited that
16 on page 13 or someplace in -- in the details.
17 But -- But this question of why those zeros
18 were there in '50 or '51 we -- we didn't have
19 any -- any idea where they came from but now
20 NIOSH said they might be due to a software
21 problem and that does raise a question of what
22 -- where else that software problem might show
23 up and what the DOE did to -- to -- to ensure
24 that -- that these problems were not occurring
25 in a widespread way in the -- in the database.

1 To the extent that the evaluation was done for
2 '53 mostly it -- it did appear to be okay.

3 **DR. NETON:** The software problem was related to
4 delta view database though, not --

5 **MR. KERR:** I don't think it was -- I also got
6 printouts from the Y-12 database and -- and
7 knowing that the Y-12 database is what CER has,
8 I asked Y-12 to look for me back in the early
9 years. And if you look in both of them there
10 clearly is beta dose data for '50 and '51 in
11 both the printouts from the CER and the Y-12
12 database.

13 **MR. GRIFFON:** Well, when you said, George, for
14 --

15 **MR. TANKERSLEY:** -- Tankersley -- and George is
16 absolutely right. There are positive data from
17 1948, 1949, 1950, 1951 and onward. And --

18 **DR. MAKHIJANI:** Bill, in the CER database?

19 **MR. TANKERSLEY:** (Inaudible) have not looked at
20 the correct fields.

21 **MR. GRIFFON:** Bill or George, I'm just -- I'm
22 just doing this right now and -- and I want a
23 clarification.

24 **DR. MAKHIJANI:** I'm going to go off, too,
25 because maybe --

1 **MR. GRIFFON:** You're looking at --

2 **DR. MAKHIJANI:** -- (inaudible) and I looked at
3 the wrong one.

4 **MR. GRIFFON:** Well, you're looking at -- at the
5 S-millirem field?

6 **MR. TANKERSLEY:** The skin and the penetrating,
7 that's exactly right.

8 **MR. GRIFFON:** Okay. Because I have '50,
9 there's no penetrating. There is skin but
10 there's no beta -- beta gamma fields is all
11 zeros.

12 **MR. TANKERSLEY:** That's correct as George said.

13 **MR. GRIFFON:** Okay.

14 **DR. MAKHIJANI:** No, I have -- believe what I
15 said is that all of the beta gamma fields are
16 zero. That's what is in our report. And among
17 the other two fields, the S-millirem and P-
18 millirem I did not observe any non-zeros in the
19 P-millirem but I did observe some in the S-
20 millirem.

21 **MR. GRIFFON:** That's correct.

22 **DR. MAKHIJANI:** Since the gamma and beta are
23 all zero I presume that the residual external
24 dose would be neutron and so I -- we did not
25 know how to interpret the non-zero in the S-

1 millirem button. No non-zero readings in the
2 P-millirem. That's sort of the substance of
3 the comment there.

4 **MR. GRIFFON:** Maybe we just need a clar -- can
5 -- George or Bill, can you clarify that?

6 **MR. TANKERSLEY:** Through the years people
7 reported the -- the doses in those two sets of
8 fields differently and I do not know why that
9 is. And to understand the data in that -- in --
10 -- in that set, which again is the Y-12 set;
11 everyone continues to refer to it as the CER
12 database.

13 **MR. GRIFFON:** Right.

14 **MR. TANKERSLEY:** It's simply a copy, of course.
15 You have to -- You have to get into it deeper
16 than -- than perhaps some have. But there are
17 definitely positive values in -- in 1950 and
18 1951 and then, of course, I'm assuming everyone
19 is pretty comfortable with the 11,000-plus
20 records, you know, in '48 and '49, PIC data and
21 -- and film badge data.

22 The -- The -- The records in the '50 and '51
23 are not from the neutron data.

24 **MR. GRIFFON:** So -- So it's sort of unknown
25 why the beta fields would be zero and the S-

1 millirem would have positive value.

2 **MR. KERR:** Well, I guess what you've got to do
3 is -- is for some of those years you also got
4 to go look at the -- sometimes it was the --
5 the penetrating and then -- in the skin. And
6 you can go to those and you can clearly
7 separate those doses out. Now, you know,
8 that's where in the early years, you know, I
9 guess the -- as a matter of fact what I do have
10 from Y-12 is slightly different than what I got
11 from CER. But from Y-12 for each of the years
12 starting back in 1950 up through I think 2003
13 or '04 gives me penetrating, they give me the
14 skin and they give me the neutron. And from
15 those three -- those items I can go back
16 through and separate out such things as -- as
17 the gammas and the betas and the neutrons.

18 **DR. MAKHIJANI:** I -- I have this database open
19 before me.

20 **MR. GRIFFON:** Yeah, me, too.

21 **DR. MAKHIJANI:** And the file, table Y-12, PBL
22 Y-12, External 1950 to 1957. Every -- Every
23 single entry in the beta and gamma dose --
24 well, there's one I believe in the gamma, not
25 in the beta that I just found that is non-zero.

1 **MR. KERR:** Okay. What about your skin and your
2 penetrating?

3 **DR. MAKHIJANI:** Well, the -- the --

4 **MR. GRIFFON:** Nothing for penetrating.

5 **DR. MAKHIJANI:** There are a number of entries
6 as I said in the report in the skin that are
7 non-zero but no entries in the penetrating that
8 are non-zero. All zeros. And if all of the
9 entries in beta and gamma are zero then one
10 must presume that the only remaining source of
11 dose would be neutron that would appear in the
12 other two fields.

13 **MR. KERR:** I think the problem early on then is
14 the way that the doses were recorded.

15 **DR. NETON:** Yeah, Arjun, I think that, you know
16 -- I think you're --

17 **MR. KERR:** That's the problem right there --

18 **DR. NETON:** -- interpreting those fields --

19 **MR. KERR:** -- is the way they were recorded.
20 They just recorded some as skin and some as
21 penetrating in the earlier years.

22 **DR. NETON:** Right. Rather than fill in the
23 beta gamma fields independently --

24 **MR. KERR:** Yeah.

25 **DR. NETON:** -- they just report skin and deep

1 which is a fairly common notation for doing
2 dosimetry.

3 **MR. KERR:** And it's fairly common at a lot of
4 sites just for getting your doses that way.

5 **DR. MAKHIJANI:** Shouldn't you have a non-zero
6 badge reading to enter something in the other
7 two fields?

8 **MR. KERR:** Well, no, it was originally how it
9 was --

10 **DR. MAKHIJANI:** (Inaudible) was a zero.

11 **MR. KERR:** It was originally how it was
12 recorded probably on the cards that went into
13 the database.

14 **DR. NETON:** Right. In other words --

15 **MR. KERR:** It was recorded as skin unless they
16 put it in the skin column. If it -- If it was
17 recorded in gamma beta they subbed them to get
18 the skin dose.

19 **DR. MAKHIJANI:** We -- We were asked to
20 evaluate what we saw in the CER database and
21 whether it was validated or not. The -- We --
22 We did find non-zero beta and gamma entries in
23 the -- in the beta and gamma column. In those
24 explicit columns in the delta view database and
25 the record numbers for that are cited in the

1 report. All of the corresponding values for --
2 for those times in the -- the database are zero
3 and -- and so -- and -- and NIOSH then did send
4 us a document saying that the database does not
5 -- the CER database for those years does not
6 appear to be correct and the origin of these
7 zeros is unknown.

8 **MR. GRIFFON:** Yeah. I -- There's two issues
9 going on here, too, Arjun, right? The delta
10 view compared to the database --

11 **MR. KERR:** Yeah.

12 **MR. GRIFFON:** -- versus just the database
13 itself?

14 **MR. KERR:** Yeah. Yeah, I agree that their --
15 their data in -- in the delta view that does
16 not appear to be in the Y-12 database but I'm
17 saying that the reason you're seeing zero in
18 some of those columns were the things -- the
19 way things were recorded back in the early
20 years.

21 **MR. GRIFFON:** So in -- in '53 it changed,
22 George, is what --

23 **MR. KERR:** Well --

24 **MR. GRIFFON:** I mean obviously. I'm looking at
25 the database and in '53 you have beta -- I got

1 one example here. Beta is 188; gamma 4901, S-
2 millirem is 5089 which is the sum of those two.

3 **MR. KERR:** Right.

4 **MR. GRIFFON:** And then P-millirem is 180.

5 **MR. KERR:** And I think in some of the earlier
6 years they may have already summed them and had
7 no way to split them back out so, you know,
8 they may have just put them in as skin dose.

9 **MR. GRIFFON:** And then in this particular case
10 P-millirem is 188 which it probably should be
11 4901 but -- but that's another issue I guess.

12 **DR. NETON:** Yeah, see, I -- I think what's
13 clear is that there's the -- the CER database
14 had to accommodate all ways of reporting so
15 there are fields there that may not have been
16 used in the early years which is what George is
17 trying to say.

18 **MR. GRIFFON:** Right, right, right. No, I -- I
19 gather that, Jim. Now, here's another
20 question. When you did your models did you do
21 the -- which fields did you use? Did you use
22 certain ones throughout or did you --

23 **MR. KERR:** Oh, we -- We -- We used the beta
24 gammas fields when we did our models.

25 **MR. GRIFFON:** Okay.

1 **DR. NETON:** But that was only after a certain
2 year. We didn't use any of the --

3 **MR. GRIFFON:** That's right.

4 **DR. NETON:** '51 data for the model.

5 **MR. KERR:** Yeah.

6 **MR. GRIFFON:** Okay. Okay.

7 **DR. NETON:** See, that's the other point here is
8 that the co-worker model is not based on these
9 data at all. The only relevance of this issue
10 I think is if we received -- if we have a
11 claimant who has monitoring data in '50 and '51
12 then -- and then maybe Arjun has a point. But
13 I think there's a strong argument to be made
14 why there are zeros in the beta gamma field in
15 the early years based on changes in reporting
16 practices when the database covers all years.

17 **MR. GRIFFON:** But that -- that's just -- that's
18 just speculation, Jim.

19 **DR. NETON:** Well, I --

20 **MR. GRIFFON:** You don't have evidence of that.
21 You're just saying that it could have happened.

22 **DR. NETON:** I don't, but it certainly makes
23 sense to me.

24 **MR. GRIFFON:** Yeah, I don't disagree. It's an
25 argument. But I don't think you have -- run

1 that data --

2 **DR. NETON:** I think it's just as speculative,
3 Mark, to say that -- that zeros there imply
4 that the beta -- the skin and deep dose are
5 invalid.

6 **DR. MAKHIJANI:** Well, this -- This is --

7 **MR. GRIFFON:** No, I'm not trying to imply that
8 -- I think part of the issue for me was '50/'51
9 is that you have S-millirem data and you have
10 no penetrating data at all and no gamma or
11 beta.

12 **DR. NETON:** Well, I think that's not
13 inconsistent with low level beta exposures --

14 **DR. MAKHIJANI:** It's --

15 **DR. NETON:** Or below the detection limit of the
16 badge. I mean hopefully they would --

17 **MR. GRIFFON:** And they just weren't recorded in
18 the beta field is your argument?

19 **DR. NETON:** Yeah, sure.

20 **MR. GRIFFON :** You know, that's a possibility.

21 **MR. KERR:** Yeah, the problem is is back in the
22 early days they were changing badges every
23 week. And you can measure beta sometimes, I
24 mean if your LD -- your lower limit of
25 detection is -- is 30 you could probably

1 measure betas but on your gamma dose it may
2 show up as zero.

3 **DR. NETON:** Right. But you --

4 **MR. KERR:** And -- And I mean, you know, the
5 beta exposures were really what was concern in
6 the early days. And with the -- with the
7 people in -- that working with in -- in the
8 foundries in natural and depleted uranium. So
9 I'm not surprised that you see all these zeros
10 for gammas.

11 **DR. MAKHIJANI:** This is Arjun.

12 **DR. NETON:** It's not about the -- the ten to
13 one --

14 **DR. MAKHIJANI:** I believe there are two
15 separate issues here. The delta view documents
16 from 1951 that I've seen clearly are from that
17 period so they should reflect the way in which
18 doses were recorded in that period. They --
19 They have four fields in the delta view
20 database. They have beta, they have gamma,
21 they have neutron and they have extremity dose
22 if I remember correctly. And the -- there are
23 -- there is a corresponding column for beta and
24 gamma in the CER database. And when you
25 compare those two things the -- the fields with

1 the identical headings, the entries do not
2 match. I believe that what -- the
3 interpretation of what's in the SM and PM -- P-
4 millirem and S-millirem is a different issue.
5 The -- The -- The -- That's how, you know,
6 how you use the dose information for dose
7 reconstruction. The -- The point of that
8 particular section is are the data -- is this
9 database good for the years '50 and '51? And
10 the observation is that for those years the
11 beta and gamma fields do not match the delta
12 view database and therefore they do not match
13 the raw data records that are available so they
14 have to be declared to be invalid. I do not
15 see how these beta and gamma entries can be
16 considered reasonable or appropriate or correct
17 in any way.

18 **DR. NETON:** Okay.

19 **DR. MAKHIJANI:** I fail to see that.

20 **DR. NETON:** If we grab that argument, Arjun,
21 and I'm not saying I'm willing to do that, but
22 if we did what's the practical significance of
23 this?

24 **MR. GRIFFON:** It's the reliability of the
25 overall database I think.

1 **DR. MAKHIJANI:** Yeah. The practical
2 significance --

3 **DR. NETON:** Well, no, no, no.

4 **DR. MAKHIJANI:** There's no explanation for it.

5 **DR. NETON:** No, you're saying that 1950 and '51
6 are invalid and that's your position. But you
7 say that '53 appears to be okay.

8 **DR. MAKHIJANI:** Right.

9 **DR. NETON:** And so what we're saying is if --
10 if the practical significance is that -- that
11 '50 and '51 are invalid we have a co-worker
12 model which we're going to discuss yet that --
13 that fills in those values so what -- I don't
14 know what the practical significance of the
15 argument is anyway.

16 **DR. MAKHIJANI:** Well, Jim, until -- until we
17 got your note about -- which -- which assessed
18 why these zeros might have been there I -- I
19 don't know that I could have -- have given you
20 a more nuanced answer to that question but
21 since there is the issue of whether there was a
22 software glitch in how these zeros occurred it
23 -- it definitely raises in my mind at least the
24 question of what else did this software do and
25 is the '53 validation that you did, which --

1 which appropriately was all right, does -- do
2 you need to do some more checking or not? If
3 it was a software glitch what -- what's the
4 investigation of the software or what is the
5 other explanation for this problem? There's
6 got to be an explanation for -- for why zeros
7 were entered when the raw data from the time
8 clearly had non-zeros in these same fields.

9 **MR. TANKERSLEY:** This is Bill Tankersley. You
10 need to discount the comment about a software
11 problem producing those zeros. That person
12 simply misspoke when he put that into the
13 report. As I explained probably a month or two
14 ago, there are database managers. I'm talking
15 about a program that will insist in a numeric
16 field putting in zero instead of nulls and the
17 new programs won't insist on that. But there's
18 not a software error that put in zeros when
19 there should have been, you know, positive
20 numbers. So any discussion about, you know,
21 that is -- is not useful at this time.

22 **MR. GRIFFON:** Okay. Well, here -- Here --
23 Here's, Jim, just to -- to -- from my
24 perspective, here's what I'm looking at with
25 this item. Is -- is the weight of the overall

1 evidence for demonstrating the reliability of
2 the -- the Y-12 or as we're calling it CER
3 database? And, you know, the way I look at it
4 right now is you have several cases -- several
5 people from the delta view in '53 that you
6 backtracked and -- and found doses to be in
7 agreement -- in pretty strong agreement but
8 then you have all this in '51 that's in
9 disagreement so -- and then that's all we have.
10 And, you know, that's my concern is that we're
11 -- we're -- I think we're a little thinner on
12 our --

13 **DR. NETON:** Okay.

14 **MR. GRIFFON:** When Wanda asks how much is
15 enough, you know, I think -- I feel like our
16 arguments are a little thinner on this -- the
17 external database than they are for the
18 internal database.

19 **DR. NETON:** Well, right. We couldn't -- We
20 couldn't go back and find the original data but
21 --

22 **MR. GRIFFON:** I'm not saying you didn't make
23 all kinds of effort, you know. I'm just --

24 **DR. NETON:** Right. But again, you know, we
25 have -- we're not relying on anything in the

1 early years for reconstructing doses for
2 workers. I mean we have gone, you know, George
3 Kerr has demonstrated pretty conclusively that
4 the data that we have in those years do not fit
5 any good distribution and so we're not using
6 them to -- to reconstruct doses. Now, when we
7 get into the '56 time frame, I don't know. I
8 guess we're going to -- you're going to -- the
9 argument is that if '50 and '51 don't match and
10 '53 did then we need to go back and look at
11 more years after '53. I mean is that what
12 we're hearing? And then if we can't what's the
13 ultimate answer? I don't know.

14 **MR. GRIFFON:** Well, yeah. Yeah, I'm just
15 saying that -- that the SEC -- I know you're
16 not using that earlier -- that early data but
17 it is all part of the database so -- and we've
18 heard explanations of why this might have
19 occurred; you might be right. But, you know,
20 and so far we have sort of two, yeah, two
21 pieces to -- to answer this question of
22 reliability of the -- of that '50 to '57
23 database. Now, you know, later -- I mean you
24 can't -- and we've talked about this before,
25 Jim. You can't sort of have it both ways with

1 this. I mean in the other case you -- you
2 pulled some data from the '70s to demonstrate
3 the -- the '50 to '57 period of the urinalysis
4 database is good, you know, so --

5 **DR. NETON:** Well, but Mark, we've looked at '53
6 and we've looked at the '70s now. I guess I'm
7 hearing the intervening years need to be
8 checked. I mean that's what I'm hearing. I
9 don't know what else we can do.

10 **MR. GRIFFON:** I'm just making observations
11 about where we're -- where we're at right now.
12 I'm not saying whether we have to or not.

13 **MR. KERR:** The only importance of that data
14 back -- that we had back in '48, '49, '50, '51
15 period is if we take our co-worker model that
16 we have and -- and apply it. We're -- We're
17 making conservative estimates of what the doses
18 were back in those days because, yeah, we're
19 way above the doses people received. And, you
20 know, that's the only reason I think they're
21 important is it's a basis of comparison for
22 what we're predicting doses to be. And
23 everything I see we're very considerate and
24 very claimant favorable. That's the importance
25 of the data back in early --

1 **DR. NETON:** I think we understand that, George.
2 But what Mark is saying is are the data that
3 we've used for the co-worker model even valid
4 now? And I'm not sure that '51 and '51
5 mismatch after we've done a '53 comparison and
6 a '70s comparison is enough to invalidate --

7 **MR. GRIFFON:** But you didn't do a '70s
8 comparison, did you, for external?

9 **DR. NETON:** I thought that's what we just said
10 we did.

11 **MR. GRIFFON:** I -- I said for the internal you
12 brought in some data from the '70s.

13 **DR. NETON:** For the internal, yeah.

14 **MR. GRIFFON:** The urine punch cards.

15 **DR. NETON:** Yeah.

16 **MR. GRIFFON:** So right now you have one -- one
17 data point, '50s, you know, one -- one set of
18 results which -- which I -- I, you know, it's
19 good. It's encouraging that they match. But
20 I'm, you know, I'm just -- I'm just throwing
21 out there, Jim. I'm not saying you have to go
22 back and do more. I'm just saying that, you
23 know, is -- how much is enough?

24 **DR. NETON:** Yeah. I -- I agree. And I don't
25 know if there's much more we can do.

1 **MR. GRIFFON:** Right.

2 **DR. NETON:** And that's the problem.

3 **MR. GRIFFON:** And then I think you -- you use
4 that and you present to the Board just sort of
5 the same arguments that you've used along with
6 what George said that that, you know, those
7 early periods the co-worker model is going to
8 you believe, you know, be very conservative
9 anyway, yeah. So all those -- all those
10 bolster your arguments sort of.

11 **DR. NETON:** Yeah, I think that -- that's pretty
12 much our position at this point.

13 **DR. MAKHIJANI:** Could I ask George a clarifying
14 question, please? If -- If the co-worker
15 model is to be judged to be claimant favorable
16 for '48 and '49 for internal dose where we have
17 no data and for external dose for '50 and '51
18 where all the entries are zero, any non-zero
19 entry would appear to be claimant favorable.

20 **MR. KERR:** Well, you see -- Okay. What --
21 What I'm saying --

22 **DR. MAKHIJANI:** How do you make a judgment --
23 how do you make a judgment about claimant
24 favorability when the -- when the database
25 itself doesn't appear to contain material

1 contents?

2 **MR. KERR:** Okay. We do have '48 and '49 data.
3 We do not -- and here we come back to your
4 argument. We -- If you go back to the '50/'51
5 data you do not have entries as true for the
6 gammas and betas separately. But you do have
7 penetrating and you do have the skin dose. And
8 my contention is you can derive or you can get
9 estimates of what these people had from those
10 two. In the case of -- of part of it was beta.
11 It was penetrating. It was gamma. You can
12 subtract and get some idea of what the beta
13 doses were people were receiving. And you can
14 compare with those.

15 **DR. MAKHIJANI:** But the fact is that all of the
16 penetrating dose entries are zero.

17 **MR. KERR:** That's okay. But we -- we can still
18 get beta doses out of there. We're -- We're -
19 - We're developing a beta dose model, too.
20 And you still have the '48/'49 data. And as a
21 result of it, even in the delta view, you say
22 those are zero. We still have the delta view
23 to go to to compare with doses that are
24 recorded in there with the co-worker model.
25 And -- And even doing that they look very

1 conservative.

2 **MS. MUNN:** Here's Wanda. It appears that one
3 could make a very good case of having verified
4 the data for an immediately subsequent year, in
5 the CER database. And (inaudible) year in the
6 CER database (inaudible) the type of recording
7 that you see in '50 and '51 clearly was
8 overcome in 1953 and therefore the
9 extrapolations that are made from subsequent
10 data (inaudible) in the obvious absence of
11 unusual events (inaudible) in that '50/'51
12 period. Do we have unusual events recorded in
13 that period? I wasn't aware of any if we did.

14 **MR. GRIFFON:** And Wanda, can I ask, are you on
15 a speaker phone?

16 **MS. MUNN:** Yes, I am right now.

17 **MR. GRIFFON:** Because I hear every fourth word
18 or so. You're cutting in and out on me. I
19 don't know if that's happening to everybody but
20 --

21 **MS. MUNN:** It must be happening to everybody.
22 One never can trust a speaker phone.

23 **MR. GRIFFON:** Sorry.

24 **MS. MUNN:** So did what I say come through
25 enough to make any sense?

1 **MR. GRIFFON:** Yeah. Yeah, I -- I think so. I
2 mean I, you know -- if -- I guess it comes down
3 to, you know, it would be more concerning to me
4 if the -- the '50/'51 issue and not matching
5 was in the middle of the time period, you know,
6 not on the front end I suppose. I don't know
7 but, you know, I come back to you have some,
8 you know, some data in '53 that are supporting
9 the argument of reliability and -- and I
10 suppose this letter that says the DOE accepted
11 this as the database of record, correct? I
12 mean that was for both external and -- and
13 internal, correct, Jim?

14 **DR. NETON:** Right. I believe so.

15 **MR. GRIFFON:** So, you know, it comes down to
16 the -- the weight of the evidence.

17 **MS. MUNN:** We know from our own experience and
18 from information that we have from individuals
19 who were in those positions at that time that
20 the particular period we're talking about, the
21 '48, '49, '50, '51 period was a period of
22 enormous change not only in plant process but
23 in administrative process and in health physics
24 process as well. We have some data prior to
25 that confusing time and significant data

1 following that time. If we've been given two
2 very valid points of comparison following that
3 time that agree, then the question becomes very
4 simply is that reliable enough for the Board.
5 It's reliable enough for me.

6 When we have times that are -- are confusing
7 for everyone and have differing methods of --
8 of computation, differing methods of
9 calculation, differing methods of recording
10 then we must either say as one argument has
11 gone, that we can't use any of that data; or we
12 must say those problems were worked out and all
13 data from there on is reliable. That
14 essentially in my view is the question we're
15 going to have to put before the Board.

16 **MR. GRIFFON:** That -- That -- Yeah, that's
17 the question and it's just, you know, be --
18 being convinced of those arguments she just
19 made. That's -- That's the important part and
20 I think the stronger the arguments can be made,
21 the -- the better, you know, so I mean -- so
22 look at this, you know. It seems like what has
23 been mentioned for '50 and '51 are -- are
24 likely explanations, you know, but I don't know
25 that I've seen documents indicating that, you

1 know. So -- So there's good explanations, you
2 know, possible good explanations. I don't know
3 that we've seen that as, you know, any health
4 physics report saying or any -- and I don't
5 know that there would be any report saying that
6 that kind of thing happened, you know, and this
7 is why.

8 **MS. MUNN:** No, but it may be helpful to put
9 that rationale very crisply in print and even
10 if it's just a letter report to provide for the
11 Board because what we're -- the agony we're
12 going through here in the working group is not
13 going to be --

14 **MR. GRIFFON:** Right.

15 **MS. MUNN:** -- manageable in the Board setting.

16 **MR. GRIFFON:** Right. I agree. I agree. I
17 mean, yeah. And I think we -- I think what I'd
18 like to do from the working group is summarize
19 where we're at on different items and I'm not
20 sure how much I'm willing to connect the dots,
21 you know. But we'll lay out the -- the facts
22 as they've been presented to us and the
23 arguments that -- that have been presented to
24 us. And then I think, you know, we present
25 that to the Board and it's, you know, so -- so

1 that we don't have to go, you know -- obviously
2 we don't want to go through all the details at
3 the Board level. I -- I agree, Wanda. And
4 we'll -- we'll -- we'll have to work on that.

5 **MS. MUNN:** My personal feeling is that such
6 report from us is going to be crucial in the
7 discussions in Denver.

8 **MR. GRIFFON:** Yeah, so --

9 **MS. MUNN:** (Inaudible).

10 **MR. GRIFFON:** Yeah, we're going to have a long
11 weekend.

12 **MS. MUNN:** -- the language needs to be right
13 and very clear and very factual.

14 **MR. GRIFFON:** Yes. Okay. And factual, I
15 agree. Okay. I don't know that we can -- can
16 we do any more on this topic? I don't know. I
17 missed -- Arjun, one thing I might want
18 clarification on from George is just in looking
19 at this database if -- if I'm looking at P-
20 millirem in the later years when there's
21 actually recorded numbers --

22 **DR. MAKHIJANI:** Yeah.

23 **MR. GRIFFON:** -- that should in most instances
24 be equal to the gamma or gamma plus neutron or
25 is there a more sophisticated algorithm?

1 **DR. MAKHIJANI:** As we understood it the P --
2 the P-millirem dose column should include the
3 gamma plus the neutron dose, yes.

4 **MR. KERR:** That's right.

5 **MR. GRIFFON:** Okay.

6 **MR. KERR:** And then the -- the -- where they
7 have millirem or the skin dose it should be the
8 gamma plus the neutron plus the beta.

9 **MR. GRIFFON:** Right.

10 **DR. MAKHIJANI:** That -- That's exactly how we
11 interpreted it and wrote it up.

12 **MR. GRIFFON:** Okay. Okay. Anyway, yeah, and
13 just glancing at a few of those I just spotted
14 some that were -- but I'm -- I can't do this
15 and talk on the phone but I think there is some
16 interesting ones that the gamma and -- and
17 penetrating don't seem to line up but I'm --
18 and there's no neutron dose on those ones that
19 I'm talking about so -- but -- and that's in
20 1953. Anyway, that -- that's sort of why I was
21 wondering which -- which columns were actually
22 being used in the co-worker model --

23 **MR. KERR:** Yeah.

24 **MR. GRIFFON:** -- out of -- out of those data
25 and is it the -- which columns are being used?

1 Which -- Which parameters?

2 **MR. KERR:** We used -- We've used the gamma and
3 the beta.

4 **MR. GRIFFON:** Gamma and beta? Okay.

5 **DR. MAKHIJANI:** Then you apply the neutron to
6 photon ratio, right?

7 **MR. KERR:** No.

8 **DR. MAKHIJANI:** That's what was in the sample
9 dose reconstructions anyway.

10 **DR. NETON:** That was for a person who was
11 potentially exposed to neutron but not
12 monitored.

13 **DR. MAKHIJANI:** Right. Right. I mean in your
14 co-worker model.

15 **DR. NETON:** Well, no. The co-worker model is
16 for -- is for gamma and is for beta.

17 **DR. MAKHIJANI:** Right. Right. For somebody
18 who is not monitored for neutrons you use a
19 neutron to photon ratio.

20 **DR. NETON:** We have done that in the example;
21 that's correct.

22 **DR. MAKHIJANI:** Right.

23 **MR. GRIFFON:** Okay. Should we move on to five?
24 I don't think we're going to get through all
25 eleven of these before --

1 **DR. NETON:** I think, Mark, some of these --

2 **MR. GRIFFON:** Yeah.

3 **DR. NETON:** -- next couple we've talked about
4 in relation to internal dose reconstruction and
5 -- and the co-worker model that used the 1952
6 bioassay data to back-calculate the maximum
7 intake that could have occurred based on, you
8 know, what we're observing in '52.

9 **MR. GRIFFON:** That's five and -- five and six,
10 right?

11 **DR. NETON:** I think five and six --

12 **MR. GRIFFON:** Yeah.

13 **DR. NETON:** -- are related to that issue. And
14 in fact in number six I think SC&A said that
15 example five does not address the issue of
16 unmonitored worker. There is a clear co-worker
17 model dose intake applied there. I'm not sure
18 where they -- they got that idea.

19 **DR. MAKHIJANI:** I'll -- I'll go back and check
20 that; maybe if it's my mistake it will be
21 corrected.

22 **DR. NETON:** Yeah. I mean I think that the
23 confusing part of number five where it says the
24 worker was monitored and it only implied that
25 he was monitored for a certain period prior to

1 '50. Of course he could not have been
2 monitored and we applied the co-worker intakes
3 so they're there.

4 **DR. MAKHIJANI:** Okay.

5 **DR. NETON:** Okay.

6 **DR. MAKHIJANI:** Well, you said the worker was
7 monitored and you assumed zero -- zero bioassay
8 results.

9 **DR. NETON:** Well, right. But see it was a
10 little misleading. He was monitored after 1950
11 --

12 **DR. MAKHIJANI:** All right.

13 **DR. NETON:** But there is no monitoring data
14 prior to '50 so we --

15 **MR. GRIFFON:** -- there was just confusion.

16 **DR. MAKHIJANI:** Okay. So if -- If there was a
17 misunderstanding that arose from how the thing
18 was written up I guess.

19 **DR. NETON:** I believe so.

20 **DR. MAKHIJANI:** Okay. All right. I'll go back
21 to that. But -- But the only point was I
22 think here that we haven't discussed in
23 relation to five and six is that it's the piece
24 of -- of the operations at Y-12 that's
25 indicated in the site profile terminated in '51

1 if I remember correctly that was called a
2 recycle and salvage, etcetera, where they were
3 reconditioning pieces of -- of -- of the -- of
4 the site for -- for new operation. And then
5 those operations were terminated at that time
6 and never redone. I -- I have not seen
7 anything, any calculations that show that the
8 available data for from '52 onward would bound
9 the internal doses for those particular workers
10 so there's a question -- there's an explicit
11 question about the salvage and recycle
12 operations in those three buildings that are
13 named, 9206, 9207 and 9211.

14 **DR. NETON:** Right. But -- But we discussed
15 this a little earlier. We took the urine data
16 from the workers in '52 who would have been
17 working in those time frames and assumed that
18 they had chronic intakes all the way through
19 those periods and -- and did a bounding
20 analysis using what was being excreted in their
21 urine in 1952.

22 **MR. CHEW:** Jim, this is Mel. Arjun, I think --
23 you know, I don't -- I fell into the same -- a
24 little bit of the same trap that -- well, I was
25 claryifying (inaudible) in submitting the

1 report. But people would talk about recycled
2 uranium and recycled uranium there are --
3 looking at the details there are two different
4 things as you probably, well, you well know.

5 **DR. NETON:** Yes.

6 **MR. CHEW:** They -- They basically out of the
7 machine shops they tried to save every piece of
8 uranium they had and they recycled it and they
9 called it recycled uranium. And then in 1952,
10 even late '52 was the first entry of what you
11 and we have been talking about as RU with the
12 contaminants of the neptunium and plutonium and
13 technetium in here and I -- I just want to make
14 sure that we -- we often fall into the same
15 trap here that I did earlier on, too.

16 **DR. MAKHIJANI:** No, no. I -- I didn't. I
17 didn't misunderstand that.

18 **MR. CHEW:** Okay.

19 **DR. MAKHIJANI:** I am not -- I am not calling
20 recycled -- in fact I didn't even think about
21 it until you mentioned it.

22 **MR. CHEW:** There's recycled and there's
23 recycled.

24 **MR. GRIFFON:** Right. Right. Right.

25 **DR. MAKHIJANI:** No, no. This -- I'm not

1 raising a recycled uranium trace contaminants
2 issue.

3 **MR. CHEW:** Okay. And so therefore if it's
4 recycled uranium in the earlier days, then the
5 bioassay for uranium was certainly bound and I
6 was making sure that you were not talking about
7 the contaminant, okay?

8 **DR. MAKHIJANI:** Yeah. No, I'm talking about
9 the specific jobs that occurred in those years
10 --

11 **MR. CHEW:** Uh-huh.

12 **DR. MAKHIJANI:** -- that stopped, you know, in
13 the conditioning of the facilities and cleaning
14 up the places and so on. There was a kind of a
15 decommissioning and recommissioning operation
16 as I understand that went on. And -- And I --
17 I have not seen where the workers were involved
18 in those specific jobs which seemed -- which
19 seemed to involve different exposure conditions
20 than the production workers. It seems to me
21 that -- that job-specific analysis is necessary
22 to show that -- that you've covered those
23 workers with your co-worker analysis. And
24 that's the thrust of the comment here. It
25 isn't that -- I didn't mean that the co-worker

1 model would not bound these doses. It's just
2 that for those workers do we have the
3 information say from '50 or '51 for those job
4 types to demonstrate that you've got them
5 covered in your co-worker model.

6 **DR. NETON:** But I think if the issue is if they
7 bounded it then the answer is we have.

8 **DR. MAKHIJANI:** Yes. No, I -- I didn't see
9 that -- that any -- any -- any demonstration
10 for those groups of workers. Perhaps it's
11 there and I missed it but -- but I -- I'm not
12 aware that such a thing has been done. But as
13 -- maybe -- maybe it's just my -- my not having
14 seen the right document.

15 **DR. NETON:** What we're saying though, Arjun, is
16 that of all the workers that were there in '51
17 and '52, they're leaving urine samples and --
18 and these are the workers, these are the
19 production-type workers, the workers who would
20 have been working with the uranium. And we've
21 taken those workers and -- and -- and looked
22 at their urine samples and said if they were
23 working in '48 and '49, how much could they
24 have breathed then and -- and still be
25 excreting what we're measuring in '51 and '52.

1 But we -- We're trying to bound it based on
2 using the workers as their own sort of
3 standard.

4 **DR. MAURO:** Jim, this is John. I -- I
5 understand where you're going and I think I see
6 the subtlety of the -- the issue that's now on
7 the table. Again going to table 3 on page 15.
8 Let me see if I can articulate this. What we
9 have here is you've got this urinalysis data
10 for 1950 and '51 for 166 and 367 employees.
11 That urine data -- Now -- Now, we also could
12 look over to the second column. We see there
13 basically is the same number of employees, '48,
14 '49, '50. And of course, it increased in '51.
15 But what I'm hearing you saying is we -- the --
16 the 166 employees that were monitored, that the
17 activity you're looking at in the
18 (unintelligible) is the -- is the result of an
19 integrated exposure that they -- that those
20 workers experienced while they were working in
21 1948 and '49 and -- and I completely understand
22 and agree of taking that tack. And it would
23 certainly be a very good surrogate for the fact
24 that the workers in '48 and '49 weren't
25 monitored. If you're looking at that 166 and

1 you go back in time and say that this is what
2 they took in in order to get the -- whatever
3 reading you're getting for the 166. The -- I
4 guess the distinction now -- to get to the
5 point where I think that there might be a
6 distinction is -- is there a -- of the 2,248
7 workers that were working in '49, what I'm
8 hearing is there might be a -- a subgroup of
9 those workers that were performing activities
10 that were substantively unique, whatever they -
11 - the -- what I hear, recycle of the scrap or
12 other operations that were substantively
13 unique. And in effect you were saying that
14 okay, that -- that's fine because we caught
15 them in the 166 people that we did monitor in
16 1950. So I think what I'm hearing is that
17 you've got it covered. It really then becomes
18 a matter of, all right, you've got these 166
19 monitored employees and you -- and you have a
20 worker that worked in 1949 and you're going to
21 want to reconstruct what he might have inhaled.
22 Now, if you were to take the high end of the
23 distribution for the 166 you certainly would be
24 placing an upper bound, perhaps an overly
25 conservative upper bound. Or you could take

1 the full distribution which you would argue
2 would be a claimant neutral approach. What I'm
3 hearing is that if there was a fundamental --
4 if there were some activities going on in '49
5 and '48 that were not going on in 1950 among
6 said subgroup, and though -- and there's reason
7 to believe that that subgroup had activities
8 that created a greater potential for them to be
9 exposed, the implication would be that when you
10 go to the 1950 data, the 166 people that were
11 monitored, you would probably have to use the
12 high end of that distribution to make sure you
13 captured that subgroup. Alternatively if you
14 could demonstrate there was nothing about the
15 activities that were going on in '49 and '48
16 that were substantially different than -- than
17 we're going on 1950 -- then I can see you using
18 the full distribution. So I -- I guess I --
19 I'm working my way through this as we're
20 working the problem. I think you've got a
21 tractable situation. I'm just not quite sure
22 if, you know, do we have a situation in '49 and
23 '48 where the activities were substantially
24 different? What I'm hearing from Arjun is that
25 there was such activities but I'm not quite

1 sure whether those activities created the
2 circumstance which had a substantially high
3 potential for exposure than let's say the other
4 activities that were going on and that
5 continued into 1950 and '51.

6 **DR. NETON:** I think -- Mark, go ahead.

7 **MR. GRIFFON:** I was just going to say, just to
8 flip that around, do you have any reason to
9 believe, Arjun, that these operations -- I mean
10 you picked these out particularly because you
11 thought that these may not be bounded by the
12 approach or --

13 **DR. MAKHIJANI:** Well -- Well, I picked them
14 out particularly for two reasons. One -- One
15 is that since the co-worker model starts in
16 1952 the going back into the era where work
17 that was being done that was different than
18 these three buildings, I felt that the validity
19 of that co-worker model should be applied to
20 the job types in these three buildings because
21 there was different types of work. And the
22 second reason is, yes, you know, the
23 decommissioning and recommissioning operation
24 involved substantially contaminated equipment.
25 They were dealing with scrap and recycling

1 uranium and scrap recovery operations are often
2 -- have often been pretty dirty, at least in
3 those early periods. They -- They involved --
4 involved kind of difficult work. If you go to
5 Ames in 1945 for instance, you know, you -- you
6 -- you have pretty highly exposed workers. So
7 there's no judgment here that the -- the -- the
8 data from 1952 wouldn't bound the earlier doses
9 but the kinds of job types were different and
10 were of the type where significant exposures
11 were certainly possible. I -- I think that
12 demonstration has to be made and that's the
13 point of the comment, not that the doses can't
14 be reconstructed or -- or that this is an SEC
15 issue. But it has to be ruled out as an SEC
16 issue or by the construction of a specific
17 demonstration.

18 **MR. GRIFFON:** Jim, do you know of any air
19 sampling data during that time period that you
20 might be able to use to make your argument to
21 say that, you know, we -- we're applying two
22 years of chronic or three years of chronic
23 exposure up to when we have a urine sample, and
24 here's the dose we would have received in air
25 sampling, limited air sampling that we have in

1 these buildings suggests that, you know, we're
2 over-estimating if nothing, you know --

3 **DR. NETON:** Right.

4 **MR. GRIFFON:** I mean is --

5 **DR. NETON:** I'm not aware right now --

6 **MR. GRIFFON:** That might be a way to --

7 **DR. NETON:** But what I -- what I'm concerned
8 about here is --

9 **MR. GRIFFON :** Yeah.

10 **DR. NETON:** -- why do we believe -- do we
11 believe that all of a sudden in 1951 or '52
12 this is an entirely different work force that's
13 monitored? I mean that would have to be the
14 case for this to be invalid.

15 **DR. MAKHIJANI:** No, that's not the argument.

16 **DR. MAURO:** I don't think we're saying that.
17 We're saying within the work force which were
18 the number of people were about the same
19 throughout those years.

20 **DR. MAKHIJANI:** Yeah. No, they doubled in --
21 they went up.

22 **DR. MAURO:** There was a subset.

23 **DR. NETON:** But what my -- But my point is,
24 though, that if -- if that subset is included
25 in this analysis --

1 **MR. GRIFFON:** Then it's appropriate.

2 **DR. NETON:** Then it's appropriate and what John
3 said is true. It's -- It's a decision whether
4 it's the 50th or the 95th percentile I mean but
5 --

6 **MR. GRIFFON:** Right.

7 **DR. NETON:** But if -- If this subset is
8 covered in this monitoring then these people
9 are their own long-term integrators of their
10 own exposure in 1949 and '50 or '48 and '49. I
11 mean that's the whole concept here and I'm not
12 sure Arjun was quite grasping that.

13 **DR. MAKHIJANI:** Maybe not.

14 **MR. GRIFFON:** Additionally I got to say --
15 additionally I didn't --

16 **DR. MAKHIJANI:** (Unintelligible) you know that
17 the recycle workers were there in the later
18 years and were monitored and therefore you know
19 what their exposures were and that you iden-- -
20 - I -- I haven't seen the recycle workers
21 identified as a subset in the later years for -
22 - for checking whether their exposures were
23 comparable to or less than production workers.

24 **DR. NETON:** Now, my point is -- is if these are
25 the same workers or similar groups of workers

1 that were working in '48 and '49 -- I don't
2 think they laid everybody off in '49 and hired
3 new uranium --

4 **DR. MAURO:** Yeah, Jim, in a way I -- I see
5 exactly where you're going.

6 **MR. GRIFFON:** Right.

7 **DR. MAURO:** In the extreme, in the limit, and
8 we're going to write this story as to what's
9 the worst possible thing that can happen.
10 Okay. Out of these 2,500 workers that were
11 working there in 1948 there's this large group
12 of them that were doing decommissioning work,
13 that were getting these very large exposures
14 and held large -- large -- large amounts of
15 material, much larger than anything anyone
16 experience, let's say from 1950 onward, and
17 they all left in 1949 and we never caught them.
18 And we never caught -- and so therefore their -
19 - the urinalysis data that we picked up in '50
20 -- I would -- I for one will argue that that is
21 a scenario that certainly would defeat your --
22 your methodology. But I think it's really
23 hard-pressed to postulate if such a thing
24 occurred. So I guess I'm coming down where you
25 are.

1 **MR. GRIFFON:** I would tend to agree with that
2 and --

3 **DR. NETON:** So -- Okay.

4 **DR. MAKHIJANI:** I -- I believe I -- I've
5 stated what my issue was.

6 **DR. NETON:** Yeah.

7 **DR. MAKHIJANI:** And it's up to the Board, of
8 course, to go where it should.

9 **MR. GRIFFON:** Okay. And it's also -- I think
10 we've done five and six. What I'd -- what I'd
11 suggest right now is can we break for lunch and
12 then we'll pick up on seven and hopefully --
13 because Rocky people are going to be on the
14 line at 2:00 p.m. or thereabouts.

15 **DR. WADE:** We can work some of them.

16 **MR. GRIFFON:** Well, yeah. Hopefully we can
17 complete Y-12 fairly quickly and not --

18 **DR. WADE:** Right.

19 **MR. GRIFFON:** -- you know, and then get to
20 Rocky. Is that -- Is that okay with everyone?

21 **DR. WADE:** Okay. So back at 2:00 ready to
22 work.

23 **MR. GRIFFON:** 2:00 p.m.

24 **DR. NETON:** Okay. Great.

25 **MR. GRIFFON:** All right. Thank you. Bye.

1 **MS. MUNN:** Rocky, be back at 2:00.

2 (Whereupon, a recess was taken from 1:05 p.m.
3 to 2:05 p.m.)

4 **DR. WADE:** I think there were some Y-12 issues
5 open. I think some of our friends from Rocky
6 Flats are on the line but we need to do what we
7 need to do.

8 **MR. GRIFFON:** Yeah. I think what I'd ask is if
9 we can just try to conclude Y-12 and then move
10 into Rocky understanding that the folks from
11 Rocky are on with us. We didn't quite finish
12 this morning. We're going to try to wrap up.
13 And I just -- just to -- I just want to go back
14 to five and six for one second, Jim and John
15 and Arjun.

16 **MS. MUNN:** Are Jim and John and Arjun on yet?

17 **MR. GRIFFON:** Oh, are they on?

18 **DR. MAURO:** John Mauro, I'm here.

19 **DR. NETON:** Yeah, NIOSH is here.

20 **MR. GRIFFON:** Okay. And SC&A is on?

21 **DR. MAKHIJANI:** Yes.

22 **MR. GRIFFON:** Yeah? Okay. For five and six, I
23 just wondered if -- the only question I had
24 there was I had mentioned whether NIOSH had any
25 data that could sort of, you know, such as air

1 sampling data that could demonstrate for these
2 particular I guess D&D salvage, whatever --
3 whatever kind of workers they were, that this
4 co-worker approach is bounding. And I -- I
5 guess, you know, that may, you know, once and
6 for all sort of put this -- this concern to
7 bed. I mean I guess the -- the real question
8 that's still out there, it seems as though if -
9 - if those workers were in that monitoring pool
10 then -- then the co-worker approach described
11 by Jim may well be bounding. But if there was
12 other data, you know, if this was followed up
13 to -- to at least look at -- at the concerns as
14 to whether they were monitored later, in the
15 later years, you know, or a set of those people
16 that did that kind of work were actually
17 monitored. You know, it seems reasonable to
18 believe that they might have been. And -- And
19 a second follow-up might be, you know, is there
20 any like summary air data in any of the HP
21 reports that might say here's, you know,
22 average levels and if we compare intake based
23 on the co-worker approach versus air sampling
24 data, you know, the co-worker model seems very
25 claimant favorable or whatever. I -- I think

1 that it would at least strengthen that case if
2 NIOSH could demonstrate that.

3 **MR. TANKERSLEY:** Hey, Jim. This is Bill
4 Tankersley.

5 **DR. NETON:** Yeah.

6 **MR. TANKERSLEY:** We certainly can identify
7 those people easily enough if you choose to go
8 that direction.

9 **DR. NETON:** Yeah, thanks, Bill. I think that -
10 - that would be one approach to go back and
11 show that, you know, they didn't fire everybody
12 in 1950 and hire a new work of -- group of
13 uranium workers or something to that extent. I
14 don't know about air monitoring data, Mark. I
15 think in '48 and '49 it's going to be pretty --
16 pretty small and then -- then you always get
17 into the issues of representativeness and
18 because it's BZ versus GA and for us to put
19 that --

20 **MR. GRIFFON:** Yeah.

21 **DR. NETON:** It sometimes causes -- raises more
22 questions than it answers.

23 **MR. GRIFFON:** Right.

24 **DR. NETON:** But, you know, and I just recognize
25 that if -- if -- it's going to be Friday here

1 pretty soon and I'm flying to Denver on Monday.

2 **MR. GRIFFON:** Yeah, I know.

3 **DR. NETON:** And I don't know what we can
4 realistically expect by then but we will do the
5 best we can. We hear what you're saying and
6 all those are great strategies to try to -- to
7 bolster our position and we'll do what we can.

8 **MR. GRIFFON:** Okay. Okay. I just --

9 **DR. NETON:** Yeah.

10 **MR. GRIFFON:** All right. Let's move on to
11 seven then I think, Arjun. If you can present
12 --

13 **DR. MAKHIJANI:** Yeah. Seven -- Seven is
14 partly the same issue as -- as five and six for
15 external dose in that except for the co-worker
16 model you've got 56 to 65 doses where the work
17 was completely different than these
18 decommissioning workers. And again I -- I'm
19 not sure what -- and then for 1950 and '51
20 you've got all the beta and gamma entries being
21 zero in the database. So at least I -- I
22 couldn't see where one would find a piece of
23 information to validate that co-worker model.
24 I'm not saying that it isn't valid or bounding
25 but that it hasn't been demonstrated to be

1 bounding. I did take a look also at the number
2 of records available and then looked at the
3 fine print in -- in the NIOSH documentation and
4 it seemed to me that while the -- the table in
5 -- in the ER, table 6-2, says there are 11,000-
6 and-odd records, the number of -- there are --
7 there are -- the records that are counted are -
8 - are four records actually and the -- the PIC
9 records and the film badge records are all
10 counted separately even though the film badge
11 records are not regarded as reliable up to
12 1950. And then the film badge records are kind
13 of questionable. Most of them are either zeros
14 or limit of detection and it's not clear that
15 there was -- NIOSH itself says, you know, that
16 they were 30 millirem or zero entered and it
17 seems both were used as the equivalents of
18 limit of -- below limit of detection. And then
19 the film badge data are not to be used because
20 they were unreliable. So one's left with
21 ionization chamber data and it seemed to me
22 that the non-zero record -- I didn't do an
23 actual count. I -- I -- I did a kind of a
24 little bit of a sampling as to how many non-
25 zero records there may be and -- and it seemed

1 like there were only about 1,000 or 1,500
2 records or one -- one per worker per -- per ten
3 weeks. And -- And that seemed a pretty slim
4 basis on which to compare the co-worker model,
5 especially for this group of workers so that's
6 -- it's sort of -- it's a little bit more
7 involved than the -- than the internal dose
8 question because there's no monitoring at all
9 for '48 and '49 on internal dose.

10 **MR. KERR:** I'd like to speak to that because I
11 think you're taking the fact that the film
12 badge data for '48 and '49 was unreliable.
13 You've taken that out of context. That's not
14 what -- That's not what the TIB says. It was
15 thought at one time it was unreliable --

16 **DR. MAKHIJANI:** I quoted --

17 **MR. KERR:** but we went back --

18 **DR. MAKHIJANI:** I quoted --

19 **MR. KERR:** to look at that data --

20 **DR. MAKHIJANI:** I quoted the TIB actually.

21 **MR. KERR:** Now, but you took it out of context
22 is what you did because earlier it was thought
23 that that was unreliable. We went back and
24 showed that there was good agreement between
25 the PICs and the film badge data.

1 **DR. MAKHIJANI:** So are you saying you're using
2 the PIC at POC?

3 **MR. KERR:** No, we're not using it but --

4 **DR. MAKHIJANI:** (Unintelligible) data were to
5 be used.

6 **MR. KERR:** The reason we went back and looked
7 at that data was so if we could see our co-
8 worker model of predicting doses back in '48
9 and '49 was truly claimant favorable. And if
10 you go back and look at the '48 data and you
11 look at the PIC data and you look at the film
12 badge data and you compare with what we predict
13 back in '48/'49, our -- our estimates of dose
14 for the workers back in those days on the -- on
15 the co-worker model that we're using are
16 extremely claimant favorable.

17 **DR. MAKHIJANI:** Now, why did -- Bill
18 Tankersley is on the phone. I guess maybe he
19 can -- he can explain his 1987 paper and -- and
20 whether I took it out of context. I just
21 quoted it saying -- I'm trying to find the
22 quote here. It's in the report somewhere.

23 **MR. KERR:** It's -- It's in the discussion
24 section.

25 **DR. MAKHIJANI:** Yeah. And where he said that

1 the earlier data were regarded as unreliable
2 and I -- I --

3 **MR. TANKERSLEY:** (Inaudible)

4 **DR. MAKHIJANI:** Sorry, I can't hear.

5 **MR. GRIFFON:** We can't hear.

6 **UNIDENTIFIED:** Can't hear.

7 **MR. TANKERSLEY:** (Inaudible)

8 **DR. NETON:** Bill Tankersley, are you on the
9 phone?

10 **MR. TANKERSLEY:** Yes, I am. I'm not quite sure
11 what paper he's referring to.

12 **MR. GRIFFON:** We've got a lot of interference
13 all of a sudden.

14 **DR. MAKHIJANI:** Well, it's table 6-2 in the
15 evaluation report. And --

16 **UNIDENTIFIED:** -- that interference --

17 **DR. WADE:** (Inaudible) I don't know what it
18 is. That's better.

19 **DR. MAKHIJANI:** Let me -- Let me see here.

20 Okay. Table 6-2 in the evaluation report for

21 '48 and '49 says that 3,599 records for 162

22 monitored employees in '48 and 7,893 for 49

23 monitored employees in -- in 1949. So I could

24 not match up the 49 monitored. It seemed there

25 were more monitored employees than the 49 but I

1 couldn't resolve the differences. And then I
2 found the issues described in section 5.2 of
3 the SC&A reports above those records including
4 the statement from you as to the -- well, I
5 won't characterize it so you can -- about --
6 about the quality of the film badge data prior
7 to 1950, referring to a 1987 paper by you.

8 **MR. TANKERSLEY:** Well, actually I don't
9 remember -- I don't remember writing that.
10 We've never questioned --

11 **DR. MAKHIJANI:** Well, in -- in O-TIB-47 on page
12 13 it says that the film badge readings prior
13 to 1950 were "considered questionable because
14 of frequently changed procedures and a
15 perceived general lack of monitoring quality
16 control during this period". And I'll -- I'll
17 just open --

18 **MR. KERR:** Bill?

19 **DR. MAKHIJANI:** Open the TIB because it sites -
20 -

21 **MR. KERR:** Bill?

22 **DR. MAKHIJANI** If I remember correctly it sites
23 a 1987 paper by you.

24 **MR. KERR:** No, it's an '82. It's '82 and it's
25 a memorandum to Shirley Fry (ph).

1 **DR. MAKHIJANI:** Let -- Let -- Let -- Let me
2 go to the TIB and so I can verify my memory
3 here. Okay, 47, page 13 -- page 13 -- yes.
4 Pre-1982, you're right, George. But it is
5 Tankersley, 1982.

6 **MR. KERR:** Right. Okay. But now, read the
7 next to the last sentence in that same
8 paragraph, the 1948, 1949.

9 **DR. MAKHIJANI:** Yes.

10 **MR. KERR:** Read that sentence.

11 **DR. MAKHIJANI:** Yeah. (Reading) Personnel --
12 '48/'49 personnel dosimetry study that Y-12
13 demonstrated that film badges provided a
14 reliable and convenient method for monitoring
15 shallow doses both in low energy photons and
16 penetrating whole-body doses from gamma rays.
17 So what -- what was the 1982 paper about?

18 **MR. KERR:** It was because the data had never
19 been looked and detailed before. It was just
20 thought or perceived that it wasn't very
21 reliable and -- because of frequently changed
22 procedures and -- and a general lack of
23 monitoring quality control and it was a
24 perception in that data up until this study.

25 **MR. TANKERSLEY:** Let me -- Let me add this,

1 too, please. Keep in mind that was 1982, more
2 than 20 years ago. That may very well -- I
3 mean I don't have the paper in front of me --
4 that may very well have been before we even had
5 the original data. I assure you that we -- we
6 did get those original data. I held the cards
7 in my hand. I looked at them again a week ago
8 or something. And we ultimately got the
9 original data; I don't mean photocopies of it,
10 the original double-sided cards and so forth.
11 And I don't -- I don't think any of us now
12 question the -- I mean obviously there are
13 shortcomings in any -- any monitoring data but
14 none of us questioned the credibility of those
15 data, neither the film badge nor the -- the PIC
16 data. I don't know exactly -- I'd have to look
17 at that paper and -- and also think about it in
18 light of it being a 1982 memo to -- to Dr. Fry.

19 **DR. MAKHIJANI:** So I -- I must confess I'm
20 confused because normally your practice is to
21 use film badge data as the data of record.

22 **MR. KERR:** No, in the early days the PIC data
23 was used as a -- as the -- as the measurement
24 of record. And that's true at both Oak Ridge
25 National Laboratory, that's true of Hanford,

1 and that's true of Y-12. In the early days the
2 PICs were considered the -- the dose of record.

3 **DR. MAKHIJANI:** And what was the limit of
4 detection on the PICs?

5 **MR. KERR:** It depends on how -- the model you
6 chose and -- and typically there were 200
7 millirem per day, 2 to 300 millirem per day.

8 **DR. MAKHIJANI:** Okay. But I saw entries as low
9 as five millirem.

10 **MR. KERR:** Well, you could read them down to
11 that if the scale on them, depending on what
12 scale you used and what sensitivity you used,
13 you could read them down to probably five. We
14 wrote a paper, there's a paper on -- on the Oak
15 Ridge website where we went back and looked at
16 the PIC data and the badge data and ORNL in the
17 early days and we used the PIC data to compare
18 with -- with the -- with the film badge data.
19 You can see what kind of comparisons you get
20 when you do the two.

21 **MR. GRIFFON:** George, can you explain to me,
22 and I understand you said the limit of
23 detection was 2 to 300 millirem per day but you
24 could read them down to five?

25 **MR. KERR:** Yeah. Typically the scale, on them

1 you could read some of them, say if they were
2 200 millirem per day, the scale was such you
3 could probably read down to five, ten -- five
4 or ten millirem.

5 **MR. TANKERSLEY:** Keep in mind that one of the
6 reasons why the -- the PIC chambers have such a
7 poor reputation is because, you know, the
8 readings can be thrown off by dropping the --
9 the badge, things like that. That's the reason
10 why they typically wore them in pairs. If I
11 remember correctly on that set of data, the
12 '48/'49 data, both of the PIC chamber readings
13 are on there.

14 **MR. KERR:** Right.

15 **MR. TANKERSLEY:** And then, you know, when they
16 have good agreement that's the reason why
17 they're still used today because they have good
18 agreement; it's generally accepted that it's a
19 reading.

20 **DR. MAKHIJANI:** I -- I only saw one PIC entry
21 in the database.

22 **MR. GRIFFON:** It usually had a slash, didn't
23 it, Arjun?

24 **DR. MAKHIJANI:** Yes.

25 **MR. GRIFFON:** That's the two readings I think.

1 **DR. MAKHIJANI:** I -- I don't recall that.

2 Yeah.

3 **MR. KERR:** Yes, and -- and then also, Mark,
4 sometimes if they do not put both readings on
5 there I -- I know that sometimes it's on there;
6 I've seen it. But they also have a field there
7 called TSR which is the total significant
8 reading and that I think typically means that
9 they have, you know, put the two together and
10 averaged them or whatever. I can't quite
11 remember what that looks like.

12 **MR. CHEW:** George, this is Mel. Just have
13 clarification for Mark, made a comment about.
14 It's not 200 millirem per day (unintelligible).
15 And yet, the chamber can read from zero to 200
16 millirem --

17 **MR. KERR:** It's zero to 200 millirem but
18 typically they --

19 **MR. GRIFFON:** Okay.

20 **MR. KERR:** -- they wore it (inaudible) each
21 day.

22 **MR. GRIFFON:** Well, that sounds more like it.
23 Okay.

24 **MR. KERR:** They -- They wore them each day.

25 **MR. GRIFFON:** I was confused, but the

1 terminology was throwing me off there. Okay.

2 **MR. CHEW:** I just wanted to make sure you --
3 you got that, Mark.

4 **MR. GRIFFON:** Yeah. Thank you.

5 **MR. CHEW:** Good. You're welcome.

6 **DR. MAKHIJANI:** But if they're wearing them
7 every day the number -- the number record will
8 indicate that.

9 **MR. KERR:** Well, at Oak Ridge, you know, they -
10 - people wore PICs every day to work in
11 radiation zones. I, you know, wore -- they
12 were wearing them up into -- they still wear
13 them. And when I went to work at ORNL in the
14 '60s and '70s we wore -- I wore a set of pocket
15 ionizations chambers every day.

16 **DR. MAKHIJANI:** But I guess -- I guess the
17 question --

18 **MR. KERR:** And those were not -- those were not
19 now part of the official records.

20 **DR. MAKHIJANI:** No, but then were they read and
21 recorded every day or --

22 **MR. KERR:** Yes. Yes, because we got weekly,
23 monthly and quarterly printouts of the -- of
24 the PIC totals. And when they exceeded 500
25 millirems we pulled the workers' badges and had

1 them developed, if they were over 500 millirems
2 we restricted them from going back in a
3 radiation field for the rest of the quarter,
4 because we limited their yearly doses to two
5 rem.

6 **MR. TANKERSLEY:** I believe if you'll look at
7 the -- those data, well, it could -- looking at
8 electronic data, the cards actually have a -- a
9 field, a block for each day. And I think one
10 side of the card -- help me remember, George --
11 I think it covers two weeks at a time or --

12 **MR. KERR:** Right.

13 **MR. TANKERSLEY:** -- or something like that.

14 **MR. KERR:** Yeah.

15 **MR. TANKERSLEY:** And so you -- they add -- they
16 do have the individual daily readings across
17 the card and then at the end there's -- there's
18 about six fields, film badge, open window,
19 shielded and maybe one other. Then -- Then
20 they have the -- the PIC chamber that's sum of
21 the week and then (inaudible) significant
22 reading. You'd really have to see the
23 original, you know, card to see. Heck, no, we
24 certainly didn't put in all of that. We put in
25 the -- you know, the -- the added data, the

1 summary data at the right side of the card.

2 **DR. MAKHIJANI:** These are summed like for a
3 week or two?

4 **MR. TANKERSLEY:** I think -- I think a week.
5 I'd have to --

6 **MR. KERR:** Yeah, because the -- the film badge
7 data was for a week.

8 **DR. MAKHIJANI:** Yeah, that -- That puzzled me.

9 **MR. KERR:** Okay.

10 **DR. WADE:** We have to move on.

11 **MR. GRIFFON:** Yeah, let's -- Let's go. Arjun,
12 where do we stand on this issue then?

13 **DR. MAKHIJANI:** I don't know. I guess --

14 **MR. GRIFFON:** Yeah.

15 **DR. MAKHIJANI:** -- if Hans might -- you know,
16 I'm not the internal -- external dose person
17 here and I guess it'll be up to the rest of the
18 team to figure out and tell me what to write
19 here 'cause as I said I -- I -- I just have
20 coordinated a lot of this and -- and --

21 **MR. GRIFFON:** Right.

22 **DR. MAKHIJANI:** -- maybe Hans and John can tell
23 me where to go on it.

24 **MR. GRIFFON:** Well, at least I mean I think we
25 have a better understanding, too.

1 **DR. MAKHIJANI:** Yes, right.

2 **MR. GRIFFON:** And we -- We just did receive
3 this database so it's hard to --

4 **DR. MAKHIJANI:** Yeah. Yeah, no question I
5 think I -- I understand the -- the -- the
6 numbers better.

7 **MR. GRIFFON:** Okay.

8 **DR. MAKHIJANI:** We'll just have to go back and
9 see what we can do.

10 **MR. GRIFFON:** Yeah.

11 **DR. NETON:** I'd like to --

12 **MR. GRIFFON:** And take this discussion into
13 account for the final draft. Go ahead. I'm
14 sorry.

15 **DR. NETON:** That's okay. I just want to point
16 out we need to look at what kind of work was
17 going on at '48/'49 versus when there was
18 really uranium there. I mean '48 and '49 as we
19 talked about was cleanup of residual uranium in
20 the Calutron.

21 **MR. KERR:** No, I think they were starting to
22 already mill depleted uranium back in '48 and
23 '49.

24 **DR. NETON:** Okay. Okay.

25 **MR. KERR:** Because one thing they did was they

1 were making shields for sources out of depleted
2 uranium.

3 **DR. NETON:** There is a source term available
4 for external. That's what I was trying to get
5 at.

6 **MR. KERR:** Uh-huh. Okay. Okay.

7 **DR. NETON:** I've got one more question and then
8 we can move on. George, you mentioned that it
9 -- the -- the co-worker model over-predicts
10 what we would estimate based on the '48/'49
11 data. That stands for about how much?

12 **MR. KERR:** Jim, I'd have to go back and look at
13 it. I -- I -- I can't --

14 **DR. NETON:** My sense was that this was --

15 **MR. KERR:** It's extremely conservative, let me
16 say that. How much does it over-predict doses
17 to people, back in those days, I can't give you
18 a figure off the top of my head.

19 **DR. NETON:** I bet this is well above the 95th
20 percentile.

21 **MR. GRIFFON:** When -- When you did that
22 comparison, George, did you compare against
23 these PID readings in the -- in the database we
24 had, this '48/'49 database?

25 **MR. KERR:** Yes, sir. Yes, sir, I did.

1 **MR. GRIFFON:** So that was the basis for --

2 **MR. KERR:** Yeah.

3 **MR. GRIFFON:** All right. We might have to, you
4 know -- SC&A, we might need a little more to
5 look at that and reconsider this issue.

6 **MR. KERR:** And you could see what would predict
7 -- back -- if you'll -- that last handout that
8 I gave out on the -- on the gamma and -- and
9 beta regression. You can go back to there's
10 five dose reconstructions at the end of that
11 report. And go back to the one where the
12 scaling factor was one and you can take those
13 doses off yourself and compare what's in that
14 report.

15 **MR. GRIFFON:** All right. Let's -- Because the
16 Rocky folks are on, too, let's move on to
17 number eight. I think we got a good sense of
18 what was in there so...

19 **DR. MAKHIJANI:** Yes, okay. I guess this is --
20 this is the big item.

21 **MR. GRIFFON:** Yeah.

22 **DR. MAKHIJANI:** The -- We looked at, you know,
23 there's a -- there's a lot of stuff in the
24 evaluation report and as I said, a little bit
25 of disclaimer in the beginning, focused on

1 table 45-B and didn't -- not enough on 45-A so
2 let me say here that it seems -- it seems that
3 there was a broad kind of sort in -- that was
4 fairly successful in the early period of
5 putting people into these two bins in the
6 various departments. And -- And the
7 comparison -- the -- the reason we focused on
8 the 45-B is if you -- that's where the high
9 exposed workers are supposed to be, more than
10 30 millirem average dose from 61 to 65 and by
11 department. And Harry Hariminsky (ph), the
12 statistician on our team, took a look at that
13 data and did some correlations between the --
14 the -- those departments that had relatively
15 high doses from the -- that one table. They --
16 Did they have what -- what they correlated were
17 the relatively high doses from the earlier
18 period of monitoring. And there was a
19 correlation but it was weak. And then there
20 was a question of who was monitored in the
21 earlier period and was there a correlation
22 between the percentage of monitored people in
23 the earlier period with those who were shown to
24 have -- those departments that had the higher
25 doses when everybody was monitored? And --

1 And the assumption underlying the analysis is
2 when everybody was monitored the average doses
3 are -- are somewhat representative of exposure
4 potential because as they go up you expect the
5 distribution to shift to the right. And --
6 And that was also a pretty weak correlation and
7 Harry concluded that the pre -- that the pre-
8 1961 workers moni-- who were monitored didn't
9 belong in the same distribution as the -- as
10 those who were identified as having the highest
11 doses in table 45-B from the '61 to '65 period
12 when everybody was monitored. And so -- so it
13 -- it seems that putting -- putting all of
14 those -- the data for all of those workers into
15 a single co-worker distribution doesn't --
16 doesn't seem appropriate. When we looked at --
17 at -- at the data it seemed that the
18 supervisors -- you know, Hans had quoted, and I
19 hope that Hans is on the line, so, Hans, a lot
20 of the technical work is yours and correct me
21 if I'm -- if I'm wrong. But it seemed like the
22 -- the supervisors were -- had some idea of who
23 was at high risk and then they were badging
24 people according to that. And they made some
25 good judgments and then badged nearly everybody

1 or the majority in those departments. And then
2 some of the judgments were shown to be off in a
3 later period. And that's the problem with the
4 lack of correlation. And so while they had the
5 intent of catching people with high exposure
6 potential, the lack of or weak correlations
7 indicate they didn't always succeed. And so we
8 think that while it seems possible to make a
9 co-worker model that would be claimant
10 favorable with the available data, that that
11 hasn't been demonstrated with the existing
12 model.

13 **MR. KERR:** Well, we have because you go back
14 and look at those five dose reconstructions we
15 did. You -- Keep in mind that we scale these.
16 We've got a -- a way to scale. If you are
17 going to assign 95 percentile to workers you're
18 going to have five workers out of 100 that have
19 doses higher than that 95 percent you're going
20 to assign if you're basing it on actual
21 distributions. Okay. We scale up based on the
22 workers monitoring between 1961 and 1965. We
23 are less apt to miss those high exposure people
24 than you are with a co-worker model.

25 **DR. MAKHIJANI:** Anyway, I mean that -- that --

1 that was our conclusion is that -- that the way
2 the model is put together by -- by -- by using
3 the data from these two periods is -- is -- is
4 not appropriate.

5 **MR. KERR:** Let Bill address that because we
6 picked out workers that had the most monitoring
7 data over a ten-year period and used them. And
8 the only thing we were trying to do was to get
9 a time trend in the data. And I don't think
10 there's any question that the time trend shows
11 that the gamma doses got smaller over time
12 because of one, the fact that -- that -- that
13 the -- the rate guides were reduced and -- and
14 the fact that more and more workers were
15 monitored with time which meant that you were
16 constantly bringing in some more lowly exposed
17 workers so there is a time trend in the data.
18 And that's the only thing we were trying to do
19 was that group, one group that went from '56 to
20 '65 was to look at a time trend. And then that
21 model is fit to where you have actual
22 monitoring data and I cannot believe that if we
23 picked out monitored workers and you apply that
24 without scaling that you're going under-predict
25 for unmonitored workers.

1 **DR. MAKHIJANI:** Well --

2 **MR. KERR:** And if they do have monitoring data
3 we scale the doses upward.

4 **DR. MAKHIJANI:** Well, time trends are not --
5 not so clear, at least as I saw them because
6 both for the gamma and beta doses in the 1950s,
7 well, for the gamma first in the early '50s the
8 number of zeros went up from the early '50s
9 some 10 or 20 percent to 80 or 90 percent and
10 then it went down to 10 percent. And for the
11 beta doses the trends -- trends were reversed.
12 So -- But it seemed to indicate that -- that
13 people were honestly trying to find who was at
14 risk but there was some -- some -- some
15 experimentation or some -- some trial and error
16 involved in what was happening there.

17 **MR. KERR:** There's three problems with the data
18 before 1960 -- before 1956. That is you had
19 small monitored worker population. You had
20 frequent exchange of the badges. And you had a
21 lot of assigned dose. And those things really
22 mean that -- that for a lot of -- if you're
23 trying to go back and use the actual data for
24 that period that you're going to see you can't
25 fit it to a model. There's no way you can

1 develop a co-worker model from going back from
2 the actual data. I mean you get -- you get
3 some things that are ridiculous. You get
4 extremely -- the values scatter a lot. You get
5 extremely in some cases small uncertainties in
6 the data because where you have a lot of
7 assigned dose to people their -- their high
8 doses are all coming in in a single band, a
9 small band. And it doesn't make sense to do it
10 that way and I -- I'm telling the way we
11 constructed that model made sure it was
12 claimant favorable.

13 **DR. BEHLING:** Arjun, this is Hans. I'm on the
14 line and I am not sure if this is the right
15 time to bring up an issue that I had discussed
16 with you, and that is the issue of quarterly
17 doses prior to 1958 --

18 **DR. MAKHIJANI:** Yes.

19 **DR. BEHLING:** -- defending full term exposure
20 monitoring and -- and I think we might want to
21 talk about that.

22 **DR. MAKHIJANI:** No, go ahead. I mean you
23 developed the issue.

24 **DR. BEHLING:** Yeah. The issue is one of the
25 following. Obviously prior to 1958 people

1 monitored on a weekly basis meaning that if
2 there is a quarterly dose record prior to '58
3 there is the potential that a person may be
4 part of that database having had a quarterly
5 dose when in fact he was monitored for as few
6 as one week out of 13 or all 13 weeks. And
7 when I looked at the -- we don't have the
8 original data but I did a spot check and I will
9 give you an example. For the -- For the 25th
10 week of 1958 which -- which the date after the
11 criticality accident at Y-12 -- there is an in-
12 house memo that identifies the names and -- and
13 badge numbers of all people who were monitored.
14 And it turns out to be for that week, the 25th
15 week of 1958 there were 378 -- that would be
16 378 people who were monitored that week. Yet
17 when you go to, for instance, table 4-4 in the
18 evaluation, in the appendix 1 of the SEC
19 evaluation and you look at the third quarter
20 you identify a total of 689 persons who were
21 monitored in that quarter. And of course,
22 there's now a -- almost a factor of two
23 discrepancy which leads me to believe that you
24 may have entered into the database people who
25 were monitored in any given quarter who were

1 not monitored for the full 13 weeks during
2 which the dosimeters were being handed out and
3 read meaning that a person with potentially as
4 few as one weeks of exposure will be part of
5 that database and the database the way it is
6 currently constructed which assume in that
7 whatever quarterly badges -- quarterly dose
8 records are available, that that person was
9 monitored for each and every 13 weeks. Now,
10 after 1961 when the cycle was extended to
11 quarterly cycles, that does not affect when you
12 deal with monthly, and worse yet with weekly,
13 just because you have a record for an
14 individual does not necessarily mean that that
15 individual was monitored for the full duration
16 of that particular quarter. And so what I'm
17 saying is that just based on that one single
18 spot check -- check involving the 25th week of
19 1958 where you only had 378 people monitored,
20 that is almost a factor of two lower than the
21 total number of people monitored for the
22 counted quarter, the third counted quarter of
23 1958.

24 **MR. KERR:** Okay. Those ones that you picked
25 out of the table, those were coming out of this

1 TIB-47 that we talked about earlier. Those
2 were not -- those were just estimates that said
3 how many people were being monitored during
4 that period. And it just took the number of
5 records that were turned in and divided by 13
6 weeks per quarter to get an estimate. And
7 that's -- that's clearly explained in that
8 report. So you shouldn't be comparing that
9 with the other more -- what do I want to say --
10 fundamental thing of going in and identifying
11 workers. But you've got to consider the way
12 that the quarterly doses were -- were obtained.
13 And the quarterly doses, and I -- I -- I hate
14 to quote on this right now but I have a couple
15 memos here of how quarterly doses were done.
16 And they took each of the individual positive
17 records they had and summed them up for that
18 individual. And then they tried to correct
19 that quarterly total for missed dose. And the
20 way they did that was they took the number of
21 film badges each and divide that by the number
22 of positive records. So if that person had,
23 say, was issued 13 film badges for the whole
24 quarter and then they come back in and said
25 okay, he was -- had 10 positive records, we'll

1 up his dose by the ratio of 13 over 10. So,
2 you know, this is one of the reasons why I
3 think we sometimes had trouble going back into
4 the database. And the reason for coming up
5 with quarterly doses and yearly doses was I
6 forget what year it was, you know, they started
7 saying, well, you got to have -- you got to
8 keep the dose under a certain limit depending
9 on age. And when they did those quarterly
10 doses they did in fact try to account for any
11 missing dose or quarters or weeks in which they
12 did not have a record for that -- that worker.
13 And he could have been on vacation. He could
14 have been off sick. He could have been
15 transferred to another job temporarily or
16 something. But I'm saying that they've --
17 they've tried to adjust those for missing dose.

18 **MR. TANKERSLEY:** This is Bill Tankersley and
19 that procedure is well documented. It was
20 written by C. M. West if I'm not mistaken and I
21 know that document is on the O-drive.

22 **MR. KERR:** Yeah, it sure is.

23 **DR. BEHLING:** Could you make that available
24 because as I said, right now I have not had any
25 reason to come to that conclusion that for

1 instance a person who is part of that quarterly
2 record --

3 **MR. KERR:** As a matter of fact that may be in
4 that gamma report. I'd have to look and see.

5 **DR. BEHLING:** Okay. Could you -- Could you
6 identify that document?

7 **MR. KERR:** And -- And I'm sure like Bill says,
8 I'm almost positive that that -- that is on the
9 O-drive.

10 **MR. TANKERSLEY:** Yes, I know it is. It's been
11 sent up there, you know, months or years ago.

12 **MR. KERR:** When this question came up before.

13 **DR. WADE:** Well, can you let Hans know where it
14 is then and --

15 **MR. KERR:** Yeah, okay. I'll get the record
16 number.

17 **MR. GRIFFON:** Okay.

18 **DR. BEHLING:** The next thing that I had, a
19 person who could have been monitored for
20 (inaudible) that he would be part of that
21 database in -- in that -- that would be
22 necessary to adjust. That -- That's the
23 central question that I have.

24 **MR. KERR:** Well, it would have been adjusted;
25 if he -- if he was missing some weeks it

1 probably would have been adjusted upward to try
2 to account for any missing dose that he might
3 have had due to a damaged film badge, due to a
4 zero reading, due to the fact it wasn't turned
5 in, it was lost. And those when they didn't
6 have the full 13 weeks there was an adjustment
7 made.

8 **DR. MAKHIJANI:** Or -- Or people were taken off
9 monitoring, too. I mean --

10 **MR. KERR:** Well, that's true, too.

11 **DR. MAKHIJANI:** -- of the examination that you
12 did of, I don't know, 15/20 workers or 30
13 workers I guess, there were examples of seven
14 workers who were found to have low doses and
15 then were taken off monitoring. So those -- I
16 don't know if they are partial quarters or full
17 quarters but -- but there certainly seem to be
18 people who went on monitoring and off
19 monitoring.

20 **MR. KERR:** They took the transferred workers
21 from one to the other on a -- on a quarterly
22 basis or semi-yearly basis or yearly basis.
23 They didn't -- They didn't take people off
24 just in the middle of the year unless they, you
25 know, were terminated, the people quit or

1 whatever. Typically those -- those rolls were
2 looked at like every quarter.

3 **DR. BEHLING:** I guess to -- to finalize this
4 issue and get on with other issues, but I do
5 still have a problem in trying to reconcile the
6 number of 689 that is in table 4-4 as defined
7 as I guess in -- defined as the 378 people who
8 were in fact identified by name and -- and
9 badge number who were monitored in the 25th
10 week of -- of 1958. To me I can certainly
11 understand a minor discrepancy where maybe ten
12 people, maybe somebody left -- left employment,
13 etcetera, would come in or leave the -- the --
14 the -- the -- the -- the database and -- and
15 essentially not be part of the full number for
16 that count a quarter. But I can't see a factor
17 of two being -- being something that you can
18 reconcile with the explanation such as
19 retirement or -- or --

20 **MR. KERR:** Well, I'm just saying that -- that -
21 - that those others were just a very crude
22 estimate by dividing the number of records by
23 assuming 13 and saying, well, that's how many -
24 - that's possibly how many that -- that's the
25 minimum number of people who were -- who were

1 monitored. And I even think you -- you -- it
2 is possible that the values that -- and this is
3 quoting from your report on page 15 -- it is
4 possible that the values in ORAU O-TIB-47 are
5 incorrect because they were deduced from the
6 number of records assuming there would be about
7 one record per worker per week. And that's
8 essentially how those values were determined.

9 **DR. MAKHIJANI:** Yeah, but --

10 **MR. KERR:** Where the other went in and looked
11 at -- at the number of workers that were
12 involved in detail.

13 **DR. MAKHIJANI:** Yes, but --

14 **MR. KERR:** If there's a factor two difference,
15 so be it. I, you know, that's just -- that's
16 just the way the two tables were differently
17 constructed.

18 **DR. MAKHIJANI:** But -- But George, the example
19 that Hans is giving has a factor of two
20 difference in the other direction. He had the
21 example from the number of workers who were
22 monitored in that week being a factor of two
23 less than the ones that were calculated by
24 dividing by 13. And what you're arguing is
25 that the -- the number of 600-and-odd should be

1 a minimum number so --

2 **MR. KERR:** Well, that could be -- that could --

3 **DR. MAKHIJANI:** -- should be larger so --

4 **MR. KERR:** That could be someplace --

5 **DR. MAKHIJANI:** -- direction.

6 **MR. KERR:** You know, that could be a place
7 where they adjusted a number of workers. I
8 don't know. You know, we just had to go back
9 and look at it. I have no idea why there's
10 that difference.

11 **DR. MAKHIJANI:** So if it's actually --

12 **MR. KERR:** It's just there.

13 **DR. MAKHIJANI:** The direction that's the
14 troubling part.

15 **MR. KERR:** It's just there and that may be a
16 place where they did adjust workers back in the
17 early days by, you know, in -- in some interim
18 period.

19 **DR. BEHLING:** I guess I don't know what
20 footnote 12 in table 4-4 says. Footnote 12
21 which represents the N value and the footnote
22 says N therefore is the total number of
23 quarterly doses which to me suggests that you
24 monitored a total of 689 people in that
25 calendar quarter.

1 **MR. KERR:** All I can say is those tables were
2 constructed differently and I don't know
3 whether that reflects the way the tables were
4 constructed or reflects a difference in the
5 data that -- that is -- was used to make them.
6 The only way we could tell what -- what's
7 happened there is to go back and look.

8 **MR. TANKERSLEY:** This is Bill. I'm a little
9 bit confused here but I heard Hans say a moment
10 ago if those were the number of quarterly doses
11 would equal the number of people. That
12 wouldn't be true typically and then we verified
13 this a number of times against the health
14 physics report; it would be one-fourth of the
15 number of people.

16 **DR. BEHLING:** I don't understand that
17 relationship.

18 **MR. TANKERSLEY:** Well, because they're
19 monitored -- the -- the results are recorded
20 per quarter.

21 **DR. BEHLING:** If you had -- Let's assume that
22 the number of people that they monitored in the
23 25th week of 1958 were in fact a stable
24 population of people. They were monitored 13
25 weeks each. You would expect in table 4-4 for

1 quarter number (unintelligible) to have 378 as
2 the value of N and that's what I'm contesting
3 or questioning.

4 **MR. TANKERSLEY:** Again, I -- I don't quite
5 follow you there but you'd expect to have about
6 four times that number of records, one -- of
7 one for each quarter for each person.

8 **DR. BEHLING:** No, no, these are quarterly dose
9 values that I'm citing to you in table 4-4 in
10 appendix 1. I'm referring to page 25, bottom
11 of page 25. It has 1968, 2-3, 3rd quarter, and
12 the number of records, quarterly records are
13 689. And yet when I as a single spot check
14 checked the number of people badged for the
15 25th week there were only 378 which is
16 approximately a factor of two lower. And as I
17 said, I cannot reconcile that big difference
18 realizing that perhaps maybe certain people
19 came into the system or left the system so that
20 the number of 378 would be potentially perhaps
21 greater by a factor of 10 people or 20 people
22 but not by a factor of two.

23 **MR. KERR:** The only thing I can say is we'll
24 just have to look at the tables and see why
25 there's a discrepancy between them. I don't

1 really know.

2 **MR. GRIFFON:** I would -- I would also suggest
3 that, you know, maybe prior to the Board
4 meeting, Jim, you know, you -- maybe you should
5 review this -- the statistical approach offered
6 by SC&A and, you know, if you have a rebuttal
7 to that or -- or, you know, because I think we
8 still have a difference of opinion. And of the
9 last question, I think --

10 **DR. NETON:** Well, I think Mark, we can do that
11 but --

12 **MR. GRIFFON:** Yeah.

13 **DR. NETON:** -- this has been on the table for
14 two months and we just got a 20-page report for
15 statistical analysis yesterday. It's going to
16 be hard to do that.

17 **DR. MAURO:** Jim, this is John Mauro. What I
18 would ask is there are two -- there are figures
19 1, 2 and 3 in -- in the appendix to this
20 report.

21 **MR. GRIFFON:** Right.

22 **DR. MAURO:** This statistical workup, there's
23 three figures. One of the figures, figure 3,
24 based on the analysis, actually supports your
25 position that there was a concerted effort to

1 monitor more people who were in the departments
2 that had the greater potential for exposure
3 which argues that it wasn't a pure cohort
4 sampling situation. It was a concerted effort
5 to monitor more of the people in those
6 departments that were expected to have the
7 highest exposures so -- so figure 3 in this
8 attachment provides some evidence, speaks for
9 itself, that -- that -- there was that tendency
10 going on. What -- However, figures 1 and 2
11 provide information that -- that says that
12 there is -- it's very hard for you to say
13 something about a given department. That is, a
14 department that may have experienced high
15 exposures post-1961 may not have experienced
16 high exposures pre-1961. There was almost no
17 relationship between the two. And -- And that
18 figure, figure 1 and figure 2 is troubling to
19 me. It's almost as if they were -- the
20 relationship between post- and pre-exposures do
21 not follow any predictable patterns by
22 department or within department. To try to
23 bring this to closure, if you wouldn't mind,
24 just take a look at that figure 1 and figure 2
25 on page 30 of our report and maybe we could

1 talk a little bit about that. And -- And it
2 would be fine with me that we could even talk
3 about it, you know, tomorrow or -- or Monday
4 because it does tell us a story that -- that
5 raises questions whether the extrapolation
6 approach that you folks have adopted can really
7 work. I think if those questions could be
8 answered maybe we can put -- put this thing to
9 bed.

10 **MS. MUNN:** Hans, I have one question. Did you
11 run a similar spot check on any other week?
12 Did you do only that one week?

13 **DR. BEHLING:** Well, that's the only data I
14 could find. I guess it would like be nice if
15 we could look at multiple time frames but it
16 turns out that apparently in the aftermath of
17 the Y-12 criticality accident I guess there was
18 some concern about who did we monitor and what
19 are their exposures and how close did they come
20 to meeting regulatory or admin limits,
21 etcetera, etcetera. So it turned out that that
22 was just perhaps useful interoffice memos that
23 allowed me to look at that but if there's any
24 other data out there, Wanda, I don't have it.
25 And so it was just a -- just a snapshot in

1 time, allowed me to look at those individual
2 numbers and then compare it to table 4-4 in the
3 appendix 1 of the SEC evaluation report.

4 **MS. MUNN:** Right. I just was trying to make
5 the point for myself that a single instance
6 where we have these puzzling numbers doesn't
7 necessarily cause me to jump to the conclusion
8 that virtually all of the numbers might suffer
9 from that same defect.

10 **DR. BEHLING:** No, well --

11 **MR. GRIFFON:** That's interesting, too, Wanda,
12 because let's remember the reverse.

13 **MS. MUNN:** Yeah, exactly. Exactly.

14 **MR. GRIFFON:** You know, so --

15 **MS. MUNN:** And it's -- but -- but I --

16 **MR. GRIFFON:** Yeah.

17 **MS. MUNN:** I'm trying to identify --

18 **MR. GRIFFON:** I agree.

19 **MS. MUNN:** -- whether that was the only week
20 that anyone even looked at.

21 **MR. GRIFFON:** Yeah. I think everybody's
22 limited on the amount of raw records we can
23 find to --

24 **MS. MUNN:** I understand.

25 **MR. GRIFFON:** -- do comparisons, yeah.

1 **DR. NETON:** I guess -- I guess I want to get
2 back to the original point that we had reached
3 I thought several months ago. See, I've looked
4 at these graphs and I have not had time to
5 digest this 20-page analysis, I'll be honest
6 with you, because it came in at noon yesterday.
7 But the point is I think if -- if it's true,
8 what you're saying is true, that there is --
9 that the highest workers were not monitored,
10 then we have a sampling of the workers. And
11 why is that an SEC issue at that point if -- if
12 then it's a matter of picking the appropriate
13 metric to -- to use for reconstructing
14 unmonitored workers, that is, the 95th
15 percentile or the 50th percentile. What is the
16 -- What is the -- Am I missing the issue
17 here?

18 **DR. MAKHIJANI:** If -- If you look at figure 2
19 in which the percentage of monitored workers in
20 the '56 to '60 period is correlated against the
21 dose -- average doses in the '61 to '65 when
22 there was universal monitoring, the correlation
23 is -- is very weak. And so what -- what that
24 says is that actually some of the departments
25 that were at high risk were monitored at high

1 percentage times and some of them were
2 monitored a low percentage of the time. And so
3 actually what were the actual -- to establish
4 that you know the actual exposure conditions in
5 the high risk departments in -- in the -- in
6 the '56 to '60 period seems -- at -- at this
7 stage that job hasn't been done.

8 **DR. NETON:** Well, my point, Arjun, is if we
9 assign the 95th percentile of all the monitored
10 workers -- you know, we're not -- you know, the
11 only way this would not work I don't think is
12 if they preferentially monitored people who
13 weren't exposed.

14 **DR. MAKHIJANI:** Well, I think that that's
15 clearly not true.

16 **DR. NETON:** Well, then, okay. If that --
17 Given that's the case then I don't know why a
18 95th percentile co-worker model would not work.

19 **DR. MAKHIJANI:** Is that the -- Is that the one
20 we have?

21 **DR. NETON:** No. We -- We're -- The argument
22 or the discussion that we've been having is
23 were the highest exposed workers monitored; and
24 our position was if they were then we can
25 assign the 50th percentile to the unmonitored

1 workers.

2 **DR. MAKHIJANI:** Okay.

3 **DR. NETON:** That's the issue. And you -- you
4 were arguing, and I need to look at your
5 analysis, that that may not be true.

6 **DR. MAKHIJANI:** Right.

7 **DR. NETON:** So now we have a sampling of the
8 work force. And given that as a sampling then
9 I would agree if that's true that the 50th
10 percentile might not be appropriate and
11 something like the 95th percentile might be --
12 might be a better estimate. But why that would
13 be an invalid model then I'm not sure.

14 **DR. MAKHIJANI:** No, we haven't said that.

15 **DR. NETON:** Right.

16 **DR. MAKHIJANI:** In fact -- In fact, what --
17 what is in the report, it -- it makes no
18 judgment about whether this is an SEC issue or
19 not.

20 **DR. NETON:** That's what I'm trying to --

21 **DR. MAKHIJANI:** It makes no judgment about --

22 **DR. NETON:** Yeah.

23 **DR. MAKHIJANI:** Well, Jim, you're -- the amount
24 on the table is what it represents.

25 **DR. NETON:** That's what I'm trying to get at,

1 Arjun, is we have a very limited amount of time
2 here to deal with issues --

3 **DR. MAKHIJANI :** Yeah.

4 **DR. NETON:** And -- And if this is not an SEC
5 issue then I would prefer not to spend my
6 entire weekend analyzing it.

7 **DR. MAKHIJANI:** This is -- This is -- I guess
8 I -- I will defer to Hans on this. As I said,
9 this is -- I'm -- you know, this is a piece I'm
10 coordinating. Ron and Hans have looked at
11 this. It -- It's your judgment call, Hans,
12 not mine.

13 **DR. BEHLING:** Yeah, I would say, and I will
14 agree with Jim, it's possibly not an SEC issue.
15 In fact, I was just reading the recent draft
16 for co-workers at Rocky Flats and where you
17 give the option of using a 95th percentile
18 value for unmonitored workers to -- who should
19 have been monitored, and that to me is a very
20 nice and claimant favorable approach that is
21 clearly claimant favorable for the Rocky Flats
22 dose reconstruction projects. There the co-
23 worker data is divided into 50th percentile
24 value for people who are possibly only exposed
25 part of their work period as opposed to the

1 95th percent value for people who were
2 routinely or should have been routinely
3 monitored. And I would concur if we were to
4 default to a 95th percent value that would
5 settle most of the questions and concerns.

6 **MR. GRIFFON:** Hans? Hans, just can I offer
7 maybe what SC&A needs to do in -- in -- in
8 finalizing this report or a final draft of it
9 is -- is to make that sort of statement or
10 something, you know, if you're comfortable with
11 it, of course -- make that sort of statement
12 within the body of the report. And then, you
13 know, then it's out there that, you know, you
14 feel that based on your analysis a 95th
15 percentile model may be more appropriate
16 because X, Y and Z as you presented but that it
17 -- it would preclude -- it wouldn't necessarily
18 be an SEC issues.

19 **MR. KERR:** And I -- And I would like to really
20 see the -- a solid basis for the --

21 **MR. GRIFFON:** Right.

22 **MR. KERR:** -- for the argument.

23 **MR. GRIFFON:** Right.

24 **DR. NETON:** Yeah, George. I don't think
25 anybody's arguing that, you know, we would

1 adopt it if they so explained.

2 **MR. KERR:** No, I understand that.

3 **MR. GRIFFON:** Right, right, right, right.

4 **DR. NETON:** But, you know, I -- I'm just
5 trying to move things along, you know.

6 **MR. GRIFFON:** I agree, Jim. I was going to say
7 the same thing before you went into that is --

8 **DR. NETON:** Sorry. Sorry I pre-empted you.

9 **MR. GRIFFON:** And we've -- We've -- We've
10 said this before actually that this has been on
11 the borderline of SEC site profile for awhile
12 so I think maybe you can make a statement to
13 that effect in your report, SC&A.

14 **MR. BUCHANAN:** Yes, this is Ron Buchanan and I
15 think that it's been our position is that this
16 would not be an SEC issue if you modified the -
17 - the final. It isn't so much the missing data
18 as how it's being used.

19 **DR. WADE:** Okay. We need to move on. We
20 really do.

21 **MR. GRIFFON:** Yeah, yeah, yeah, yeah. I'm
22 saying I think the next three we can wrap up
23 fairly quickly actually but maybe I'm wrong.
24 Let's go on to number 9.

25 **DR. NETON :** Yeah. Can I just get a little

1 clarification that, you know, for number 8 SC&A
2 may -- may modify their -- their -- their
3 documents so that we don't have to provide
4 these analyses at this point or is that -- I
5 mean I want to make clear what we're going to
6 provide. I mean we -- we're certainly going
7 to -- we're certainly going to become familiar,
8 you know, with the entire --

9 **MR. GRIFFON:** It sounds to me -- I mean Hans
10 and Ron weighed in there for SC&A. It sounds
11 to me like that's right, Jim.

12 **DR. NETON:** Okay.

13 **MR. GRIFFON:** That you don't need any more
14 analyses I mean --

15 **DR. NETON:** Well, we will eventually but --

16 **MR. GRIFFON:** Although, yeah. For site profile
17 concerns.

18 **DR. NETON:** Yeah, okay. Very good. All right.
19 Number 9 gets into the polonium 208 issue and
20 actually 9 and number 11 are somewhat related
21 because they're both Cyclotron issues.

22 **MR. GRIFFON:** That's, yeah.

23 **DR. NETON:** And so I'll try to cover it
24 somewhat in the same way. I think there's a
25 little bit of confusion as to what we meant to

1 do with the examples for the Cyclotron, that is
2 the gallium and the polonium. Given our
3 position, and I think SC&A understood that
4 pretty clearly in their review, that -- that
5 for the Cyclotron these are -- these tend to be
6 episodic exposures over a period of time that
7 were -- were followed up and tracked to ground
8 and monitored, and we have a lot of indications
9 we believe from the documents that we have in
10 hand that that's true. I'd emphasize that by
11 doing a gallium intake assessment for --
12 admittedly the only one we could get our hands
13 on quickly to get the analysis done admittedly
14 is outside the 1957 period by three years, but
15 it spoke to the issue of -- of not only were
16 these things tracked to ground and -- and they
17 do follow-ups on -- on incidents when there
18 were target ruptures but also the -- the -- the
19 relative magnitude of the deltas involved with
20 these so-called exotic radionuclides that have
21 very typically fairly short half-lives in the
22 body and are fission products that -- not alpha
23 emitters. They're more beta gamma emitters.
24 That was the intent of those examples that we
25 provided. We -- We believe and we -- we still

1 have not provided to you but we believe we have
2 sort of a five-prong approach (unintelligible)
3 constructing these incidents. Through the HP
4 reports that we have -- and there are some gaps
5 in those reports because a few of them are
6 still classified. Our folks have looked
7 through them and they believe that they support
8 our case that there is Cyclotron information in
9 there that we can use to support these dose
10 reconstructions. There are interoffice
11 correspondences that we -- we have available,
12 division reports and individual claimant files.
13 We've looked through a number of individual
14 claimant files looking at the CATIs that were
15 done and out of the entire population right now
16 we can only identify 11 or so individuals who
17 indicate that they were involved in -- in
18 Calutron/Cyclotron operations and -- and had --
19 maybe had some reference to incident. We're
20 working through those files now to identify the
21 bioassay data, etcetera. But I want to point
22 out that this is not a huge population of
23 workers. This is a Cyclotron operation that --
24 that is involved. Some technical people, some
25 maintenance folks and those types, but our

1 estimation is that -- that the affected
2 population is somewhere in the vicinity of
3 maybe 40 individuals because this was a unique
4 isolated operation. Now, the Cyclotron targets
5 were for the most part cladded. That is, you
6 know, they were contained in cladding, exposed,
7 pulled out and as Mel Chew nicely described it,
8 had pictures, when the radiation was done and
9 those targets were processed over at ORNL. In
10 the few cases there were ruptures though, again
11 we feel that we can track these bioassay
12 follow-ups and incident reports through either
13 the DOE submittals for the claimants or in the
14 investigation reports that we talked about in
15 delta view. The polonium period is slightly
16 more problematic in the sense that in 1951 and
17 '52 polonium exposures were -- were non-clad.
18 They couldn't get enough energy into these
19 targets with the cladding in place so they were
20 essentially bare targets that did dispense --
21 disperse some fairly significant levels of
22 airborne alpha activity, although if you look
23 in the 1951 and '52 health physics reports
24 there are indications where there are air
25 sample results. I think there's probably about

1 100 individual air sample results indicating
2 they recognized the problem, they were
3 controlling for it, they restricted access, all
4 those sort of things. So I think between the
5 incident reports, some of the air monitoring
6 data we have and the nature that these were
7 episodic, you know, discrete events, we -- we
8 feel fairly confident that we can go back and
9 reconstruct exposures to these workers.

10 **DR. MAKHIJANI:** This is -- This is Arjun. The
11 -- I -- I actually want to separate the
12 polonium from the -- from the gallium example
13 because even though they're in the same area
14 because --

15 **DR. NETON:** Right.

16 **DR. MAKHIJANI:** -- we found different issues
17 with them. I think Jim -- Jim covered some of
18 them. There is -- There -- There is a set of
19 samples from 1953 that does appear to relate to
20 an incident for polonium in 1953 and those seem
21 -- I think most -- almost all but two of the
22 samples relate to that incident best I could
23 tell. I don't have a description of the
24 incident, just from the dates or how the
25 sampling was done.

1 DR. NETON: Right.

2 DR. MAKHIJANI: Is that right, Jim?

3 DR. NETON: Yeah.

4 DR. MAKHIJANI: Okay. The -- The -- But it -
5 - It seems to me that we don't know the years
6 of production of polonium well because --

7 UNIDENTIFIED: Yes -- Yes, we do.

8 DR. NETON: Yeah, I think we do.

9 DR. MAKHIJANI: Okay. Because I found -- I
10 found that the appendix 2 compilation was --
11 was not -- didn't have anything for '51 and '53
12 even though there was an accident in '53. And
13 so what -- what I -- what I mean to say is that
14 I didn't -- I didn't see that the compilation
15 was complete and so I don't know whether you
16 have a complete set of data about that.

17 DR. NETON: We -- We actually have, Arjun --
18 I'm sorry I -- I usurped your introduction
19 there.

20 DR. MAKHIJANI: Oh, no. No problem.

21 DR. NETON: You saw my zeal to get --

22 DR. MAKHIJANI: No, that's -- shortness of
23 time.

24 DR. NETON: We have a production of polonium
25 208 report from Oak Ridge National Laboratory.

1 It was the final report on termination of
2 project, ORAU -- ORNL 1392, that goes in -- in
3 -- in a lot of detail as to how much production
4 there was by month --

5 **DR. MAKHIJANI:** Okay.

6 **DR. NETON:** -- from the initiation of the
7 polonium runs in 1951 through closure in August
8 1952.

9 **DR. MAKHIJANI:** Okay. If it's unclassified it
10 would be useful to see it.

11 **DR. NETON:** Yeah, we can put that on -- on the
12 O-drive for you.

13 **MR. RUTHERFORD:** Sorry. I'm sorry. This is
14 LaVon Rutherford. In fact that is already on
15 the O-drive under Cyclotron and Calutron --

16 **MR. GRIFFON:** Oh, it is?

17 **MR. RUTHERFORD:** -- of the A-B (inaudible).
18 It's already there.

19 **MR. GRIFFON:** Okay.

20 **DR. NETON:** So we do know production and again,
21 we have some of these air sample data. The
22 1953 data we -- we analyzed show that
23 (inaudible) reconstruction for polonium
24 (inaudible).

25 **DR. WADE:** Jim, you're cutting in and out.

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

2 **DR. NETON :** We could do dose reconstructions
3 for -- for polonium 208. There was some
4 concern about that given bioassay data. And --
5 And we've used to -- to demonstrate proof of
6 principle that we can actually do that if in
7 these incident reports we run across a polonium
8 208.

9 **MR. CHEW:** Jim, this is Mel. Yeah, we -- We
10 also were aware of there was an incident with
11 polonium 210 from a polonium drilling neutron
12 source that was -- was different from the
13 polonium 208 and that could be the bioassay
14 result because they just mentioned it was
15 polonium.

16 **DR. MAKHIJANI:** Oh, I see. Yes, that's right.
17 That was a question, too, because he had three
18 different isotopes of polonium going on --

19 **DR. NETON:** Yeah.

20 **DR. MAKHIJANI:** -- binary. And the -- And the
21 data actually only mentioned the element of the
22 isotope.

23 **DR. NETON:** That's correct.

24 **DR. MAKHIJANI:** Okay. Okay.

25 **DR. NETON:** So anyway --

1 DR. MAKHIJANI: Yeah.

2 DR. NETON: I guess that's about all I can say
3 on our position right now. We -- We wish we
4 had all these investigation reports out there
5 for you to look at but we just don't.

6 DR. MAKHIJANI: Yeah. No, I mean, Jim, I -- I
7 just wrote up what I saw. That's all.

8 DR. NETON: Sure.

9 MR. GRIFFON: Jim, I was going to -- just going
10 to ask. You mentioned this five-prong
11 approach.

12 DR. NETON: Uh-huh.

13 MR. GRIFFON: And I guess in the spirit of --
14 of sort of proof of principle the -- the better
15 you can lay that out the --

16 DR. NETON: Yeah.

17 MR. GRIFFON:-- you know, before the Board the
18 better, you know, it will be in the situation
19 that --

20 DR. NETON: I understand.

21 MR. GRIFFON: Yeah.

22 DR. NETON: It's just --

23 MR. GRIFFON: I know.

24 DR. NETON: It's all coming out in time.

25 MR. GRIFFON: In your situation, too, I know.

1 DR. NETON: Yeah, because I'm not --

2 MR. GRIFFON: We've been here before.

3 DR. NETON: I'm not making apologies.

4 MR. GRIFFON: Yeah.

5 DR. NETON: I'm just trying to be realistic.

6 DR. WADE: So what do we have left now in terms
7 of -- of --

8 MR. GRIFFON: Wait. Maybe we should just pick
9 up on the gallium there. Arjun, were you --

10 DR. MAKHIJANI: There's a plutonium and a
11 gallium, Mark. And I think I haven't examined
12 the plutonium dose reconstruction, nor I think
13 has anybody else on our team because it does
14 seem put up pretty recently. And -- But the
15 plutonium data as we say here is more copious
16 and it is from the period and there's --
17 there's one year that seems to possibly be
18 missing but it could possibly be filled in by --
19 - by co-worker data. It doesn't seem to have
20 the same kind of issues as we picked up from
21 polonium. Does the gallium --

22 MR. GRIFFON: Is it obvious -- let me stop on
23 the plutonium. Is it obvious who would --
24 would -- would be exposed to plutonium in those
25 years?

1 **DR. MAKHIJANI:** Well, NIOSH has said based on
2 limited information that there were only
3 limited production parts there for a limited
4 time that were solid and did not pose a
5 potential for internal exposure. And so we've
6 just re-quoted that and cannot make a judgment
7 about it so for -- for the moment that's where
8 it stands. And haven't come across any
9 evidence to the contrary to NIOSH's position
10 certainly.

11 **MR. GRIFFON:** There are a large number of
12 bioassay samples from '52 to '56 it says. Why
13 were they doing bioassay if there was no
14 potential threat?

15 **DR. NETON:** No, there were -- I think that
16 these, and Mel Chew can correct me if I'm
17 wrong, but this was the plutonium separations
18 in the Calutrons.

19 **MR. CHEW:** Right. That's correct. Uh-huh.

20 **DR. NETON:** All right. And -- And so, you
21 know, it's clear in 1951 that they were
22 thinking about it. It's even mentioned in the
23 health physics reports they mention that we
24 need to think about getting ready for 1952
25 production of plutonium. And so there was a

1 fair amount of separation going on in those
2 years and -- and that's why we have these
3 bioassay samples. I think I would just like to
4 comment on one of SC&A's comments that, you
5 know, we don't have a co-worker model. The
6 example that we provided went through and --
7 and -- and as a bounding analysis we proposed
8 to use, and we identified the 95th percentile
9 of all of the monitoring data we have. And as
10 -- as a bounding analysis we would propose to
11 use that in a -- as a -- as an intake, chronic
12 intake scenario for plutonium. So we think we
13 -- we have a handle on the upper limit of
14 exposures based on the I think there are 600 or
15 700 plutonium samples in the -- in this period.

16 **DR. MAKHIJANI:** That's correct.

17 **DR. NETON:** Which is not inconsistent
18 necessarily with the number of workers that may
19 have been working at the operation.

20 **DR. MAKHIJANI:** No, no. That's correct. I --
21 I agree there -- there -- there -- there are
22 that number. Joyce, are you still on the line?

23 **MR. GRIFFON:** Back to my question.

24 **DR. LIPSZTEIN:** Yes, I'm still on the line.

25 **DR. MAKHIJANI:** Can we -- Can -- Will you

1 have the time to look at that?

2 **DR. LIPSZTEIN:** Yes.

3 **MR. GRIFFON:** Let me -- Yeah, let me ask this,
4 too, Jim. Back to my question on how do you
5 know who was working in the -- in this area?
6 Is it obvious by department or --

7 **DR. NETON:** Well, this would be --

8 **MR. CHEW:** Mark, let me try to answer that
9 question. The primary work during that
10 particular periods was using the Calutron to
11 separate some of the plutonium isotopes for the
12 research to look at cross-section work for the
13 different isotopes of plutonium. That's why
14 the pockets were there. And so I would say
15 it'll limit it to the people who were basically
16 either cleaning out the -- the Cyclotron
17 pockets and potentially the (unintelligible)
18 and recovering the specific isotopes that were
19 being separated at the Calutrons for the
20 plutonium here. So I think -- I think the --
21 the class -- I mean the number of people and
22 the category of people can really be well
23 defined.

24 **MR. GRIFFON:** Yeah. No, that -- that all makes
25 sense to me, Mel. The question I'm asking is

1 retrospectively, you know, do these people fall
2 out from department number from -- from their
3 own questionnaire? Do they self-identify that
4 they were working in Calutrons in that time
5 period? Do they, you know -- how do you -- how
6 do you place people in -- in time in that area?

7 **MR. TANKERSLEY:** Mark, again, I think this is
8 one of the best places where use of the work
9 history database can identify those people
10 really pretty accurately.

11 **DR. NETON:** Yeah, I think --

12 **MR. GRIFFON:** Because there was a small number
13 and they were well controlled, right, or
14 whatever.

15 **DR. NETON:** Right. And these department
16 numbers are fairly small.

17 **MR. TANKERSLEY:** Job titles, departments, job
18 codes and year, you know. You can track the
19 people, you know, by every job they had, every
20 department they had.

21 **MR. GRIFFON:** Okay. Okay.

22 **MR. TANKERSLEY:** That would be pretty -- pretty
23 straightforward.

24 **DR. NETON:** But we would certainly start with
25 the CATI and if there was any indication in the

1 CATI report that they worked with this material
2 it would -- it would certainly get us going
3 down that path.

4 **DR. MAKHIJANI:** And what happens with the
5 survivors?

6 **DR. NETON:** Well, that's another issue. Fifty
7 percent of our cases are survivors. Now,
8 remember that these plutonium values were, we
9 believe, and this is what ORAU or Y-12 folks
10 have told us, is that these samples, if they
11 were taken there should -- should be showing up
12 in their urine samples because remember, they
13 go through the delta view database and look for
14 people who have those samples and provide them
15 with the records. So anyone who would monitor
16 for plutonium were -- we believe that these are
17 going to come across and that's what we've been
18 told in -- in our -- in the DOE submittals.

19 **MR. GIBSON:** This is Mike. Jim, have these --
20 some of these individual cases involving the
21 Cyclotron and the Calutron, are they pended or
22 have they started to have reconstruction done
23 and -- and been adjudicated?

24 **DR. NETON:** Well, that's a good question, Mike.
25 We have not universally pended

1 Calutron/Cyclotron operators but I will say
2 that using the efficiency process, there's a
3 number of methods in case those could go out,
4 you know, ones that certainly would qualify,
5 you know, over 50 percent. And I don't think
6 that -- I'm not -- I'd have to go back and
7 check to see where -- where any of it may have
8 been Calutron operators went out, if they were
9 -- it seemed to be less than 50 percent. I
10 don't know that any have.

11 **MR. GIBSON:** Okay. That would be interesting
12 to find out.

13 **MR. GRIFFON:** Good question, yeah.

14 **DR. NETON:** It's a good question. I think
15 among the -- the cases that we've done we -- we
16 can take a look at that and provide some
17 information.

18 **MR. GIBSON:** Okay.

19 **MR. GRIFFON:** Okay. I think we can look at 10
20 -- or 11 just for a second, Arjun.

21 **DR. MAKHIJANI:** Yeah.

22 **MR. GRIFFON:** Then I'll try to probably take a
23 break and go to Rocky.

24 **DR. MAKHIJANI:** Okay. Well, 11 is -- is -- is
25 simpler. There, you know, the -- the gallium

1 internal dose was considered. I guess you were
2 only considering gallium and not trying to
3 illustrate all radionuclides to which this
4 person was exposed.

5 **DR. NETON:** That's correct. We were just
6 trying to show, you know, we can do these dose
7 reconstructions using ICRP model given that the
8 incidents will track to bed.

9 **DR. MAKHIJANI:** Okay. And -- And so -- So
10 the -- The big question is what -- how to
11 establish the relevance of a 1968 incident
12 through what went on in the SEC period, and
13 that, there's no discussion of that. And how
14 do you -- how do you bound the doses or show
15 their maximum plausible for the period in
16 question?

17 **DR. NETON:** Right. And -- And again, we
18 believe, you know, this five-prong approach
19 that I mentioned --

20 **DR. MAKHIJANI:** Right.

21 **DR. NETON:** -- that we just have not found one
22 in the SEC period yet that -- that we can -- we
23 can show you.

24 **DR. MAKHIJANI:** Okay.

25 **DR. NETON:** But the data that we have in hand

1 leads us to believe that these are -- are what
2 was John Mauro's --

3 **MR. GRIFFON:** Jim -- Jim, is there any way
4 short of -- I was just wondering if there's any
5 sort of interim product to provide with regard
6 to these incidents like if you had a printout
7 of -- of what came up on your search. I don't
8 know if that's --

9 **DR. NETON:** Yeah.

10 **MR. GRIFFON:** -- any faster, that would give us
11 an indication of how much insufficient data you
12 had, how, you know, and what radionuclides were
13 covered or something.

14 **DR. NETON:** Yeah.

15 **MR. GRIFFON:** It may not be that easy but I
16 don't know.

17 **DR. NETON:** Yeah, I can assure you, Mark, we're
18 working towards that end --

19 **MR. GRIFFON:** Okay. Okay.

20 **DR. NETON:** -- as fast as we can and --

21 **MR. GRIFFON:** Yeah.

22 **DR. NETON:** -- you know, we're not -- we're not
23 sitting on our hands here but I -- it's a good
24 comment and I think if we can make this picture
25 clearer for the Board and working group we're

1 going to try.

2 **MR. GRIFFON:** I -- I know that, Jim.

3 **DR. NETON:** Yeah.

4 **MR. GRIFFON:** I know you're not sitting on your
5 hands.

6 **DR. NETON:** I know.

7 **MR. GRIFFON:** Okay.

8 **MS. MUNN:** I don't think any of us thinks
9 you're sitting on your hands.

10 **DR. NETON:** What I meant to say though is this
11 is an issue that, you know, as of this morning
12 we were conferencing and working to try to --
13 to see, you know, the maximum amount of -- of
14 light we can shed on this the better. We know
15 that.

16 **MR. GRIFFON:** Okay. Okay. The -- The only
17 other question I have on the gallium was this
18 example -- I haven't even looked at the example
19 but the -- only discusses internal dose; is
20 that true? And --

21 **DR. NETON:** Correct.

22 **MR. GRIFFON:** And are there any reasons to
23 believe that you'd need any sort of other
24 method for estimating external dose in the
25 Cyclotron or would they all be badged and --

1 **DR. NETON:** We -- We don't think so. It's
2 very clear that Cyclotron workers were badged.
3 We've got some -- some control procedures that
4 speak to that, you know, this -- of any place
5 at Y-12 --

6 **MR. GRIFFON:** Yeah.

7 **DR. NETON:** -- this would have been the highest
8 potential exposure.

9 **MR. GRIFFON:** Okay.

10 **DR. NETON:** In fact, we had toyed with the idea
11 of using the badge results to impute the
12 internal doses but it didn't work out as you
13 can imagine.

14 **MR. GRIFFON:** Okay. All right. Because I --
15 Anything else on that, Arjun? I guess we --

16 **DR. MAKHIJANI:** No. No, I think that's it.

17 **MR. GRIFFON:** Okay. All right. I think -- I
18 mean what -- what -- I think SC&A has some --
19 some, you know -- you're going to provide us
20 with a final draft on this so I guess right
21 before the meeting.

22 **DR. MAKHIJANI:** Yeah.

23 **MR. GRIFFON:** I wouldn't expect it any sooner,
24 you know.

25 **DR. MAKHIJANI:** Yeah.

1 **MR. GRIFFON:** There's only a few days left
2 here.

3 **DR. MAKHIJANI:** Just -- Just so I -- I
4 understand, Mark, though, it'll be the recycled
5 uranium section.

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

7 **DR. MAKHIJANI:** There'll be some comments on
8 the 147 worker question including comments on --
9 -- on 95 percentiles and -- and maybe table 4-
10 5A. Yeah, and --

11 **MR. GRIFFON:** And then possibly some other
12 fine-tuning of -- of language that -- from the
13 discussions today, right?

14 **DR. MAKHIJANI:** Okay.

15 **MR. GRIFFON:** The other --

16 **DR. MAURO:** Yeah, Mark, this is John.

17 **MR. GRIFFON:** Yeah.

18 **DR. MAURO:** For each one of these 11 items I --
19 I took a lot of notes about the response that
20 was given and I think that we're in the
21 position where we can re-craft this report in a
22 way that would communicate that we posed this
23 issue; here is the response and -- and the
24 degree to which we consider to be the issue to
25 be resolved based on the information that we've

1 been given or -- or we may be in a place where
2 we haven't yet had an opportunity to run it
3 down. But I guess it'll effectively be as
4 complete as we possibly can make it and bring
5 down with us -- perhaps we can discuss it at
6 the sub-committee meeting on Tuesday morning.

7 **MR. GRIFFON:** That -- That sounds like a plan.
8 And -- And I would -- I would offer that what
9 I'm going to try to do over this weekend and
10 maybe with the work group's help to the extent
11 I can get it, is to sort of do a -- a summary
12 report. And this, a real over, you know, more
13 over-arching, not as much -- not meant to have
14 the kind of detail that we have in these other
15 reports. But a summary report of where we are
16 on the -- on the SEC evaluation. And it might
17 -- it might, you know, to some -- I'm not sure
18 how, if it's going to be a strong
19 recommendation to the Board, but it's going to
20 be, you know, I guess the work group's
21 impressions of different areas of concern with
22 regard to the SEC and then that'll -- that'll
23 be hopefully, you know, be useful in our Board
24 deliberations.

25 **DR. WADE:** And remember, Mark -- this is Lew --

1 that the Board will take up the Y-12 SEC
2 petition on Wednesday so we do have Monday
3 night, Tuesday night, you know.

4 **MR. GRIFFON:** Oh, yeah, we've got plenty --

5 **DR. WADE:** Yeah, plenty of time.

6 **MR. GRIFFON:** -- plenty of time.

7 **DR. WADE:** The work group ought to get together
8 and look at the work product.

9 **MR. GRIFFON:** That's right. Well, I mean I,
10 you know, I would -- what I would offer is I
11 would try to draft something and -- and email
12 it as soon as possible and then maybe when we
13 get out there we can meet at night --

14 **DR. WADE:** Right.

15 **MR. GRIFFON:** -- as a work group separately and
16 -- and, you know, fine tune language or
17 whatever.

18 **DR. WADE:** Okay. Just let me know your
19 pleasure and we'll make the arrangements for
20 the meeting.

21 **MR. GRIFFON:** Okay.

22 **MS. MUNN:** Are you going to make an effort to
23 tie your comments to the original matrix or
24 not? Well, that's a question that we can
25 develop later.

1 **MR. GRIFFON:** Yeah. I haven't thought that
2 part through.

3 **MS. MUNN:** That's not pertinent right now.
4 Just a thought.

5 **MR. GRIFFON:** Yeah.

6 **MR. GIBSON:** This is Mike. Would it -- would
7 it helpful -- could -- I mean would it be
8 possible if perhaps NIOSH could have a -- a
9 little presentation ready for the Board, the
10 whole Board, about the status of the
11 Cyclotron/Calutron worker cases, the numbers
12 and the status for dose reconstruction so that
13 they would have a better overview and not just
14 try to take stuff from our matrix and then our
15 recommendations?

16 **DR. WADE:** Well, I think NIOSH could take those
17 comments to -- to heart as it prepares its
18 comments for the Board and do what it can do.

19 **MR. GRIFFON:** Yeah. And I certainly think
20 anything -- I think Jim's, you know, you've --
21 you've got the message that anything that
22 you've gleaned from this call today that you
23 think would strengthen your position I think,
24 you know, might not be in your evaluation
25 report but in your presentation you could

1 certainly --

2 **DR. NETON:** Yeah. I'm a little bit sensitive
3 though in -- in terms of, you know, breaking
4 new information, you know. We -- We -- We
5 try to fix things and, you know --

6 **MR. GRIFFON:** Well, yeah.

7 **DR. NETON:** -- before that but, you know --

8 **MR. GRIFFON:** Maybe just if -- if they can be
9 presented as clarifications rather than --

10 **DR. NETON:** Yeah.

11 **MR. GRIFFON:** -- modifications, you know.

12 **DR. NETON:** Right. I think everything we have
13 here right now is clarifications on these
14 issues.

15 **MR. GRIFFON:** Right. That's the way --

16 **DR. NETON:** I'd like to do that. In some sense
17 I see sort of a -- sort of a different
18 framework for this presentation as compared to
19 other SEC petitions because, you know, we have
20 the SC&A report and I think -- I think the
21 Board -- full Board would probably want to hear
22 our -- our position on these issues, you know,
23 independent of the working group and --

24 **DR. WADE:** All right. This is Lew. Just very,
25 very briefly, Y-12 will come up a number of

1 times. The first time it'll come up it'll be
2 the -- the sub-committee dealing with the
3 matrix as it related to the site profile so all
4 of the issues can be talked about then. Later
5 that first day then I'll ask John Mauro to make
6 a presentation of SC&A's work with regard to
7 the SEC review for Y-12, and there would be an
8 opportunity there then for you to do what
9 you're talking about, Jim, if need be to put
10 some issues on the table. All of that
11 channeling into a Wednesday formal presentation
12 of the evaluation report hearing from the
13 petitioners, the working group making its
14 report and the Board deliberating. So I think
15 when -- when SC&A presents its report would be
16 an opportunity, Jim, for you to put some things
17 on the table outside of the formal SEC
18 evaluation report.

19 **DR. NETON:** Okay. Sounds good.

20 **DR. NETON:** Yeah.

21 **MS. MUNN:** And excuse me, Lew. You said sub-
22 committee. Did you mean working group?

23 **DR. WADE:** Well, I think when the sub-committee
24 meets on Tuesday morning I would expect that
25 the working group would talk to them about the

1 matrices on the different site profiles so Y-12
2 will be talked about there in the more general
3 sense of the broad work that was done and, you
4 know, what remains to be done will get more
5 focused then on the SEC issues later that day
6 and the next day.

7 **MS. MUNN:** All right. Just wanted --

8 **DR. WADE:** Okay.

9 **MS. MUNN:** -- to get clarified.

10 **MR. SMITH:** This is Matthew Smith with the ORAU
11 team. Before you move off of Y-12 I want to
12 take 30 seconds just to let everyone know that
13 when we do apply the external co-worker data
14 that we've been talking about, we do apply it
15 into IREP as a lognormal distribution so we're
16 not just considering 50th percentile value
17 only. We're also applying a GSD value, a
18 geometric standard deviation value that takes
19 into account the 95th percentile dose as well.
20 And that's just a point of procedure I wanted
21 everybody to know.

22 **MR. GRIFFON:** Okay.

23 **DR. MAKHIJANI:** Can you say that again? I
24 didn't quite get that.

25 **MR. SMITH:** When we -- When we apply the

1 external co-worker data for Y-12, the data set
2 that's been under discussion all morning, when
3 we take that dose information and put it into
4 IREP, we apply it in the lognormal
5 distribution. We do not just put in the 50th
6 percentile value as a constant. We let IREP
7 know that the 50th percentile value is a
8 geometric mean of a lognormal distribution.

9 **DR. MAKHIJANI:** Right.

10 **MR. SMITH:** And then we also define a geometric
11 standard deviation and in doing that, that
12 takes into account what the 95th percentile
13 value is.

14 **DR. MAKHIJANI:** But you're not using a fixed
15 95th percentile value?

16 **MR. SMITH:** No, we're not.

17 **DR. NETON:** That's right. And --

18 **MR. GRIFFON:** That's a good question.

19 **DR. NETON:** -- before was like Bethlehem Steel
20 for example. And I appreciate Matt's comment.
21 That's very true. I'm not sure that gets us
22 past this other issue, though, of, you know, if
23 the workers weren't monitored properly then one
24 needs to think about the 95th.

25 **MR. GRIFFON:** Right. Good to clarify that.

1 **DR. MAURO:** Yeah, it was good clarification.
2 We weren't thinking in those terms.

3 **DR. NETON:** Yeah, it is. The GSDs are fairly
4 large. I think they're around 3.7 or something
5 like that for those distributions.

6 **MR. SMITH:** They're -- They're usually above
7 3, That's correct.

8 **MR. GRIFFON:** Okay.

9 **DR. WADE:** Okay. So let's close the chapter on
10 Y-12.

11 **MR. GRIFFON:** Yeah.

12 **DR. WADE:** And open it on Rocky Flats.

13 **MR. GRIFFON:** Well, all I would say is can we
14 take a five-minute because I know people from
15 Rocky are on the line. Can we take a five-
16 minute break to get our documents in order and
17 --

18 **DR. WADE:** As you wish. And then when we come
19 back we'll do some introductions and make sure
20 we get the conflict of interest statements
21 done.

22 **MR. GRIFFON:** Yes.

23 **DR. WADE:** Then we can begin our discussions.

24 **MR. GRIFFON:** Okay. All right. Five minutes.

25 **DR. WADE:** Five minutes.

1 **MR. GRIFFON:** Bye.

2 (Whereupon, a brief recess was held.)

3 **ROCKY FLATS**

4 **DR. WADE:** Those are the principals. This is
5 Lew Wade. I'll keep the introductions very
6 short. I think everyone knows the working
7 group, what the working group is about. We're
8 now going to look at issues related to the
9 Rocky Flats SEC petition. I would like members
10 of the NIOSH ORAU team to identify themselves
11 and state their conflicts or absence of, and
12 then the same with the -- the SC&A team. There
13 are no conflicts with regard to Rocky Flats for
14 the Board members involved. Brant, for ORAU
15 NIOSH?

16 **DR. ULSH:** Sure. This is Brant Ulsh with NIOSH
17 and I have no conflicts at Rocky.
18 That might be it, Lew. It's awfully lonely
19 here.

20 **DR. WADE:** Okay.

21 **MS. JESSEN:** This is Karin Jessen from ORAU and
22 at this time I have no conflicts.

23 **MR. ROBINSON:** This is Al Robinson of the NIOSH
24 team. No conflicts.

25 **MR. FALK:** And this is Roger Falk. I am part

1 of the ORAU -- ORAU. And yes, I have
2 conflicts with Rocky Flats.

3 **MR. LANGSTED:** This is Jim Langsted with the
4 ORAU team. I have conflicts at Rocky Flats.

5 **MR. KENOYER:** Judson Kenoyer with the ORAU
6 team. No conflicts with Rocky Flats.

7 **MR. SHARFI:** Mutty Sharfi with the ORAU team.
8 No conflicts with Rocky Flats.

9 **MR. WOLFE:** This is Craig Wolfe with the ORAU
10 team. No conflicts with Rocky Flats.

11 **MR. MCFEE:** This is Matt McFee with the ORAU
12 team. I have no conflicts.

13 **MR. STEMPFLEY:** This is Dan Stempfley with the
14 ORAU team. No conflicts.

15 **MR. MEYER:** This is Bob Meyer with the ORAU
16 team. No conflicts.

17 **MR. SMITH:** This is Matt Smith, ORAU team. No
18 conflicts.

19 **DR. WADE:** Okay. SC&A?

20 **DR. MAURO:** John Mauro, SC&A. No conflicts.

21 **MR. FITZGERALD:** This is Joe Fitzgerald. No
22 conflicts.

23 **DR. MAKHIJANI:** This is Arjun Makhijani. No
24 conflicts.

25 **DR. BEHLING:** Hans Behling. No conflicts.

1 **MR. BUCHANAN:** Ron Buchanan. No conflicts.

2 **DR. WADE:** Okay. Board members on the call,
3 please identify yourselves.

4 **MR. GRIFFON:** Mark Griffon.

5 **MS. MUNN:** Wanda Munn.

6 **MR. GIBSON:** Mike Gibson.

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

8 (No response)

9 **DR. WADE:** Okay. So we do not have a quorum
10 and we can conclude -- can conduct our
11 business. Mark?

12 **MR. GRIFFON:** Okay.

13 **DR. WADE:** Well, we should have petitioners
14 identify themselves.

15 **MR. GRIFFON:** Yeah.

16 **MR. DEMAIORI:** Tony DeMaiori, USW.

17 **DR. WADE:** Thank you Tony, and thank you for
18 your patience.

19 **MR. GRIFFON:** Okay. I think the best way to
20 proceed on this is probably going to be we --
21 we had some matrix responses from Brant Ulsh
22 from NIOSH and we also have a -- a -- a summary
23 report that -- that SC&A agreed to provide
24 regarding the data integrity issues that arose
25 in the latter part of our matrix, many of them

1 out of the SEC petition items. So let's see.
2 I -- I think, and I'm -- I'm -- I'm hesitating
3 a little because I just now opened the report
4 that Brant forwarded so -- but I -- I -- I
5 imagine it might make sense to go through your
6 responses first to the matrix items and then --
7 and then bring in SC&A's report and discuss
8 that. Is that -- Is that okay or does it make
9 sense to reverse that order. I'm -- I'm open
10 either way.

11 **DR. ULSH:** That works for me, Mark. Whatever -
12 -

13 **MR. GRIFFON:** Okay.

14 **DR. ULSH:** -- you'd like to do.

15 **MR. GRIFFON:** We'll start with your report,
16 Brant.

17 **DR. ULSH:** Okay. I only focused on --

18 **MR. GRIFFON:** Does everyone have this report
19 first of all? Did the petitioners get this?

20 **DR. ULSH:** I don't know. I sent it out to SC&A
21 and to the working group members.

22 **MR. GRIFFON:** Maybe you can just tell the title
23 and stuff just to see if people have it.

24 **DR. ULSH:** Okay. I think it's called 12 April
25 Working Group Comment Responses. And that's on

1 the O-drive. I -- Again I don't know who --

2 **MR. GRIFFON:** Yeah, 12 April Matrix Item
3 Responses. Did -- Tony, did you -- you have
4 access to this or --

5 **MR. DEMAIORI:** I'm checking right now. I
6 believe I do.

7 **MR. GRIFFON:** Okay.

8 **DR. MAURO:** This is John Mauro. Did that deal
9 with a full range of issues or solely the data
10 reliability?

11 **DR. ULSH:** No, John. This was just -- actually
12 it's even more narrow than that. This is just
13 the outstanding action items that NIOSH had on
14 Mark's latest matrix that was sent out I
15 believe the day after our last meeting.

16 **MR. GRIFFON:** Right.

17 **DR. MAURO:** Mark, would it be of any benefit
18 to, in a broad way, to set the table so to
19 speak of the -- the range of issues and -- and
20 where we're going to sort of narrow it down and
21 focus in on within the con-- the overall
22 context of the petition at this point just for
23 orientation?

24 **MR. GRIFFON:** Sure. You know, I -- I know that
25 you didn't have time to do a review report at

1 this point, John, so I felt like that might be
2 premature. But if you, you know, if you want
3 to generally give a broad overview of where --

4 **DR. MAURO:** I guess it goes back to, yeah,
5 there was an issues matrix for Rocky --

6 **MR. GRIFFON:** Right.

7 **DR. MAURO:** -- that -- that covered the full
8 territory. And if you think that it's
9 inappropriate or it's premature, to try to just
10 sort of set the table but we certainly could
11 just zero right in on the data reliability
12 issues and get to work on those. That --
13 That's fine.

14 **MR. GRIFFON:** I think, yeah. I think that's
15 probably best. I mean most -- most everybody
16 has been on these calls before so there -- they
17 know the matrix. They know the general items
18 that we have on the matrix and I think we --
19 let's hone in on the work to be done
20 understanding that we, you know, we -- you
21 didn't do a review of -- of NIOSH's evaluation
22 report yet. So let's just -- just hammer
23 through this work I think and see where we're
24 at if that's okay.

25 **DR. ULSH:** Okay. Mark, would you like me to

1 proceed?

2 **MR. GRIFFON:** Yeah, go ahead, Brant.

3 **DR. ULSH:** The -- The first action item that
4 was still open for NIOSH related to comment
5 number 9, action item number 6, and that's on
6 page 1 of my handout. I don't know if you also
7 have access to Mark's matrix. Maybe you do and
8 that's on page 4 of 13. Now, this issue dealt
9 with the Case 16 shift, and we discussed that
10 at the last working group meeting. Jim
11 Langsted gave a verbal response and I think
12 Mark -- I think it was you who requested that
13 we provide that in writing.

14 **MR. GRIFFON:** Yeah.

15 **DR. ULSH:** And that's what you see here in this
16 response. The -- The bottom line is pretty
17 much the last paragraph of that response, and
18 that is that the Rocky Flats dosimeter
19 algorithm does not utilize one chip
20 specifically for the K-16 spectrum and it does
21 not use a correction factor specific for that
22 photon energy. So we don't believe that this
23 is a -- an -- an issue with SEC implications
24 but that -- that's -- that's our response on
25 that one. I don't know if we want to discuss

1 that or -- further or --

2 **MR. GRIFFON:** Any -- Any comments? A lot of
3 us are receiving this real time so I don't know
4 if -- if SC&A has any comments on it. I really
5 think we just wanted a written documentation on
6 that one.

7 **DR. ULSH:** Yes. So that's about it. That --
8 That basically counts as a -- a written summary
9 of what we said at the last meeting.

10 **MR. GRIFFON:** Right.

11 **DR. ULSH:** So unless SC&A or anybody else has
12 any comments I can move on to the next one.

13 **DR. WADE:** Go ahead.

14 **DR. ULSH:** Okay.

15 **MR. GRIFFON:** I wouldn't -- I wouldn't -- Let
16 -- Let me just clarify. I wouldn't assume
17 just because we don't comment that -- that
18 we're -- that these items are closed at this
19 point because --

20 **DR. ULSH:** No, certainly not.

21 **MR. GRIFFON:** -- given that we just received
22 these so --

23 **DR. ULSH:** Certainly not, yeah. I -- I
24 realize that we're operating them pretty close
25 to real time.

1 **MR. GRIFFON:** Right.

2 **DR. ULSH:** In between when I write it and when
3 you read it is pretty short a time.

4 **MR. GRIFFON:** Exactly.

5 **DR. ULSH:** Okay. The next one is also comment
6 number 9 and it's action item number 7. And
7 this deals with the nature and extent of the
8 criminal investigations and/or security
9 investigations that were mentioned by the
10 petitioner in some of our previous work group
11 meetings.

12 **MR. GRIFFON:** Right.

13 **DR. ULSH:** Just to bring you up to speed we
14 sent a letter -- I -- I sent a letter to Tony
15 on, let me see, I believe it was March 16th and
16 he responded. And there's a -- a copy of his
17 response letter there on page 2 of my handout.
18 And basically Tony recommended in that letter
19 that we talk to Lisa Bretsler (ph) who is a
20 person that works in records for -- I believe
21 for DOE and we did in fact talk to her. At the
22 last Board meeting I reported -- or at the last
23 working group meeting, sorry -- I reported that
24 she had also directed us to Jackie Baridini
25 (ph) who is with the Kaiser Hill legal

1 department. And basically what -- what -- what
2 we found out in talking to those two
3 individuals, Tony had suggested that we look
4 for all abnormal radiation dose records that
5 have resulted in a criminal and/or internal
6 investigation at the Rocky Flats site for the
7 last 50 years. And we ran that by Ms. Bretsler
8 and she indicated to us that that -- that was
9 going to be a pretty tough request to fulfill
10 because it was so general. So we were looking
11 -- she suggested and we kind of agreed that
12 what we really needed were some specific
13 examples. So to that end I had a phone
14 conversation with Tony I believe it was Monday
15 of this week and that was very helpful. Tony
16 was able to provide four examples that he
17 thought were relevant to this issue and gave us
18 enough specifics that we could go after some
19 more information on this. And so I'd like to
20 walk through those four and tell you where we
21 are with them. I would caution, well, I guess
22 everyone that some of this information deals
23 with Privacy Act protected information and so
24 we have to be very careful about how we talk
25 about it. And I'm -- I'm not trying to be

1 evasive or anything. I'm just trying to
2 protect, you know, Privacy Act material. So
3 the -- the first example that Tony gave us was
4 an individual who upon termination from the
5 site, and this is pretty recently, gave a urine
6 sample and also had a whole-body count. The
7 whole-body count came back negative and the
8 urine sample came back high for plutonium and
9 this initiated an investigation. Well, we
10 basically accessed this person's file and we
11 found the investigation report. Specifically
12 what happened was Kaiser Hill convened a team
13 of outside experts -- well, I'm going to
14 clarify that. A team of experts that included
15 most noted internal dosimetry authorities and
16 also people who were familiar with Rocky --
17 Rocky Flats operations to investigate this
18 incident. We were able to locate the report
19 that that expert team issued. I did place that
20 report in the O-drive, the Rocky Flats folder
21 that is, you know, there's a chain there,
22 rather than email. But I talked to Mark over
23 the lunch break and he was still not able to
24 access that so --

25 **MR. GRIFFON:** It's still not there.

1 **DR. ULSH:** Still not there?

2 **MR. GRIFFON:** I'm on the O-drive now so --

3 **DR. ULSH:** Yeah. I don't know. That's -- I'm
4 not sure what the issue is there but we will
5 try to get that report to you as -- if that
6 would be of interest. I have, for the benefit
7 of the working group, reproduced the executive
8 summary of that report and I'd like to just
9 walk you through parts of that. That is shown
10 -- the executive summary is shown on pages 4
11 and 5 here. And what this expert panel
12 concluded I've summarized here on page 3. And
13 --

14 **MR. GRIFFON:** I should update. It's there now.

15 **DR. ULSH:** Okay.

16 **MR. GRIFFON:** This is real time.

17 **DR. ULSH:** Yes, it certainly is. So refer to
18 the email that I sent out to you giving the
19 location of these files if you'd like to look
20 at it in its entirety. But the main
21 conclusions are listed on page 3 of the handout
22 here and here's what they say. They considered
23 several possible intake scenarios from this
24 incident and they found them to be implausible.
25 They considered inhalation, ingestion, wound,

1 and they found that -- they concluded that
2 these were not plausible intake scenarios. The
3 other thing that sends up flags I think was the
4 isotopic composition of the plutonium that was
5 found in the urine sample. It didn't seem to
6 match material that was present at Rocky Flats.
7 And I believe -- keep in mind I just got this
8 report about a day ago. I believe that the
9 issue was that it was almost pure plutonium 239
10 which is not what you'd expect to see from the
11 material at Rocky Flats. And also please keep
12 in mind that I am speaking for NIOSH. I'm not
13 trying to make any value judgments on -- on any
14 of this. I'm just reporting what this expert
15 investigation concluded so what the team, the
16 expert team considered was the likelihood of
17 external contamination of the sample prior to
18 it entering the Kaiser Hill chain of custody.
19 They also considered, due to the isotopic
20 composition, almost pure plutonium 239, that
21 this was consistent with a (unintelligible)
22 source that could have been easily removed from
23 the site. And the team concluded that
24 deliberate contamination of the urine and fecal
25 samples from an (unintelligible) source was

1 plausible and could be accomplished with little
2 risk to the person doing the tampering. Now,
3 they didn't go into any detail beyond that as
4 far as I can see in terms of hypothesizing when
5 such tampering might have occurred. However,
6 they did conclude -- the expert panel concluded
7 that Kaiser Hill has implemented a very
8 effective program, and I'm quoting now -- "a
9 very effective program for determining the
10 cause of the anomalous high urine bioassay
11 results. The team felt that Kaiser Hill had
12 been very thorough and complete in their
13 approach to this unexpected occurrence." Now,
14 I -- I recognize that some individuals might
15 take exception to the conclusions of this
16 expert investigation. All I'm doing is
17 presenting what this investigation concluded.
18 They did not conclude that there was fraud on
19 the part of the dosimetry staff at Rocky Flats
20 and really if you want more details on -- on
21 that particular incident I would refer you to
22 the full report which apparently as of about
23 three minutes ago is now available. Okay.
24 That was the first example. The second example
25 that Tony provided was one that we had actually

1 already considered. I believe it was in the
2 last working group meeting although they are
3 all kind of blurring together for me. This was
4 the one where the individual had submitted an
5 affidavit as part of the SEC petition. And a
6 copy of that affidavit is again presented on
7 page 7 of my handout. And the main allegation,
8 the main issue that was raised in this petition
9 was that the worker stated that an entire
10 year's dose record is missing from a time when
11 he worked in a radiation area with dose rates
12 ranging up to eight I guess Renkin per hour and
13 this was during the 1982/1983 time frame. On
14 page 8 of my handout you'll find the dosimetry
15 results for this individual. And again this is
16 a recap because we've already discussed this in
17 a previous meeting. And what you see here is
18 that in fact in 1982 there are quarterly
19 results for three of the four quarters and the
20 monthly result that falls during the one
21 quarter where there's not a quarterly result.
22 And then in the next year, in 1983, there are
23 quarterly results for all four quarters. And
24 in addition there's another monthly result. So
25 the dosimetry for this particular individual

1 does not seem to support the claim that his
2 entire year's dose record is missing. And
3 that's really all I can say about that one.
4 The next example was an individual, a specific
5 individual that -- that Tony was able to --

6 **MR. GRIFFON:** Which one did you just cover the
7 figure 4 that you were looking at?

8 **DR. ULSH:** Oh, sorry. Let me see. It is
9 figure --

10 **UNIDENTIFIED:** Yes, it was.

11 **MR. GRIFFON:** I'm intentionally slowing you
12 down, too, so I can scan through the documents
13 as you're talking. I'm sorry.

14 **DR. ULSH:** Yeah, I apologize. Maybe I am going
15 too fast.

16 **MR. GRIFFON:** Yeah.

17 **DR. ULSH:** Figures 3 and 4 are the ones that
18 are relevant here, Mark. Figure 3 is the
19 affidavit that was provided in the SEC
20 petition.

21 **MR. GRIFFON:** Right.

22 **DR. ULSH:** And then figure 4 is the dosimetry
23 relevant to that particular individual for the
24 time frame that he cited.

25 **MR. GRIFFON:** Now, this is no different than

1 what you provided last time?

2 **DR. ULSH:** Exactly right.

3 **MR. GRIFFON:** Right, right.

4 **DR. ULSH:** It's just that this is one of the
5 examples that Tony mentioned in our
6 conversation on Monday.

7 **MR. GRIFFON:** Okay.

8 **DR. ULSH:** So I -- I just presented it for
9 completeness.

10 **MR. GRIFFON:** Okay.

11 **DR. ULSH:** The next example -- and please feel
12 free to jump in if, you know, you want to
13 discuss any of these further. Example three
14 was an individual who Tony named for me, and we
15 were able to look at the dosimetry results for
16 this particular individual. The -- The issue
17 here was blackened neutron badges and this
18 would be an issue during the era of MTA films.
19 And for this particular individual he began
20 work at the very end of the NTA film era in
21 1969. And the concern about blackened neutron
22 badges, I did a little digging on this and what
23 I found is in the neutron dose reconstruction
24 project protocol there's a phenomenon described
25 on page 16 of that document about gamma

1 fogging. And what that involves is when a
2 neutron badge is exposed to a high gamma field,
3 and we're talking about 500 to 1,000 millirem,
4 it can start to cause fogging on the film that
5 progressively makes it more and more difficult
6 as the doses get higher to read the film for
7 neutron results. So I took a look at the --
8 the -- the -- the gamma results for this
9 individual and it doesn't seem like that would
10 be the issue here because the highest -- the
11 highest NTA film badge result that occurred for
12 this individual during the period of 1969 was
13 about 430 millirem. And so it doesn't appear
14 that gamma fogging would have been an issue.
15 And I should mention that there's no indication
16 in this person's file that, in other words, a
17 film where blackening was a problem. However,
18 also during that period you might not expect to
19 see such a notation.

20 **MR. GRIFFON:** I don't understand; maybe you can
21 explain to me why -- why seeing 430 made you
22 feel that there wasn't a problem for the one
23 badge where I think he only --

24 **DR. ULSH:** No, what --

25 **MR. GRIFFON:** Did this individual say that

1 happened once or -- or multiple times?

2 **DR. ULSH:** It wasn't clear. What I'm saying
3 is, Mark, if gamma fogging becomes an issue
4 starting at approximately 500 millirem. You
5 can still read the badge at around 500 but as
6 you progress up to about 1,000 millirem it
7 becomes progressively more difficult to read
8 the badge. And since the highest result that I
9 saw during this film badge era for this
10 individual, 1969 -- because remember in 1970
11 they began to switch over to TLDs.

12 **MR. GRIFFON:** Right.

13 **DR. ULSH:** So we're only talking about one year
14 here and the highest individual badge read
15 gamma dose that this individual had was about
16 430 millirem. All the rest of them were lower.
17 So I wouldn't really expect to see gamma
18 fogging on any of these particular badges.
19 That's the only point I was trying to make
20 there.

21 **MS. MUNN:** Brant?

22 **DR. ULSH:** Yeah?

23 **MS. MUNN:** Do you have a typo on this third
24 line?

25 **DR. ULSH:** Entirely possible.

1 **MS. MUNN:** Three? Shouldn't that have one more
2 zero?

3 **DR. ULSH:** Yes, it should.

4 **MS. MUNN:** Just checking.

5 **DR. ULSH:** Thanks for the catch.

6 **MS. MUNN:** You bet.

7 **DR. ULSH:** That probably will not be the last
8 typo. Yes, that should be 1,000 bec. So it
9 doesn't appear that gamma fogging would explain
10 -- I mean if in fact there was --

11 **MR. GRIFFON:** I guess what -- what -- I just
12 don't understand the rationale of that
13 argument. If -- I mean if -- if the
14 individual believed those doses as recorded
15 then there wouldn't be any issue at all. So I
16 mean I don't -- I don't know that this sort of
17 demonstrates that he couldn't have one quarter
18 where he -- he was into some other area or
19 whatever and got higher exposures and that's
20 where the badge fogged. And -- And -- And
21 he's -- I mean here -- I don't know what the
22 claim specifically is here but are they
23 claiming that, you know, that it wasn't -- that
24 whatever dose was assigned was not accurate
25 because he had this badge fogging problem or --

1 **DR. ULSH:** I don't know. I was just looking at
2 --

3 **MR. GRIFFON:** I'm just trying to understand,
4 too.

5 **DR. ULSH:** No, I understand. What I was trying
6 to do, Mark, is consider -- let's assume for
7 the -- for a minute that this individual did
8 have NTA films that were blackened. And I'm
9 trying to come up with and consider all
10 possible explanations for a blackened film
11 badge. And the first possible explanation that
12 I considered was gamma fogging.

13 **MR. GRIFFON:** Okay.

14 **DR. ULSH:** Now, his gamma results don't appear
15 to be consistent with gamma fogging. Again, if
16 you assume that the gamma results are --
17 represent reality.

18 **MR. GRIFFON:** Okay. All right.

19 **DR. ULSH:** The second -- Really I didn't see
20 anything else in his file. I mean there was no
21 specific mention of -- of film blackening. But
22 however, we do know that it is possible that
23 NTA films can be blackened and there are a
24 couple of situations that can lead to that.
25 One of them is that if NTA films are exposed to

1 high temperatures and some pretty moderate
2 humidities you can get thermal blackening. And
3 I have provided some references there from peer
4 review journal articles. That's at the top of
5 page 9. That is one possibility if in fact
6 there were some blackened films. Now, like I
7 said, I wasn't able to locate any but let's
8 just assume that, you know, that that was the
9 case. And certainly it -- it happened at Rocky
10 Flats that some people did have blackened film
11 badge -- film badges. And another possibility
12 is that -- is light contamination. As you --
13 as you may or may not know, these NTA films
14 were in light-proof packets and those packets
15 could be damaged, could be ruptured. And just
16 like any other photographic film, if it is
17 exposed to light that could blacken a film
18 badge. So I mean it certainly is possible
19 that, you know, we would have film blackening.
20 I didn't see any indication of it in this
21 individual's file but certainly it occurred at
22 Rocky Flats. But that was about as far as I
23 could go with this one in the time frame that
24 we have available. That's what I know on that
25 individual. The last example that Tony

1 provided to me was an individual and the
2 petitioner, oh, some time ago after one of our
3 earlier working group meetings, submitted a
4 list of -- of about I think it was about 12 or
5 13 questions that resulted from the discussion
6 that they heard and participated in during the
7 working group meeting. And as it turns out one
8 of those questions is relevant to this
9 particular situation. And you'll see that
10 question reproduced on the bottom of page 9 and
11 I'd like to just read it to you. It says
12 (reading) how are you addressing the fact that
13 when a person received an abnormal or
14 unexpectedly high dose and an individual -- oh,
15 I'm sorry -- an internal investigation could
16 not identify the source, the person received a
17 zero for a dose? I know this to be true
18 because it happened to me when I was pregnant
19 in the 1999/2000 time frame. My dosimeter
20 showed a high reading for ionizing radiation
21 and an investigation was con-- was conducted
22 and the reviewers could not find the source so
23 they decided not to follow conduct of
24 operations which said you have to trust your
25 indicators, in this case, my dosimeter, and

1 decided to enter a zero for my exposure. I'm
2 sure there are hundreds of examples like this
3 so now my dose record is inaccurate and there
4 is obviously no way to reconstruct it
5 accurately since they failed to do so at the
6 time. Now, in response to that question, I
7 think this was back in March when this question
8 was submitted to us. We provided the -- a
9 response but you'll see at the bottom of page 9
10 and the top of page 10. There's a little bit
11 of confusion here with regard to conduct of
12 operation. What that refers to is that in
13 order to ensure that workers are not
14 overexposed when they're in the field, when
15 they're in the presence of potentially
16 hazardous environment, if you get an indication
17 on instruments such as chirpers or Geiger-
18 Mueller counters or anything like that, that
19 you're in a high dose field, conduct of
20 operations tells you that you should not
21 question that result at the time; you should
22 remove yourself from that environment and then
23 an investigation can be conducted to determine
24 whether or not the instrument was
25 malfunctioning or whether you were actually in

1 a hazardous environment. So that's to protect
2 the worker, just to say don't question the
3 instrument when you're standing in the
4 potentially hazardous envir-- environment. Get
5 out. That conduct of operations guidance
6 doesn't necessarily apply to film badges and I
7 think that was a little bit of a con--
8 confusion because of course the worker is now,
9 you know, out of the environment and we can --
10 they can conduct an investigation. And that's
11 exactly what they did actually. We were able
12 to, since Monday when -- when Tony gave me this
13 one, I was -- he gave me enough specifics that
14 I was able to pull the records. Actually the
15 ORAU team was able to pull the records for this
16 particular individual, and what you'll see I
17 combed -- well, we combed through the entire
18 record and we did find an extended external
19 dose reconstruction for approximately the right
20 time frame and you'll see that on pages 11, 12
21 and 13. And here is what -- here is the
22 conclusion from that investigation, and I'll
23 just read you that. That's on page 10,
24 summarized in the text, and it's also in the
25 actual report which is on page 13. It says

1 that this individual -- again I'm not going to
2 use actual names -- but this individual became
3 separated from her dosimeter while in the
4 building 371 RBA thereby necessitating this
5 extended dose reconstruction. She forgot to
6 remove it from her anti-C (ph) clothing while
7 doffing at the room 3408 step-off pad. The
8 individual was on a tour with two listed co-
9 workers and was separated from her dosimeter
10 for approximately 30 minutes. The individual
11 is being assigned the zero dose listed on page
12 1 for the time that she was without her
13 dosimeter. This dose is equal to the dose
14 received by the listed co-workers who were with
15 her on the entire tour. So what they concluded
16 was during the brief time that the individual
17 is not wearing her dosimeter but she was with
18 the other people on the tour they took a look
19 at the doses received by those other
20 individuals and concluded that the dose to be
21 assigned was less than the limit of detection
22 or zero. So we didn't see any evidence that
23 this investigation was in error. You know, I -
24 - I suppose that a person could take issue with
25 it but it wasn't clear to us that this was a

1 clear-cut indication of fraud because an
2 investigation was conducted and placed in the
3 individual's file.

4 **MR. DEMAIORI:** This is Tony DeMaiori with the
5 steel workers. I'm intimately familiar with
6 this case. And the individual was in fact on
7 tour, was giving a tour in building 371, a
8 communications person. And when the dose was
9 discovered it was almost six months later when
10 they were questioned and the investigation
11 occurred. And they were simply told that they
12 were going to model after their co-workers who
13 worked in communications and received no dose.
14 And that's how the zero was going to be
15 applied. That's even though this individual
16 routinely toured the production areas and gave
17 tours. So this -- what you have is nowhere
18 near what the individual was told; not even
19 close.

20 **DR. ULSH:** It does sound like if that's what
21 the individual was told, it does sound like
22 there was some miscommunication going on
23 certainly.

24 **MR. DEMAIORI:** Hugely so.

25 **DR. ULSH:** What I have here though is -- is the

1 report, the extended dose reconstruction report
2 that's in the file. So I mean I -- that's I
3 think is what was done and that was the reason
4 for it.

5 **MR. DEMAIORI:** Yeah, I think they used what you
6 guys call the worker model and they
7 reconstructed the dose to the other folks in
8 communications who never entered RA's.

9 **DR. ULSH:** Well, now, that's actually not what
10 the report at least says. It says that the
11 assigned dose -- hold on. Let me pull it up
12 here. This dose is equal to the dose received
13 by the listed co-workers who were with her on
14 the entire tour.

15 **MR. DEMAIORI:** And that was a zero.

16 **DR. ULSH:** Right. So I think that -- I think
17 that rather than the communi--

18 **MR. GRIFFON:** So I guess the question there is
19 that if Tony's presenting this, you know, if
20 I'm understanding Tony, this person was the
21 tour guide --

22 **MR. DEMAIORI:** Yes.

23 **MR. GRIFFON:** -- and would have done several of
24 these tours and got assigned a dose based on
25 two people that were taking a tour on a given

1 day. So maybe a whole quarter's worth of
2 information was zeroed. I don't know. That's
3 -- I guess that's the question, you know.
4 Maybe -- Maybe it was appropriate to use the -
5 - to assign a co-worker exposure but were those
6 representative co-workers? I know they were
7 only in the area for one tour and this
8 individual was in there giving tours all the
9 time.

10 **DR. ULSH:** Well, let's see.

11 **MR. GRIFFON:** That's not clear, I mean --

12 **DR. ULSH:** I'm trying to track down the date of
13 the incident. Let me see if I can find that.

14 **MR. WOLFE:** Brant, I have it in front of me.

15 **DR. ULSH:** Okay.

16 **MR. WOLFE:** It was -- well, now I say that. Go
17 ahead. May 2nd, '01 was the date of the -- the
18 -- there was a radiological improvement report
19 that was part of the investigation report and
20 the event happened on that date, May -- May
21 2nd, '01.

22 **DR. ULSH:** Okay.

23 **MR. WOLFE:** Part of the report, it said she --
24 she was separated from her badge for 30
25 minutes.

1 **DR. ULSH:** Yeah.

2 **MR. WOLFE:** And when they found the badge in
3 the -- still attached to her anti-contamination
4 clothing in the laundry bag and surveyed it,
5 and it was uncontaminated. And I see --
6 (inaudible) -- was contaminated.

7 **DR. ULSH:** But Craig, I also see on page 11 of
8 my handout there's a section, section 2,
9 dosimeter, and it says -- that section gives
10 the -- the needle date and the issue date, the
11 assign date, the return date. Those are all
12 May 2nd, 2001.

13 **MR. WOLFE:** Yeah.

14 **DR. ULSH:** So that seems to indicate that the
15 dosimeter was retrieved on the day this
16 incident happened and was read that day.

17 **MR. WOLFE:** Yes.

18 **DR. ULSH:** So I -- I don't think that would
19 represent the entire quarter.

20 **MR. DEMAIORI:** And when did that quarter end?

21 **DR. ULSH:** Oh, well, I don't know. The date is
22 May 2nd so let me see.

23 **MR. WOLFE:** It would have been the end of June
24 most likely.

25 **DR. ULSH:** Yeah, but they pulled this -- pulled

1 this badge on May 2nd. At least that's what it
2 appears to indicate.

3 **MR. WOLFE:** Because the co-workers who are --
4 who were -- who were used that their -- their
5 date for their badge was May 2nd through May
6 9th, '01.

7 **DR. ULSH:** Yeah, that's listed on page 12 at
8 the bottom.

9 **MR. DEMAIORI:** And who were the co-workers?
10 The people on tour or --

11 **DR. ULSH:** Yeah.

12 **MR. DEMAIORI:** -- the other communications
13 folks that never entered the work area?

14 **DR. ULSH:** According to the report anyway on
15 page 13 you see this individual is being
16 assigned a zero dose listed on page 1 for the
17 time she was without her dosimeter, the dosage
18 equal to the dose received by the listed co-
19 workers who were with her on the entire tour.

20 **MR. DEMAIORI:** Okay.

21 **DR. ULSH:** So it is the individuals who are
22 with her on the tour.

23 **MR. DEMAIORI:** I tell you what. I'll have the
24 individual affidavit, the -- the entire
25 incident to you because it's not the same.

1 **DR. ULSH:** Okay.

2 **MR. DEMAIORI:** I know it's --

3 **DR. ULSH:** Tony, are you saying she was
4 separated from her badge for six months?

5 **MR. DEMAIORI:** No. No, no, not at all. The
6 way it was described to me in detail is as
7 media relations manager of Rocky Flats part of
8 their duties was to give tours in production
9 areas, something the other communication folks
10 never did. And that they gave a tour and then
11 six months later she was informed that there
12 was an abnormality reading in her badge and
13 they wanted to know where she was. And she
14 told them she couldn't tell them; she didn't
15 know, that was six months ago. So they
16 assigned her a zero. Now, this is what I was
17 told.

18 **DR. ULSH:** Okay. Tony, I -- I agree with you.
19 If that's actually what occurred, I mean if it
20 was a situation where this individual was
21 assigned doses based on other people in the
22 department that weren't even on the tour or
23 giving tours that would certainly be a concern.

24 **MR. DEMAIORI:** Right. This may not even be the
25 same incident. This doesn't even sound like --

1 it -- it remotely sounds like the same --

2 **DR. ULSH:** Yeah.

3 **MR. DEMAIORI:** -- because the person was
4 pregnant at the time and they didn't waive
5 their right to go in the area. So it sounds
6 remotely the same.

7 **DR. ULSH:** I do have --

8 **MR. DEMAIORI:** But there's huge discrepancies
9 in the reporting in that.

10 **DR. ULSH:** Okay. Like I say, if you can -- I
11 mean if there's other information that would
12 indicate that we've got the wrong
13 interpretation here we would certainly --

14 **MR. DEMAIORI:** Well, without you giving me a
15 name over the phone I couldn't tell you it's
16 the same incident even.

17 **DR. ULSH:** The name of the individual? What?

18 **MR. DEMAIORI:** Right. Give me their initials.
19 Give me something so that I can --

20 **MR. GRIFFON:** Maybe offline you can do that.

21 **DR. ULSH:** Yeah, yeah. I'll -- I'll tell you
22 what, Tony. I'll get with you offline so that
23 we can talk about Privacy Act material or --

24 **MR. DEMAIORI:** Okay. Because this is, you
25 know, what your reports are aren't even close

1 to what the individual had reported to me.

2 **DR. ULSH:** Okay.

3 **MR. DEMAIORI:** And this supports what we're
4 saying, that, you know, when doses aren't
5 believed they're given out as zero.

6 **MR. GRIFFON:** Okay. Brant, you should follow
7 up with Tony on that offline and --

8 **DR. ULSH:** Okay.

9 **MR. GRIFFON:** -- you know.

10 **DR. ULSH:** Sure. Okay. That's the only
11 information I have on the four individual cases
12 that Tony provided. We also invited Tony to
13 provide, you know, if he can think of any
14 others where you can give us some details so we
15 can run them down just like we have with this
16 one -- these four, that would be great. We
17 invited him to do that by email and you're
18 certainly welcome to do that.

19 **DR. MAURO:** Brant, this is John Mauro.

20 **DR. ULSH:** Yes, John.

21 **DR. MAURO:** On the first example, the
22 individual that had the high reading that might
23 have been -- there's going to be some follow-up
24 investigation, was there additional urinalysis
25 taken subsequent to see if in fact the person

1 had body burden or was in fact an after-the-
2 fact contamination of his sample as you -- as
3 you described?

4 **DR. ULSH:** I -- John, I would be speculating
5 on -- on that because I got this report
6 yesterday late in the day so I haven't had a
7 chanced to read through the details to
8 determine the exact sequence of events. Those
9 are --

10 **MR. DEMAIORI:** John, I can give you that
11 information. I'm intimately familiar with the
12 investigation.

13 **DR. MAURO:** Okay.

14 **MR. DEMAIORI:** The individual had a high
15 bioassay urine sample as pure plutonium. Then
16 the individual was sent to Los Alamos National
17 Labs and they were poked and prodded and
18 absolutely nothing in their body, not in their
19 urine samples; not in their lungs. They were
20 brought back to Rocky Flats, given another
21 urine sample kit. It returned high plutonium.

22 **DR. MAURO:** And -- And there -- a continuing
23 follow-up related to that?

24 **MR. DEMAIORI:** I don't know. You know, Rocky
25 Flats is very sensitive on a happy closure.

1 **DR. MAURO:** Uh-huh.

2 **MR. DEMAIORI:** And so I think everybody decided
3 that the chain of custody was the real problem
4 and that there was no way anybody could prove
5 how the samples got the plutonium and so there
6 was no follow-up after that. The
7 recommendation was not to assign dose. They
8 decided that the chain of custody, you couldn't
9 prove anything one way or another because the
10 chain of custody was weak and that's what the
11 report will tell you.

12 **DR. ULSH:** Actually I'm looking at the -- the --
13 -- well, at least the executive summary of the
14 report and the report -- and again, I'm just
15 quoting from the report. I'm not issuing a
16 value judgment from NIOSH. All I'm saying is
17 that the report concluded that Kaiser Hill
18 implemented a very effective program for deter-
19 - for determining the cause of the anomalous
20 high urine bioassay result. And the team felt
21 that Kaiser Hill had been very thorough and
22 complete in their approach. However if you
23 look on page 5 of my handout the team does
24 recommend additional analyses and actions and
25 that's on page 5; obtained three additional

1 urine and three additional fecal samples, and
2 said that those samples were collected on
3 September 23rd -- well, it gives you the dates
4 there. They performed a radiological survey of
5 the individual's home. They sent
6 (unintelligible) to the analytical lab and to
7 Los Alamos where they did thermal ionization
8 mass spectroscopy. And they -- based on the
9 first three recommend-- recommendations they
10 recommended the team reconvene. So those are
11 the follow-up actions that are at least listed
12 in the executive summary. Again -- Again
13 Tony, I haven't had a chance to really look at
14 the bulk of the report and that is available on
15 the O-drive.

16 **DR. MAURO:** Yeah. All I'm saying is that it
17 sounds like Tony indicated that those results
18 did come back and they came back negative.

19 **MR. DEMAIORI:** Yeah, everything from Las Alamos
20 came back negative and then the -- the final
21 urine sample came back positive again. That's
22 when the team came to the conclusion that the
23 sample itself was injected with the plutonium
24 and not the individual. And, you know, to give
25 you a point, the suspicion was the RAD sources.

1 We had the (unintelligible) plated RAD sources
2 that were uncontrolled, literally hundreds of
3 them.

4 **DR. ULSH:** All right. So that's -- That's
5 what we have so far in the more specific
6 examples. If there's -- Is there any further
7 discussion on this one?

8 (No response)

9 **DR. ULSH:** Okay. Mark, would you like me to
10 move on?

11 **MR. GRIFFON:** Yep.

12 **DR. ULSH:** All right. Comment number 9, action
13 item number 8. And that's on page 14 of my
14 handout. NIOSH ORAU to demonstrate the
15 reliability of bioassay and external database
16 data for the compensation program. And just to
17 refresh your memory on what we've talked about
18 in previous meetings. In terms of co-worker
19 data I think that's one issue that we need to
20 talk about. And I would remind you that the
21 need for co-worker data at Rocky Flats is far
22 less than what you might expect based on other
23 sites. This is getting to be old information.
24 It was, you know, a few weeks ago that I got
25 this information. But to my knowledge we only

1 have two identified cases that require external
2 co-worker data and I don't think we're aware of
3 any that require internal co-worker data at
4 this point. But keep in mind there are 300 --
5 approximately 300 cases left to do at Rocky
6 Flats out of the 1,100 or so that we've
7 received. Okay. So what we did -- what we've
8 already done, the call, is we talked about the
9 external co-worker data. The remaining
10 question was for internal data. And remember
11 that what we proposed to do is use the CEDR
12 database to use -- to generate internal co-
13 worker data distribution. And previously we
14 had compared CEDR to HIS-20 and we found at
15 least what I would characterize as pretty good
16 agreement. The remaining thread here I think
17 this action is referring to was then going from
18 HIS-20 back to some of the earlier records like
19 the bioassay cards and the other database
20 printouts that are contained in individual
21 files. And we have made some (unintelligible).
22 We took about 300-plus -- 306 worker samples
23 from about 38 separate individuals and we
24 compared what we see in HIS-20 with those
25 earlier data sources, the Health Sciences data

1 system and also in the earlier time period when
2 they were using bioassay cards. And what we
3 found is that for instances where there was
4 data we found very good agreement. About 97.1
5 percent of the samples from the earlier data
6 sources agreed with HIS-20 so we felt pretty
7 good about that. In the remaining three
8 percent where there was an imperfect match the
9 data found on the bioassay cards, I think that
10 was about seven of the samples, seven of the
11 individual results, and six of those seven we
12 found that the value in HIS-20 was larger than
13 the card data. And then we also found that for
14 22 of the entries that there was an indication
15 that the worker was not involved in the
16 bioassay sample program because there was
17 nothing in HIS-20 for them and there was
18 nothing on the earlier bioassay cards so that's
19 actually in agreement. Now, as you might
20 expect there were some discrepancies. There
21 were about 41 individual results that we saw
22 bioassay card data but we didn't see -- we have
23 not yet located anything in HIS-20. We have
24 some theories about why that might be but we're
25 still running those down. But the point I

1 think that you have to consider, the next --
2 the next obvious question would be, well, gee,
3 what does that do to your co-worker data?
4 Well, first of all, keep in mind that we're
5 using CEDR data which is the most complete data
6 set for the early years -- early years we
7 think. And also, 40 of the 41 results that we
8 didn't find were below detection so -- and the
9 remaining one was just slightly above the limit
10 of detection. So what we concluded here is
11 that this doesn't appear to indicate that
12 there's a systematic censoring of high data.
13 So I -- I think we still have pretty good
14 confidence in the co-worker data should we ever
15 have to use the co-worker data.

16 **MR. GRIFFON:** Brant?

17 **DR. ULSH:** Yes.

18 **MR. GRIFFON:** This -- I'm getting a little
19 deja vu here when I ask this question so excuse
20 me if I've already asked this question.

21 **DR. ULSH:** Sure. Go ahead.

22 **MR. GRIFFON:** But you're -- you're -- you're
23 presenting this as co-worker data.

24 **DR. ULSH:** Yes.

25 **MR. GRIFFON:** And I -- I think the real

1 question for me has always been the data
2 reliability more so. And -- And to what
3 extent do the claimants have raw data within
4 their file or is it often a printout of like
5 HIS-20 or CEDR data? And I don't know that
6 answer. That's -- I might have asked it
7 before, too.

8 **DR. ULSH:** Well, I can give you -- I can speak
9 in generalities and maybe I'll let some of the
10 other site experts speak in more specific.

11 **MR. GRIFFON:** Because that's where it would be
12 more important is if a lot of the individual
13 claimants that you say have data, they don't
14 need co-worker data.

15 **DR. ULSH:** Yeah.

16 **MR. GRIFFON:** If it's only printouts from the
17 database then -- then you're back to the same,
18 you know.

19 **DR. ULSH :** Well, I think, Mark, and again I'm
20 going to rely heavily on the site experts here
21 but in the early years before the computer era
22 the bioassay cards were the dose -- the dose of
23 record. And I don't know exactly what years.
24 Roger or Craig, can you give me the years when
25 bioassay cards were the dose of record?

1 **MR. FALK:** Yes, the cards were the means to --
2 the means to record the bioassay data through
3 1969.

4 **DR. ULSH:** Okay. Then after that, Roger, came
5 a database. Which one? Health Science?

6 **MR. FALK:** That was the Health Sciences
7 database.

8 **DR. ULSH:** Okay. And was that the official
9 dose of record then?

10 **MR. FALK:** Yes. Also for the people who were
11 active at that time all of the card data was
12 actually manually transposed into the Health
13 Sciences database.

14 **DR. ULSH:** Okay. After the Health Sciences
15 database then came -- I don't know what. Then
16 came what?

17 **MR. FALK:** Then we started to have the HIS-20.

18 **DR. ULSH:** Okay. And that year -- that was in
19 the late '90s or maybe 2000, HIS-20; is that
20 right?

21 **MR. FALK:** That was in the '90s.

22 **DR. ULSH:** Okay.

23 **MR. FALK:** I don't know -- I don't know the
24 exact date of that.

25 **MR. DEMAIORI:** Late '90s.

1 **DR. ULSH:** Okay. So -- So Mark, the -- the
2 point that I'm making is there were different -
3 - if you go over the years of operation of the
4 plant there were different systems for keeping
5 track of the dose of record.

6 **MR. GRIFFON:** Well, when you say the -- the
7 Health Sciences database that's -- I -- I think
8 that's the first time I've heard that one but -
9 -

10 **DR. ULSH:** Okay.

11 **MR. GRIFFON:** -- but if, you know, that -- and
12 you say that's -- that was the dose of record,
13 this gets back to the same discussions we've
14 had with the Y-12, you know. That -- That --
15 Maybe it's -- and I -- I don't, you know, I --
16 I would -- would say you're -- you're probably
17 presenting it accurately but, you know, we went
18 through that with the Y-12 database that there
19 was I guess a letter from Y-12 and they sort of
20 went through a process with DOE to accept the
21 database as the dose of record. Is there
22 anything like this in Rocky or --

23 **DR. ULSH:** I don't know. I'm going to defer to
24 the experts.

25 **MR. GRIFFON:** Because otherwise I think you're

1 -- you're -- you know, the same question
2 applies. How do we, you know -- you haven't
3 chall-- you haven't checked that against the
4 raw records or -- or you did just do some of
5 that I guess in the --

6 **DR. ULSH:** Well, we did respond. We certainly
7 did for the years when the bioassay cards were
8 -- were the dose of record. We did that.

9 **MR. GRIFFON:** Okay.

10 **DR. ULSH:** Now, the question I think would be
11 then if during the years when the HSDS, Health
12 Sciences Data System I think, was the original
13 dose of record, I'm not sure, you know, what --
14 what kind of a validation you might be looking
15 for here.

16 **MR. GRIFFON:** Well, I'm -- I'm -- it's the
17 first I heard of it so I'm just laying it out
18 there. I'm not sure either.

19 **DR. ULSH:** Sure.

20 **MR. GRIFFON:** But it seems to be that covers
21 '69 through '90-something, right or --

22 **DR. ULSH:** Yeah, I think so.

23 **MR. GRIFFON:** -- thereabouts.

24 **DR. ULSH:** I think that's accurate. Yeah. And
25 then later HIS-20.

1 **MR. GRIFFON:** Right.

2 **DR. ULSH:** So --

3 **MR. GRIFFON:** So you didn't really have any raw
4 records to compare against for those years from
5 '69 on but you did the earlier period?

6 **DR. ULSH:** Yes.

7 **MR. GRIFFON:** What you presented here is from
8 the earlier period?

9 **DR. ULSH:** Well, when you say raw records, we
10 didn't have any handwritten records.

11 **MR. GRIFFON:** Right.

12 **DR. ULSH:** Yes.

13 **MR. GRIFFON:** Okay.

14 **DR. ULSH:** So the summary of -- of what we've
15 done is at the bottom of page 14. And we did
16 find pretty substantial agreement between the
17 bioassay cards, the HSDS database and the HIS-
18 20 database. It is worth pointing out that
19 when we actually do dose reconstructions
20 however, we utilize all three sources of data
21 and that's to maximize completeness. Say for
22 instance there's nothing in HIS-20 but we have
23 earlier results on bioassay cards or maybe the
24 HSDS. We will certainly use those earlier
25 records. We'll supplement what we get from

1 HIS-20.

2 **MR. GRIFFON:** And then this might also be
3 review but I think someone present-- I forget
4 who presented the HIS-20 CEDR comparison.

5 **DR. ULSH:** Yes.

6 **MR. GRIFFON:** And I was just, you know, looking
7 at some of that -- not that I had a lot of time
8 to look at it.

9 **DR. ULSH:** Yeah.

10 **MR. GRIFFON:** But HIS-20, there were -- there
11 were tables somewhere developed breaking this
12 down --

13 **DR. ULSH:** Right.

14 **MR. GRIFFON:** -- HIS-20 '53 to '57, and CEDR
15 '53 to '57, and looking at that I remember
16 something in a discussion of the discrepancy in
17 the total number of samples was possibly due to
18 a lot of extra zeros which shouldn't have
19 actually been -- been put in the CEDR data is -
20 - is what I recall. Maybe Roger indicated
21 that. But I -- I see, for instance, this time
22 period I have 10,158 samples in HIS-20 for that
23 time period. Of them I -- I -- that was 10,158
24 zeroes out of a total of 12,041 total data
25 points which was 84 percent. And then if I

1 look at the same time period for CEDR it was
2 16,412 zeros out of 18,888 -- 886 total data
3 points which was like 87 percent zeros. I just
4 wonder, you know, the difference in raw records
5 there is about 6,800 and you might have
6 answered this already but I -- just maybe to
7 clarify that, why was --

8 **DR. ULSH:** If I did --

9 **MR. GRIFFON:** -- what would have caused that
10 difference there?

11 **DR. ULSH:** If I did answer it, Mark, I don't
12 remember so --

13 **MR. GRIFFON:** I think Roger discussed it or
14 someone else. I know we discussed it on the
15 last call but --

16 **DR. ULSH:** It might have been Joe Locktemy
17 (ph). I'm not sure. Roger, do you recall
18 anything?

19 **MR. FALK:** Well, I was only commenting on the
20 lung count data --

21 **DR. ULSH:** Oh, right.

22 **MR. FALK:** -- about with regard to zeros but
23 I'm also thinking that the HIS-20 did not
24 capture the urine data for the workers who --
25 for the workers who had retired from the Rocky

1 Flats site or -- or were terminated from the
2 Rocky Flats site prior to 1977 and were not
3 part of the benefits program. And so therefore
4 the -- and therefore I would expect that the
5 CEDR database would -- would contain more --
6 more -- more of the urine results than the CEDR
7 database for those early years.

8 **MR. GRIFFON:** Okay. And I think -- and I have
9 to look back on that analysis, too, but I think
10 the general conclusion that he was making was
11 that the -- the co-worker models would not
12 have differed that much using either one of
13 these approaches. Or there were some small
14 differences but --

15 **DR. ULSH:** I think that's accurate, Mark.

16 **MR. GRIFFON:** Yeah.

17 **DR. ULSH:** I think that is what he was
18 indicating. And -- And keep in mind that if
19 what Roger says is -- is the explanation for
20 the difference in the -- the number of records
21 we do have -- for that earlier time period we
22 do have the original dose of record which up to
23 '69 would have been the cards and then from '70
24 up through -- up through '77 we would have the
25 Health Sciences Data System printout.

1 **MR. GRIFFON:** Okay.

2 **MS. MUNN:** Mark, I lost you.

3 **MR. GRIFFON:** I lost myself once.

4 **MS. MUNN:** When you -- when you started giving
5 figures from the -- I was looking at the tables
6 from the database --

7 **MR. GRIFFON:** Well, these -- these --

8 **MS. MUNN:** -- assessment and follow-up
9 evaluation. Were you looking at something
10 else?

11 **MR. GRIFFON:** I have to -- the numbers I got
12 were from the -- on the O-drive within the co-
13 worker folder.

14 **MS. MUNN:** Oh, all right. Fine.

15 **MR. GRIFFON:** And there was a breakout of HIS-
16 20 versus CEDR, so yeah.

17 **MS. MUNN:** Fine. All right. All right. So I
18 -- no wonder I didn't have the numbers.

19 **MR. GRIFFON:** Yeah, right.

20 **DR. ULSH:** One of them was called a comparison.

21 **MR. GRIFFON:** Yeah.

22 **DR. ULSH:** I'm not going to get the titles
23 right but one of them was comparison and the
24 other one was follow-up --

25 **MS. MUNN:** Follow-up.

1 DR. ULSH: -- comparison or something --

2 MS. MUNN: Correct.

3 DR. ULSH: -- I think. Are those the two
4 documents you're talking about, Mark?

5 MR. GRIFFON: No, no, no.

6 MS. MUNN: Those are the two I was looking at -
7 -

8 DR. ULSH: Oh.

9 MR. GRIFFON: No, I actually --

10 MS. MUNN: -- and they are not the ones that --
11 that Mark was looking at.

12 MR. GRIFFON: This is on the O-drive because I
13 -- I -- we haven't received any of the HIS-20
14 or CEDR databases so I thought, well, maybe
15 they weren't put in the AB folder so I looked
16 in the co-worker data and to be honest with
17 you, I'm not sure exactly what sub-folder they
18 were in within the co-worker data but there was
19 -- there was actually -- I think someone broke
20 out the full database into -- into year span,
21 '53 to '57, '57 to '61, something like that.

22 MS. MUNN: Yes.

23 DR. ULSH: Now, that sounds a lot, Mark, like
24 what was in those two documents I mentioned but
25 I --

1 **MS. MUNN:** Yeah.

2 **MR. GRIFFON:** It might have been what you used
3 to create those doc-- yeah, those documents.

4 **MS. MUNN:** Yeah.

5 **DR. ULSH:** It might have been that.

6 **MS. MUNN:** Very possible.

7 **MR. GRIFFON:** Because these were access
8 databases that I was looking at.

9 **DR. ULSH:** All right.

10 **MS. MUNN:** It was just --

11 **MR. GRIFFON:** Yeah.

12 **MS. MUNN:** -- I was confused --

13 **MR. GRIFFON:** Yeah.

14 **MS. MUNN:** -- because I couldn't find where you
15 were getting your numbers but --

16 **MR. GRIFFON:** Well, the other -- the other
17 thing I no-- I noticed in there, and this just
18 might come into play in the -- in the models,
19 and like you said, that -- that may not be such
20 an issue because co-worker models are probably
21 not going to be used much, but in the CEDR
22 database, in the particular one I was looking
23 at anyway, for 19-- the last 20 or so values
24 all were -- all were in excess of -- let me --
25 let me present this correctly. HIS-20 had like

1 20 or so values that were greater than 935 and
2 I think we're talking DPM here. And when I
3 looked at it closely they all fell
4 approximately on the same -- I think all on the
5 same day or thereabouts, 6/15/57. In CEDR all
6 those values were truncated off, and I wondered
7 if that was because they were related to some
8 incident and not thought to be applicable to a
9 general co-worker model or what -- what the
10 rationale was for that. And I -- I think that
11 -- that -- that's just a question on the co-
12 worker models period, you know. Do you --

13 **DR. ULSH:** Yeah.

14 **MR. GRIFFON:** Would -- Would that tend to be
15 an approach if you had incident data, would you
16 -- that was clearly from one incident
17 involving, you know, specific people, would you
18 tend to truncate that off your general co-
19 worker models? So I don't -- yeah. If you
20 want to answer or don't have an answer --

21 **DR. ULSH:** I -- I -- I don't really have an
22 answer to that right now, Mark. If you could
23 maybe provide the specifics in an -- in an
24 email to me I'll --

25 **MR. GRIFFON:** Okay.

1 **DR. ULSH:** -- try to find an answer for you.

2 **MR. GRIFFON:** I'll type that up for you, yeah.
3 But it's 6/15/57 were the samples.

4 **DR. ULSH:** Okay.

5 **MR. GRIFFON:** And HIS-20 had high values and
6 CEDR has nothing.

7 **DR. ULSH:** Okay.

8 **MR. SHARFI:** Mark, this is Mutty. Those --
9 Those can be chelated samples so in a co-worker
10 study you might not want to include those.

11 **MR. GRIFFON:** You know, could -- yeah. There -
12 -

13 **MR. SHARFI:** I'm thinking by chelation you
14 would not want to include them in your co-
15 worker study.

16 **MR. GRIFFON:** Right. And when I saw them all
17 in the same day it may just be that -- and I've
18 seen --

19 **MR. SHARFI:** Depending on how high they were
20 they're -- they could -- they're -- they're
21 more like to be chelated.

22 **MR. GRIFFON:** And I think I've seen notations
23 in some of your co-worker spreadsheets where
24 there's a note in red at the bottom that says,
25 you know, this and this data point were dropped

1 -- found to be involved in a incident and not
2 deemed applicable to co-worker model. So I
3 don't know if that, you know -- there could be
4 good rationale for this. I was just trying to
5 understand it and whether that, you know, if
6 that's a general approach. I thought maybe if,
7 you know, a follow-up on that one, Bill, so
8 maybe in general is that done for the co-worker
9 models or for -- for Rocky for their source
10 model.

11 **DR. ULSH:** Okay. Yeah. Mark, like I said, if
12 -- if you can mail that off to me I'll --

13 **MR. GRIFFON:** Sure.

14 **DR. ULSH:** -- I'll get you an answer or I'll do
15 my best to give you an answer.

16 **MR. GRIFFON:** Yeah.

17 **DR. ULSH:** Okay. So let me think about where
18 we are here. I think we're on page 15 which is
19 comment 12 from the matrix, and this deals with
20 the no data available issue. And in previous
21 discussions what NIOSH has said is that no data
22 available could indicate two situ-- at least
23 two situations that we can think of. One is a
24 missed badge exchange. You know, a worker was
25 on vacation or sick or, you know, maybe just

1 forgot to exchange his badge in which case he
2 would continue wearing the badge for an extra
3 cycle. The second possibility is that the
4 badge was turned in and there was a problem
5 with the badge. And what I mean is there might
6 be an investigation, there might, you know,
7 such as during the TLD era; maybe a crystal was
8 missing or something that would have required
9 some additional processing so that the results
10 from that badge weren't available at the time
11 the report was issued. And what we've
12 discovered as we've gone along with this issue
13 is that the fact the place where these no data
14 available entries appeared, but in the reports
15 that were issued to the supervisors, they were
16 computer printouts sent to the supervisors
17 showing the dosimetry results for the people
18 that -- that reported to that supervisor. And
19 we actually over the past week, we have located
20 some of those supervisor reports at the records
21 center. We have pulled those and we are
22 currently in the process of trying to go back
23 and chase down some individual incidents --
24 sorry, individual instances where no data
25 available was on the supervisor reports and

1 compare those to maybe the dosimetry records
2 for the individuals. That is not complete yet.
3 We just got those records yesterday, but we
4 have made some progress. And that's really
5 about as much of an update as I can give you on
6 that at the moment.

7 **MR. GIBSON:** This is Mike Gibson. If I could
8 step back for just a second, I had a -- I'd
9 like clarification from Roger Falk I believe it
10 was who was talking. How many people received
11 chelation at Rocky Flats? Do you have a record
12 of that, database of that, any documentation?

13 **MR. GRIFFON:** I think Mutty brought -- brought
14 up that possibility, didn't you?

15 **MR. SHARFI:** Yeah.

16 **MR. GRIFFON:** Yeah.

17 **MR. SHARFI:** Usually when you're assessing a
18 case it's very clear in the record, both --
19 both a part of the incident report and part of
20 their medical report about exact dates on when
21 they -- when they were receiving chelation,
22 what -- how much, what type of chelating agent
23 was prescribed. Every -- Every case that I've
24 dealt with that had a chelation scenario had
25 all that information inside their DOE file but

1 I don't have any good idea of the -- the total
2 number of chelating scenarios that they had at
3 the facility.

4 **MR. GIBSON:** I guess I can open up the question
5 up generally then. Does anyone with experience
6 from Rocky out there know that -- basically
7 that number or is there any kind of --

8 **DR. ULSH:** Roger, are you out there?

9 **MR. FALK:** Yes, I am out there. I'm trying to
10 -- I'm trying to draw that up. It is something
11 over 100 but probably less than 140 but I don't
12 have the specific number right -- right at
13 hand.

14 **MR. GIBSON:** That could be -- that could be dug
15 up out of some sort of data file if needed?

16 **MR. FALK:** Well, I'm not sure if it's really
17 pertinent but I think that the basic -- that
18 the basic statement is that if a worker was
19 actually chelated it would be in the claimant's
20 file that were captured by the -- by the
21 project so that the -- so that the dose
22 reconstructor would have that available.

23 **MR. GIBSON:** Well, whether it's pertinent or
24 not, that -- as a member of the Board I just
25 asked the question, is that available?

1 **MR. FALK:** I'm not sure.

2 **MR. GIBSON:** Okay.

3 **MR. GRIFFON:** You know, and this is a little
4 bit of an aside here but I -- I'm also -- just
5 wanted to mention and I think maybe something
6 that might be important in the super-S model.
7 I think today the cases used for the super-S
8 TIB, were they chelation cases or were they
9 not?

10 **DR. ULSH:** Oh.

11 **MR. GRIFFON:** Do you recall that? I mean I
12 think you only -- at the end of the day you
13 used two cases, right, for your --

14 **MR. FALK:** Six of the Rocky Flats cases were
15 the chelation cases and three were not.

16 **MR. GIBSON:** This is Mike Gibson again. Would
17 it be pertinent to a co-worker model?

18 **MR. FALK:** It would be pertinent to actually
19 exclude the urine samples that were actually
20 perturbed by the chelation and those were
21 generally coded as a code one in the Health
22 Sciences Database data.

23 **MR. GIBSON:** (Unintelligible) separated out by
24 a some kind of asterisk or notation.

25 **MR. GRIFFON:** Yeah, and that -- and that --

1 that could be one explanation of those ones
2 being separated out that I mentioned but --

3 **DR. ULSH:** Well, it could be.

4 **MR. GRIFFON:** I think it's worth following up
5 on.

6 **DR. ULSH:** Sure, Sure. And -- and Mike, I
7 think the answer to your question is yeah, it
8 sure would be relevant to make sure that those
9 chelation sample results don't make it into the
10 co-worker model.

11 **MR. GIBSON:** Right.

12 **DR. ULSH:** Yeah, that would certainly be
13 something you'd want to do.

14 **MR. FALK:** But now, I would also like to point
15 out that if they did get into the co-worker
16 model it would be claimant favorable because it
17 would tend to elevate the data set.

18 **DR. ULSH:** Well, and if there were only between
19 100 and 140 I'm not sure how much of an impact
20 it might have. The values of course would be
21 pretty high but you wouldn't expect all of
22 those to fall in the same year.

23 **MR. SHARFI:** Actually the people chelated were
24 using daily samples so they would have a
25 sizeable number of samples.

1 **DR. ULSH:** Oh, okay. All right.

2 **MR. GRIFFON:** Right. Thanks for that.

3 **MS. MUNN:** I can't imagine those would be used
4 for co-worker--

5 **DR. ULSH:** No, I --

6 **MS. MUNN:** -- co-worker data under any
7 circumstances. We have such a few number of
8 claims that are likely to be a part of co-
9 worker data.

10 **DR. ULSH:** Right. We haven't identified any
11 for internal that I know of.

12 **MR. LANGSTED:** This is Jim Langsted and I
13 specifically recall Joe Lochemy talking last
14 time about the fact that he did take that data
15 out of the co-worker data set.

16 **MR. GRIFFON:** Okay. Like I said, that may well
17 be the explanation for what I saw so that, you
18 know, that -- and I -- I don't remember Joe
19 saying that but he sure could have and so --

20 **DR. ULSH:** Well, like you said, Mark, it could
21 be. But if you send us the statistics --

22 **MR. GRIFFON:** Yeah.

23 **DR. ULSH:** -- we'll follow up on it.

24 **MR. GRIFFON:** Okay. Worth following up on,
25 yeah. All right.

1 **DR. ULSH:** Mike, did you have anything else or
2 do you -- should I move on or --

3 **MR. GIBSON:** Yeah, go ahead.

4 **DR. ULSH:** Okay. All right. Let's see. I
5 think we were on comment 15 which is
6 coincidentally on page 15 of my handout. And
7 Mark, I don't know. I may be confused. I -- I
8 think that we addressed this issue on comment
9 9, action item 7. This was the follow-up with
10 the -- the petitioner on the -- on the
11 particular example.

12 **MR. GRIFFON:** Yeah. If you recall -- if you
13 recall it said I moved the comments from 9 to -
14 -

15 **DR. ULSH:** Oh, okay.

16 **MR. GRIFFON:** -- their individual comments so
17 they're the same one, yeah.

18 **DR. ULSH:** All right. So we've already covered
19 that?

20 **MR. GRIFFON:** Yes.

21 **DR. ULSH:** Okay. Then comment 18 is the next
22 one, and this has to do with workers who
23 frequently did not wear badges in production
24 area and did not report non-use of the badge.
25 So this -- this is that I left my badge in my

1 locker issue. And we had talked last time
2 about some statistical analyses or -- or, you
3 know, just looking at some of the data at least
4 from the post-'77 years that we might be able
5 to look at to get a feeling for this issue.
6 And we have done some of that. We have
7 actually located I think, Jim Langsted, was the
8 number 121 work reporters?

9 **MR. LANGSTED:** 239.

10 **DR. ULSH:** 239? Wow. Okay. So what we --
11 what we've done is we started assembling graphs
12 that you see on page 17 that indicate -- it's a
13 cumulative dose graph. And what you might be
14 wanting to focus in on on these graphs is
15 instances where you might see a concave down
16 shape. So as you go from left to right on the
17 graph if you saw a flattening of the curve,
18 that would be consistent with two situations at
19 least that we know of. One would be the worker
20 was approaching a dose limit of some kind and
21 was removed from radiation work. The second
22 situation that it would be consistent with is
23 the worker continued in his job but his badge
24 was removed from that environment. In other
25 words, maybe left in his locker. I'm still not

1 clear on how we're going to separate that out
2 if we see it. Here are a couple of
3 representative graphs, about six of them on
4 page 17 where we did not see the kind of
5 flattening that we're talking about. And also
6 it's worth noting that --

7 **MR. GRIFFON:** Each of these graphs represents
8 one individual or what -- what do these --

9 **DR. ULSH:** I think it's one individual; is that
10 right, Jim?

11 **MR. LANGSTED:** Each -- the -- each one is a
12 different individual.

13 **DR. ULSH:** Right.

14 **MR. GRIFFON:** Yeah.

15 **MR. LANGSTED:** And these individuals were
16 picked because first of all they were exchanged
17 -- badges were being exchanged on a -- a semi-
18 monthly basis which means they were identified
19 at the time as the highest potential dose
20 people and needed to be controlled periodi-- or
21 more periodically than others. And also we
22 selected from those the ones that had the
23 highest total dose for the year thinking that
24 those would be the individuals that would be
25 most likely to need dose control where you

1 might see that.

2 **MR. GRIFFON:** All right.

3 **MR. FITZGERALD:** This is Joe Fitzgerald. What
4 facilities do these graphs or these curves
5 represent?

6 **MR. LANGSTED:** Don't have that data
7 specifically, Joe. We just randomly picked
8 individuals. In fact the ID of the individual
9 was protected from me.

10 **MR. FITZGERALD:** Okay.

11 **MR. LANGSTED:** But my guess is there they'd be
12 plutonium production individuals.

13 **DR. MAURO:** This is John Mauro. So out of the
14 237 cases you looked at, how many of those had
15 this flattening someplace in the -- in the --
16 in the cumulative distribution or the
17 distribution we're looking at?

18 **DR. ULSH:** Well, we're -- we're actually still
19 looking at -- at the data, John. We just got
20 these data over the past week. I think in the
21 graphs that Jim sent me I saw one where there
22 might be some flattening but we're -- again
23 we're still looking at -- through the rest of
24 these.

25 **DR. MAURO:** I think the intent was not so much

1 to say whether we could make a distinction of
2 whether it was deliberate or leaving in the
3 locker room versus a person who's taken off the
4 job because of exposure. But just to see how
5 often that occurred --

6 **DR. ULSH:** Sure.

7 **DR. MAURO:** -- that would be 237. You see it
8 three times, I would say, well, that's not very
9 often. Out of the 237 if you see it 237 times,
10 then we have something that I guess we have to
11 pay a little more attention to.

12 **DR. ULSH:** Right. And --

13 **MR. FITZGERALD:** Right.

14 **DR. ULSH:** -- keep in mind, John, I mean I'm
15 just speculating here because again our
16 analysis isn't complete yet. But as the years
17 went on, as you got into the '90s say, and the
18 dose limits, you know, got progressively lower
19 over the history of the plant, and what you
20 might expect to see is that as the limits got
21 lower people may be approaching the limits more
22 perhaps. And so you might expect to see more
23 flattening. I don't know if that's what --
24 what -- whether it'll turn out that we see.
25 We're just going to have to --

1 **DR. MAURO:** Yeah.

2 **DR. ULSH:** -- finish the analysis but --

3 **MR. GRIFFON:** Brant, the reason you picked '77
4 was because you had monthly data or -- or --

5 **DR. ULSH:** Jim, you had a pretty good
6 explanation for that and I'm not sure I'd do it
7 justice. Can you?

8 **MR. LANGSTED:** Okay. Yeah, Mark, in 1977 is
9 when the HIS-20 database first started
10 recording or -- or kept the exchange by
11 exchange data.

12 **MR. GRIFFON:** Right.

13 **MR. LANGSTED:** So if I was going to -- to do
14 that I -- I've got to be using more than just
15 quarterly totals.

16 **MR. GRIFFON:** That's what I thought. Okay.

17 **MR. LANGSTED:** That's why I started that. And
18 then I -- I thought probably 1989 is -- is
19 about the last time you want to look at this
20 because at that point production shut down at
21 the plant --

22 **MR. GRIFFON:** Right.

23 **MR. LANGSTED:** -- and dose became less of an
24 issue.

25 **MR. DEMAIORI:** This is Tony DeMaiori. Prior to

1 shipment of the plutonium the last dose went
2 back up in the 2000s and we were doing a PUSPS
3 operations.

4 **MR. LANGSTED:** That's very true.

5 **DR. ULSH:** Okay.

6 **MR. GRIFFON:** So that's an explanation of what
7 -- Okay. So that's ongoing, Brant, is what
8 you're saying?

9 **DR. ULSH:** Exactly. Exactly. I just wanted to
10 update you on our progress so far. We had some
11 progress.

12 **MR. GRIFFON:** Okay.

13 **DR. ULSH:** Oh, also before we leave this issue,
14 as I was trolling through some of these
15 dosimetry files I did find an interesting
16 letter and that is on page 18 of my handout.
17 And what this is, it's a letter to a worker
18 notifying the worker that he's going to be
19 placed on radiation exposure restriction. So
20 this is the first situation that we described
21 where a worker might be approaching a limit of
22 some sort and so that he's going to be pulled
23 out of the radiation environment. And the
24 interesting thing that you see here is that --
25 is that last paragraph that it says you will

1 remain in this classification, that -- that is,
2 say, you know, pulled out, restricted from
3 radiation work. You will remain in this
4 classification 'til the end of this calendar
5 year. Your rate of pay will remain the same as
6 it is now. At the end of the year you will be
7 returned to Chem-Op Building 77-1. Now, I
8 don't want to make too much of this because I
9 don't know how generally it applies across the
10 years or across, you know, the plant for that
11 particular year, 1979. It does indicate though
12 that there might be less of an incentive for a
13 worker for financial reasons to engage in this
14 kind of manipulation of his dosimetry.
15 However, it should also be pointed out that the
16 petitioner mentioned that one reason a worker
17 might want to do this is to remain eligible for
18 overtime work and this letter certainly does
19 not speak to that situation.

20 **MR. GRIFFON:** Right.

21 **DR. ULSH:** But it's just one more piece of
22 evidence to add to the weight of evidence
23 approach that we're building here.

24 **MR. DEMAIORI:** I -- I guess -- this is Tony
25 DeMaiori. I'd like to speak on that. We

1 actually negotiated that into our collective
2 bargaining agreement.

3 **DR. ULSH:** Right.

4 **MR. DEMAIORI:** Which would speak just the
5 opposite.

6 **MR. GRIFFON:** Exactly, yeah.

7 **MR. DEMAIORI:** We wouldn't have wasted our time
8 if in fact people weren't suffering financial
9 loss. That's -- I'd also like to point out
10 that, you know, your rate of pay, your base
11 rate of pay, that's not premiums. That --
12 Like when we re-entered the beryllium areas we
13 paid time and a half for papper (ph) pay. And
14 when we removed the beryllium hazard the papper
15 pay was removed. And we had two different
16 instances, one in 707 and one in building 444
17 where the people took their lapel samplers and
18 swept the floor, trying to restore the papper
19 pay. So, you know, for -- for this case you're
20 building that there was no disincentive that's
21 totally incorrect.

22 **DR. ULSH:** No, no, I'm not -- I'm not -- in
23 fact I was trying to be very clear that I'm not
24 saying that there was no disincentive because
25 this letter certainly does not speak to those

1 situations like overtime or the premiums that
2 you mentioned. It doesn't speak to that at
3 all. And that's the point I was trying to
4 make.

5 **MR. DEMAIORI:** Yeah. No, what that letter
6 speaks to is the language in the collective
7 bargaining agreement.

8 **DR. ULSH:** Right. And you see that in the
9 first paragraph of the letter, the article 4,
10 section 6 of the company union agreement.

11 **MR. DEMAIORI:** Absolutely.

12 **DR. ULSH:** Right. That's -- as you said, Tony,
13 that would be the basis for this no penalty in
14 the base rate of pay. So I -- I -- I don't
15 claim that this letter makes that issue go away
16 at all.

17 **MR. DEMAIORI:** Okay.

18 **DR. ULSH:** It's one piece of information to add
19 to what we've got. Should I move on or --

20 **MR. GRIFFON:** Yeah.

21 **DR. ULSH:** -- does anyone have any questions on
22 or discussion on that issue?

23 **MR. GRIFFON:** I think go ahead through.

24 **DR. ULSH:** Okay. That takes us to the last
25 page, page 19, comment 22, there was an action

1 item. This goes back to the instances of no
2 data available in situations of high exposure.
3 Again we -- we've located some of these
4 supervisor reports that we're trying to run to
5 ground now and I think the other concern that
6 was raised in -- in this particular situation
7 was the blackening of film and I think we've
8 already covered that under another comment,
9 too. I can go through it again if anyone would
10 like but if you're satisfied with that for now,
11 I can just leave it.

12 **MR. GRIFFON:** I think we're okay with that.

13 **DR. ULSH:** Okay. Well, then we're on to the
14 last item, comment 26. And this is the action
15 item was that we would provide co-worker
16 methodology to the Board and to SC&A. At the
17 risk of speaking without sitting in front of my
18 computer to see what's actually available out
19 there I -- I did see the co-worker data in the
20 location I've listed at the bottom of page 19.
21 I sure hope that all of that is out there now
22 for you guys to -- to review at your
23 convenience.

24 **MR. GRIFFON:** Question on that.

25 **DR. ULSH:** Yeah.

1 **MR. GRIFFON:** I mean as I'm pulling it open
2 again, did you put the Excel analysis files
3 with that, too, in the --

4 **DR. ULSH:** Yeah, I think so, Mark.

5 **MR. GRIFFON:** It should be -- I know it's
6 somewhere else on there, too, but --

7 **DR. ULSH:** I'm thinking it's in the co-worker
8 data folder and then there were some sub-
9 folders. Oh, boy, I'm trying to go from memory
10 here. I know that there's a folder for
11 americium and for plutonium and for uranium.

12 **MR. GRIFFON:** So all those -- all those folders
13 are there? Okay.

14 **DR. ULSH:** I think if you open those folders
15 there's a whole long list of spreadsheets in
16 there.

17 **MR. GRIFFON:** Okay.

18 **DR. ULSH:** But again, I'm trying to go from
19 memory so...

20 **MR. GRIFFON:** All right.

21 **MS. MUNN:** Do you have the number of that -- of
22 those TIBs?

23 **DR. ULSH:** Yes, that is O-TIB 38 and O-TIB 58
24 although I can never keep it straight which is
25 external and which is internal.

1 **MS. MUNN:** That's okay.

2 **MR. BUCHANAN:** External is 58.

3 **DR. ULSH:** Okay. Thank you, Ron.

4 **MS. MUNN:** Thanks.

5 **MR. GRIFFON:** And at this point I'm not sure,
6 you know, we can really discuss 38 or 58 or any
7 of this extensively because I think we've --
8 most of us have just been focused on Y-12 last
9 week so --

10 **MS. MUNN:** Yeah.

11 **MR. GRIFFON:** Yeah.

12 **DR. ULSH:** Well, that takes you to the end of
13 my status update.

14 **MR. GRIFFON:** One other question on -- on the
15 data provided -- I'm just looking in the co-
16 worker folder.

17 **DR. ULSH:** Yeah.

18 **MR. GRIFFON:** I see the HIS-20 database from
19 (unintelligible); is that the one?

20 **DR. ULSH:** Yeah, that's -- I don't know if
21 that's internal or external, Mark.

22 **MR. GRIFFON:** Anyway, I see that but is there
23 also a -- a CEDR one or is --

24 **DR. ULSH:** I don't think we provided the CEDR.
25 I don't know. I'd have to look again.

1 **MR. GRIFFON:** There wasn't -- you indicated you
2 had the CEDR in Access format, not in CEDR
3 format.

4 **DR. ULSH:** There was an issue about CEDR data.
5 We -- we have to -- according to the agreement,
6 to use CEDR data you have to only provide this
7 to an authorized CEDR user. And so I think
8 there at least was an issue about whether or
9 not we were free to do that.

10 **MR. GRIFFON:** Oh, okay.

11 **DR. ULSH:** However, if you are an authorized
12 CEDR user I think, again I'm going from memory
13 here, I think in the evaluation report, the
14 data sufficiency section, I listed the names of
15 the files from CEDR that we used. And this was
16 for I want to say the internal. And if you're
17 a CEDR user you could actually look at those
18 files in CEDR.

19 **MR. GRIFFON:** Yeah, yeah. I am a --

20 **DR. ULSH:** I -- I know that's -- I know that's
21 not the most convenient but --

22 **MR. GRIFFON:** It's not the best format to go in
23 CEDR either. I mean --

24 **DR. ULSH:** Yeah.

25 **MR. GRIFFON:** -- (unintelligible) was better

1 but anyway.

2 **DR. ULSH:** I mean if you'd like us to pursue
3 that, Mark, we can investigate it further but -
4 -

5 **MR. GRIFFON:** Well, I'm not sure how much we --
6 we need it. I mean, yeah, I guess we'll push
7 through that when we get to the co-worker
8 models more but --

9 **DR. ULSH:** Okay.

10 **MR. GRIFFON:** I mean really it was -- it was
11 for the purposes of comparison of the two.

12 **DR. ULSH:** Yeah.

13 **MR. GRIFFON:** And you provided that analysis
14 but just to have the raw materials there would
15 have been helpful.

16 **DR. ULSH:** Sure. I understand what you're
17 saying.

18 **MR. GRIFFON:** I mean I'll leave it at that for
19 now.

20 **DR. ULSH:** Okay.

21 **MR. GRIFFON:** Okay. I think -- is there
22 anything else on -- on Brant -- I mean this is
23 really a status report on these actions, many
24 of which you've completed but some are
25 outstanding and we've got those notes. And I

1 think the last thing we'll do -- it is getting
2 late.

3 **DR. ULSH:** Yeah.

4 **MR. GRIFFON:** The last thing we should do here
5 is get a presentation from -- from John --
6 from SC&A or maybe it's Joe. I'm not sure
7 who's presenting on the -- on their report.
8 And -- And, you know, the same probably
9 applies here. I'm not sure how much we can
10 discuss it because most people just received it
11 but at least have a little initial discussion
12 on it.

13 **MR. FITZGERALD:** Yeah, Mark. I -- I -- I have
14 Kathy here. We're in Los Alamos.

15 **MR. GRIFFON:** Oh, okay.

16 **MR. FITZGERALD:** What we can do is just
17 clarify. I think the last work group meeting
18 it was pointed out that because of the way a
19 lot of these issues were combined we -- we did
20 take the issues from the petition, combine them
21 with some from the site profile, came up with
22 the 17 at Dr. Ziemer's request. And then we
23 tried to clarify where things stood and also
24 about the same time as we had the last work
25 group meeting, as we indicated, Kathy was, in

1 fact, out at Rocky Flats talking to petitioners
2 and beginning a process of trying to identify
3 some additional documentation for the purposes
4 of corroborating really, additional
5 corroboration of -- of some of the issues that
6 were -- were identified. I think it was the
7 sense of the work group at the last meeting
8 that it was kind of confusing tracking all
9 these various issues. Some of them were
10 overlapping and some of them had certainly
11 different origins. Some of them were in fact
12 in the process of being closed because they
13 were recognized as not being SEC issues. And
14 so there was a lot of things in motion. What
15 we wanted to do for purposes of this discussion
16 and the -- the SEC discussion of data integrity
17 or data reliability was to sort of simplify it
18 somewhat, and this is the purpose of the April
19 20th document which was to clarify both the
20 major issues and the -- in a -- in a somewhat
21 (unintelligible) the basis and reasoning behind
22 our seeing these as sort of the key issues that
23 need to be addressed in providing a pathway,
24 which I think was the important suggestion that
25 came out of the discussion last time. A

1 pathway to come up with sufficient
2 corroboration that I think, you know, all would
3 be satisfied that, you know, there was a -- a
4 reasonable pursuit of whatever documentation
5 could be obtained. And obviously this is a
6 work in progress. We're still getting
7 documentation in. I think it was the
8 recommendation of the work group, however, that
9 we clearly identify that which NIOSH was in a
10 better position perhaps to pursue and -- and in
11 the same breath maybe reserve some of the
12 things that we were in the process of doing
13 that we would like to complete. And that was
14 the intent of this document was to clarify the
15 basis but also identify a path forward that --
16 that we would -- we could continue doing but
17 also offer up as simply a suggestion for work
18 group discussion of documents that could be
19 obtained and what those documents may tell us
20 that would be of usefulness in this process.
21 So that's the backdrop. And I don't know how
22 you want to go through this. Certainly I --
23 **MR. GRIFFON:** Well, yeah. I think it's worth
24 stepping through. I mean if you can summarize,
25 Joe, but stepping through section by section

1 and then coming out -- each -- at the close of
2 each section I think you have some recommended
3 actions or -- for NIOSH and for SC&A, correct?

4 **MR. FITZGERALD:** That's correct.

5 **MR. GRIFFON:** So maybe just if you could step
6 through in a concise --

7 **MR. FITZGERALD:** Probably with Kathy since
8 she's right beside me here. And certainly we
9 start with data access as a backdrop.

10 **MS. ROBERTSON-DEMERS:** There are two -- two
11 sets of data that have not been reviewed.
12 (Unintelligible) dosimetry log sheets, that
13 type of information that I copied when I was
14 there that has not been shipped to me yet. The
15 other are these outstanding records.

16 **DR. WADE:** Kathy, we're not hearing you. I
17 don't know if -- if you're on a speaker phone
18 but we're not hearing you.

19 **MS. ROBERTSON-DEMERS:** Is this better?

20 **DR. WADE:** Yes.

21 **MR. GRIFFON:** Yeah.

22 **MS. ROBERTSON-DEMERS:** Okay. Okay, there's two
23 outstanding sets of records. One set is -- is
24 the set that I copied while I was there and
25 that they were supposed to ship to me which I

1 haven't received yet. And that's from the
2 boxes I did review. And then there were the
3 records that I requested that were not pulled
4 back from the Denver Federal Center while I was
5 there. And I kind of summarized in table 1 the
6 documents that I originally was looking for and
7 which ones I -- I walked away with. And the --
8 the box of -- there's probably about 1,000
9 sheets of paper. There's just kind of a mish-
10 mash of all -- all sorts of things, everything
11 from tritium to TLD log sheets to external
12 dosimetry technical documents, that type of
13 stuff.

14 **DR. ULSH:** Kathy, this is -- this is Brant.
15 With regard to the first set of data that
16 you're talking about, the ones that you've
17 copied but they've not yet been shipped to you.

18 **MS. ROBERTSON-DEMERS:** Uh-huh.

19 **DR. ULSH:** Is there anything that you can think
20 of that NIOSH can do to maybe assist in that
21 process? I mean are -- do you know what the
22 issue is as to why they haven't been shipped?

23 **MS. ROBERTSON-DEMERS:** I do not know. The
24 person that -- my contact has not gotten back
25 to me for about a week.

1 **DR. ULSH:** Oh, okay.

2 **MS. ROBERTSON-DEMERS:** And probably what the
3 best action is is for me to try again.

4 **DR. ULSH:** Okay.

5 **MS. ROBERTSON-DEMERS:** And then if they don't
6 turn around and provide it then for NIOSH to
7 step in and say, hey, we want those records
8 sent.

9 **DR. ULSH:** Yeah, I mean we've got people out
10 there who have a, you know, fairly good
11 relationship with records, you know, the DOE
12 records personnel. And, you know, again, I --
13 it's hard for me to say without knowing what
14 the issue -- what the holdup is but, you know,
15 I mean if -- if it's just a matter of one of
16 our people driving down to the records center
17 and saying hey, you've got some boxes on hold
18 for Kathy DeMers, we'll take 'em and get 'em to
19 her, I mean we can do that.

20 **MS. ROBERTSON-DEMERS:** Let me catch up with
21 Andrea.

22 **DR. ULSH:** Oh, is this Andrea Wilson?

23 **MS. ROBERTSON-DEMERS:** Uh-huh.

24 **DR. ULSH:** Oh, okay. Okay. Yeah, that's --
25 that's one of our contacts actually.

1 **MS. ROBERTSON-DEMERS:** Yeah, and I've been out
2 of town --

3 **DR. ULSH:** Okay.

4 **MS. ROBERTSON-DEMERS:** -- this week so --

5 **DR. ULSH:** All right.

6 **MS. ROBERTSON-DEMERS:** At least let me get home
7 and make sure that they --

8 **DR. ULSH:** Yeah, they may have been shipped,
9 right, so --

10 **MS. ROBERTSON-DEMERS:** -- don't show up.

11 **DR. ULSH:** Okay.

12 **MS. ROBERTSON-DEMERS:** Now, there's a -- a
13 later table in here that -- they're more into
14 table 1, table 4 and what I did was I scrunched
15 -- it doesn't look like it but I scrunched the
16 type of records that would be helpful if they
17 were pulled. These -- these are really those
18 records that I wanted to see but didn't get to
19 see. And those years correspond to individual
20 situations in the SEC petition so I tried to
21 overlap. This person said he worked on this
22 job in this area for 1982, 1983 so I tried to
23 pull the logbook from that area for 1982/'83.
24 And I guess the -- the important thing about
25 those logbooks is that I'm told that there's

1 personnel dose information in them and that
2 that dose information doesn't correspond to the
3 dosimetry record. So that's what I was trying
4 to -- to check on. Now, you'll see that I said
5 select years on some of these. I realized
6 that's a lot of logbooks but those are the --
7 those are the years that cover particular
8 people and the intention was to just pick a
9 couple of them through that period for that
10 building and compare it back to that person's
11 dosimetry record.

12 **DR. ULSH:** I would -- I would say if you're
13 doing that, too, it might be worthwhile if
14 possible to make sure we have a good coverage
15 of the years, you know, the decades I should --
16 I should say. Like let's not pick them all
17 from the '80s or all from the '90s or --

18 **MS. ROBERTSON-DEMERS:** Right.

19 **MR. GRIFFON:** -- you know, yeah.

20 **MS. ROBERTSON-DEMERS:** Well, you'll see there's
21 quite a variety.

22 **MR. GRIFFON:** Yeah, there's a range I see in
23 your table.

24 **DR. ULSH:** Just from -- to get a point of
25 clarification, Kathy, I'm looking at table 4 --

1 **MS. ROBERTSON-DEMERS:** Okay.

2 **DR. ULSH:** -- the ones where you see select
3 years between '63 and '95.

4 **MS. ROBERTSON-DEMERS:** Uh-huh.

5 **DR. ULSH:** When you see that are -- are you
6 indicting that there are specific years that
7 you're looking for or rather that you're
8 interested in a random sampling of -- of those
9 years?

10 **MS. ROBERTSON-DEMERS:** That's what I was
11 talking about.

12 **DR. ULSH:** Yeah.

13 **MS. ROBERTSON-DEMERS:** A random sampling. I
14 don't expect --

15 **DR. ULSH:** Oh, I see. Okay.

16 **MS. ROBERTSON-DEMERS:** -- this whole -- every
17 logbook for that building from '63 to '95.

18 **DR. ULSH:** Okay. Right.

19 **MS. ROBERTSON-DEMERS:** You know, I'm just --
20 pull five or something. Those years are
21 associated with a particular person being in
22 that building over that time period because
23 they didn't specify a particular year.

24 **DR. ULSH:** Okay. I think I see now. Okay.

25 **MS. ROBERTSON-DEMERS:** Okay. I tried to under

1 the RFP-SEC petition matrix -- I tried to kind
2 of come down to --

3 **MR. GRIFFON:** What page are you on, Kathy?

4 **MS. ROBERTSON-DEMERS:** I'm on page 4.

5 **MR. GRIFFON:** Okay. (Unintelligible) backup.

6 **MS. ROBERTSON-DEMERS:** And I already see an
7 error in this list. It's the bulleted area.

8 **MR. GRIFFON:** Okay.

9 **MS. ROBERTSON-DEMERS:** I tried to kind of boil
10 it down to -- to the issues, the core issues.
11 And one of those, the other radionuclides we
12 dropped in the back but apparently we didn't
13 drop from this list.

14 **MR. GRIFFON:** Which bullet item is that?

15 **MS. ROBERTSON-DEMERS:** That's the last one.

16 **MR. GRIFFON:** Last item, okay.

17 **MS. ROBERTSON-DEMERS:** And I tried to tie it to
18 one of the matrix issues just to give you --

19 **MR. GRIFFON:** Okay.

20 **MS. ROBERTSON-DEMERS:** -- a reference back to
21 that -- to what particular matrix issue
22 brought this particular situation up but --

23 **MR. GRIFFON:** That bullet is dropped is what
24 you're saying?

25 **MS. ROBERTSON-DEMERS:** Yeah. But really for

1 several of these I would follow the same
2 process in trying to evaluate it, going from
3 the dosimetry record to the processing logs to
4 the logbook like the no data available, false
5 entries, zeros where they were -- where they
6 expected to have high dose, those types of
7 things. The same process will be used.

8 **MR. GRIFFON:** Okay.

9 **MS. ROBERTSON-DEMERS:** With respect to the
10 external dosimetry investigations, really what
11 -- what that's about is how did they do it,
12 especially before the time period of the
13 procedures that NIOSH has cited, and how did
14 they document it or how were they told to
15 document it and did they indeed document that.
16 And I provided a table from actually a TLD
17 problem logbook and each of these entries have
18 had an issue which -- which I listed out. I'll
19 try and give you the table number here, and
20 that's on page 7. I would have expected them
21 to say something in -- in the worker's file
22 about it or have some policy on how to deal
23 with that situation. And those ID numbers
24 should -- should allow you to track back to an
25 individual. Basically what we want to see is

1 whether they actually indeed did do -- did have
2 a process in place to assign doses when there
3 was a problem with the -- with the film badge
4 or it was lost or there was an overexposure
5 like when the film was black. And was that
6 process formally documented. In other words,
7 did they do an extended external dose
8 reconstruction and go out and talk to co-
9 workers and find out where this person was
10 working and that type of thing.

11 **MR. GRIFFON:** Kathy, can we -- I -- I guess if
12 we could step through section by section now --
13 you've kind of given an overview there.
14 Section 1 you have suggested NIOSH follow-ups
15 and SC&A follow-ups. I think --

16 **MS. ROBERTSON-DEMERS:** Okay. Let's go back --

17 **MR. GRIFFON:** -- it might be worthwhile to be
18 clear what we expect, you know.

19 **MS. ROBERTSON-DEMERS:** Okay. Well, let's go to
20 page 5.

21 **MR. GRIFFON:** Okay.

22 **MS. ROBERTSON-DEMERS:** And this has to do with
23 the safety concerns.

24 **MR. GRIFFON:** Right.

25 **MS. ROBERTSON-DEMERS:** Ones that -- that have

1 been filed -- filed. What I did is I got a
2 list of the safety concerns and really it just
3 had brief descriptions. And I picked out those
4 that were relevant to dosimetry. And hopefully
5 NIOSH has gotten 71-4 but that -- but I guess
6 you'll get -- NIOSH will have to tell me if
7 they've gotten that one.

8 **DR. ULSH:** Kathy, who did you send -- I don't
9 think I've got -- got it. Who did you send it
10 to over at NIOSH?

11 **MS. ROBERTSON-DEMERS:** Probably it would have
12 come through formal general. John, are you
13 still there?

14 **DR. MAURO:** Yes, I am. Okay. I guess I don't
15 have it. Or if I do I don't know I have it.

16 **MS. ROBERTSON-DEMERS:** Okay.

17 **DR. MAURO:** You thought it was forwarded to me?

18 **MS. ROBERTSON-DEMERS:** Yeah. Probably a CD I
19 sent.

20 **DR. MAURO:** You sent it recently?

21 **MS. ROBERTSON-DEMERS:** Yeah. A CD.

22 **DR. MAURO:** Oh, okay. I did receive a set of
23 CDs from Judy. Are you referring to CDs that
24 went first to Judy and then to me?

25 **MS. ROBERTSON-DEMERS:** Right.

1 **DR. MAURO:** I have it. Yes, I do. I have
2 those CDs.

3 **MR. GRIFFON:** So you have to -- SC&A can still
4 work on providing that to NIOSH, Brant, yeah.

5 **DR. MAURO:** Okay. So -- okay.

6 **MS. ROBERTSON-DEMERS:** Yeah, it's really just a
7 single sheet of paper.

8 **MR. GRIFFON:** Okay.

9 **DR. MAURO:** Okay. So -- but I received two --
10 I -- two separate days I received two sets of
11 CDs. Now, just let me know what you'd like me
12 to do with those because I distributed them
13 internally to SC&A folks but I did not forward
14 anything on to NIOSH.

15 **MS. ROBERTSON-DEMERS:** Okay. Well, that safety
16 document should be on the Rocky Flats CD.

17 **DR. MAURO:** Okay. So you would like me to send
18 --

19 **MS. ROBERTSON-DEMERS:** Forward that.

20 **DR. MAURO:** Okay. The Rocky CD, and I'll send
21 that to whom?

22 **MR. GRIFFON:** To NIOSH.

23 **DR. ULSH:** Yeah, if you could send it to me,
24 John -- Brant -- Brant Ulsh, that would be
25 good.

1 **DR. MAURO:** Okay. I'll take care of that.
2 It'll go out tomorrow.

3 **DR. ULSH:** Thanks, John.

4 **MS. ROBERTSON-DEMERS:** Okay. And then there's
5 several other safety concerns and some of them
6 kind of track very well with concerns that were
7 in the petition and I would just recommend that
8 those safety concerns be pulled. And some of
9 the files, well, there's -- there's -- there's
10 a company response to each safety concern so
11 the concern is listed and the company response
12 is listed.

13 **MR. GRIFFON:** Okay. So we have a limited set
14 of safety concern reports here, and the
15 recommendation is for NIOSH to pull these and
16 evaluate 'em, right?

17 **MS. ROBERTSON-DEMERS:** Right.

18 **MR. GRIFFON:** And SC&A is also going to
19 evaluate a couple that you already have, three
20 that you --

21 **MS. ROBERTSON-DEMERS:** Well, we have 71-4 --

22 **MR. GRIFFON:** -- that are coming under --

23 **MS. ROBERTSON-DEMERS:** -- but we'd like to see
24 probably 87-206 and 92-036.

25 **MR. GRIFFON:** Okay. So you can do a few in

1 parallel is what you're suggesting?

2 **MS. ROBERTSON-DEMERS:** Right.

3 **MR. GRIFFON:** Okay.

4 **DR. ULSH:** On -- on that list of safety
5 concerns, Kathy, were -- were these documents
6 that you requested and -- and DOE was not able
7 to provide them?

8 **MS. ROBERTSON-DEMERS:** The -- I originally
9 requested 71-4 when I was at Rocky Flats
10 because I just discovered them when I was
11 there.

12 **DR. ULSH:** Oh, I see.

13 **MS. ROBERTSON-DEMERS:** And the remainder have
14 not been requested.

15 **DR. ULSH:** Okay. Not yet requested, okay.
16 Okay. I guess my thoughts are that I mean we
17 can certainly try to get them. It will take
18 some time I think. Pretty much everyone agrees
19 that I mean that certainly can't be
20 accomplished before the Board meeting. We can
21 try. Our -- our experience is that the
22 classified records are fairly well organized.
23 The unclassified records not so much. I guess
24 if -- if the group decides that we want to
25 pursue these documents or any other documents

1 in this -- in this -- the SC&A's report then
2 the next step for us would be to talk to our --
3 our contacts, the records people, and find out,
4 you know, what kind of a time frame we're
5 looking at on getting these. I mean I'm not
6 sure that we'll be able to do any better than -
7 - than Kathy did but --

8 **MR. GRIFFON:** Right, right.

9 **DR. ULSH:** -- we can try.

10 **MR. GRIFFON:** Yeah. And maybe you can, you
11 know, we can just -- we just have to keep on
12 top of this and you can give us an update on --
13 on how you -- you -- I mean I think it's
14 important especially since at least a few of
15 them -- SC&A is arguing that they directly tie
16 back to some of our matrix items and they're --
17 they're -- these are issues that were raised by
18 the petitioner.

19 **DR. ULSH:** Right.

20 **MR. GRIFFON:** So I think to that extent I think
21 it would be good at least to attempt. And, you
22 know, then if it's taking -- I mean we'll --
23 we'll just try to keep on top of it and --

24 **DR. ULSH:** Okay.

25 **MR. GRIFFON:** Yeah. If we're not getting

1 anywhere then we -- we at some point have to
2 pull the plug. We understand that.

3 **DR. ULSH:** Mark, a point of procedure. Are you
4 capturing these in a -- and --

5 **MR. GRIFFON:** Yeah.

6 **DR. ULSH:** And it will be coming out in a
7 matrix?

8 **MR. GRIFFON:** Yeah.

9 **DR. ULSH:** Okay. Good.

10 **MS. ROBERTSON-DEMERS:** Okay. The -- the next
11 section is the external dosimetry procedures.
12 And this somewhat goes back to the lost chip
13 issue that's in the petition but it -- it's
14 really broader and covers all sorts of -- of
15 issues. And again it's getting back to
16 verifying that they actually did do a valid
17 external dosimetry investigation when there was
18 a problem with the badge. One of our concerns
19 was that the extended external dose reviews
20 procedures were from the '80 -- from the '90s.
21 And what we'd like to -- to see is the --

22 **MR. GRIFFON:** And the one that Brant mentioned
23 on the last call is from '83, right?

24 **MS. ROBERTSON-DEMERS:** Well, that -- that --
25 that's an actual processing procedure.

1 **MR. GRIFFON:** Oh, okay.

2 **MS. ROBERTSON-DEMERS:** Not a dosimetry --

3 **DR. ULSH:** Yeah, that's correct. I think
4 that's the Lincoln Penox (ph) document?

5 **MS. ROBERTSON-DEMERS:** Right.

6 **DR. ULSH:** Yeah, I think -- I think you've
7 accurately described it. That's a dosimetry
8 processing procedure.

9 **MR. GRIFFON:** Oh, okay.

10 **DR. ULSH:** Yeah, I don't know.

11 **MR. GRIFFON:** I just did that on the last call
12 I think. I thought that was similar to -- to
13 the other investigation procedures but...

14 **DR. ULSH:** There are some overlap but not
15 complete overlap.

16 **MR. GRIFFON:** Okay.

17 **DR. ULSH:** And I -- I don't know. I mean
18 without looking we're certainly not aware of
19 earlier procedures. We haven't been able to
20 locate any but -- but I don't know. I mean --

21 **MR. GRIFFON:** Okay.

22 **MS. ROBERTSON-DEMERS:** In this case I was able
23 to in table 3 give you examples from the
24 '85/'86 logbook because that's what I had
25 access to at the time. But certainly you need

1 to do snapshots in time including the era
2 before 1983 and just kind of work your way
3 backwards.

4 **DR. ULSH:** Now, what -- I guess I'm just trying
5 to clarify what we're going to do on these. So
6 we've got some examples here on table 3 where
7 there were some problems with I guess in this
8 time frame it would have been the crystals in -
9 - in the TLD badges.

10 **MS. ROBERTSON-DEMERS:** Or -- Or the badge was
11 contaminated or --

12 **DR. ULSH:** Right. Right.

13 **MS. ROBERTSON-DEMERS:** There were reader
14 errors.

15 **DR. ULSH:** Right. Problems with the TLD of
16 various types. And what -- I guess what are
17 we looking for to further inform us about
18 these? Are we looking for --

19 **MS. ROBERTSON-DEMERS:** Let's just -- Let's
20 just walk through one.

21 **DR. ULSH:** Okay.

22 **MS. ROBERTSON-DEMERS:** Let's say I was looking
23 at 514479.

24 **DR. ULSH:** 514479 -- Okay, I see it.

25 **MS. ROBERTSON-DEMERS:** Okay. The first thing I

1 would do is compare it back to that person's
2 actual dosimetry file.

3 **DR. ULSH:** Okay. That's easily enough --
4 easily enough accomplished I think.

5 **MS. ROBERTSON-DEMERS:** And see if there's any
6 indication of this in how they investigated
7 that and how they ultimately assigned the dose.

8 **DR. ULSH:** I -- I can -- Jim, can you -- Jim
9 Langsted, can you -- I know that in the later
10 period, certainly in the '90s sometime forward
11 they put extended -- extended and abbreviated
12 dosimetry investigation reports in the file.
13 How far back in time does that go? Do you have
14 a feel for that?

15 **MR. LANGSTED:** Probably mid-90's.

16 **DR. ULSH:** (Inaudible) in the logbook that we
17 see here in table 3?

18 **MR. LANGSTED:** My guess is no there would not.

19 **MS. ROBERTSON-DEMERS:** Then the question
20 becomes how did they assign the dose for that
21 particular situation?

22 **DR. ULSH:** Yeah, I mean I don't know that we're
23 going to get any more information than what you
24 might see in the logbook. I mean I -- I'm
25 trying to go from memory from the example pages

1 that you provided at the last working group
2 meeting and there was a justification for
3 change. I think there was also maybe a column
4 that showed the dose that was assigned but I
5 could be mistaken in that.

6 **MS. ROBERTSON-DEMERS:** And the question is how
7 did they determine that dose?

8 **MR. LANGSTED:** Well, I mean, again --

9 **MS. ROBERTSON-DEMERS:** Because I guess the
10 contention by the petition is well, the badge
11 was blacked out and I got a zero. Well, they
12 had to have a reason for assigning zero.

13 **MR. GRIFFON:** Well, I think the -- the other --
14 I mean I'm not -- I'm hearing what -- what
15 Brant's saying is that they likely wouldn't
16 have anything in the file to show how they
17 treated these. Or is that what you're saying,
18 Brant? I mean --

19 **DR. ULSH:** Well, yeah. In terms of a separate
20 document over and beyond what you might see in
21 the logbook. I mean again, I'm --

22 **MR. GRIFFON:** And they probably wouldn't have
23 any field in the -- in the database with like a
24 flag indicating, you know, bad crystal or
25 whatever. Not in the earlier time period

1 probably.

2 **DR. ULSH:** I don't know. Jim or Roger, do you
3 have some insights on that? Oh, okay. Okay.
4 Hold on a minute. I've just found the samples
5 that I guess Kathy provided in the last set of
6 comments. And what I'm looking at are the -- a
7 few pages from a logbook and they do show,
8 let's see -- I see the -- I see the ac-- I see
9 the activity date; I see the gamma and the
10 penetrating. There's a column for that where
11 it has at least for some of them there's
12 numbers there. Same for neutrons and then
13 there's penetrating skin and beta they put some
14 numbers. And then there's a justification
15 column. And I assume that that talks about why
16 those doses were assigned. I mean it doesn't -
17 - I'll grant you it doesn't go into much detail
18 but I guess the point I'm trying to make is I
19 don't know that we could expect to find much
20 more than what's in the logbooks. Jim or
21 Roger, if I'm off-base here, please jump in and
22 correct me but --

23 **MR. LANGSTED:** I believe you're correct.

24 **MS. ROBERTSON-DEMERS:** Well, I guess the
25 contention by the petitioners is that when you

1 get into these issues, zeros are being
2 recorded. Now, obviously there are doses other
3 than zero in the logbook.

4 **DR. ULSH:** Yeah, but there are some zeros, too.

5 **MS. ROBERTSON-DEMERS:** But --

6 **MR. LANGSTED:** Well, now, one thing that would
7 be possible --

8 **MS. ROBERTSON-DEMERS:** -- It comes down to the
9 question where did these people work and does
10 that make sense?

11 **DR. ULSH:** Okay.

12 **MS. ROBERTSON-DEMERS:** Another -- Another
13 thing is if you can find these earlier
14 investigation reports it might give you some
15 indication of if there is a record out there.
16 Maybe it's in the field.

17 **DR. ULSH:** Okay. Here's what I would propose
18 maybe. And Kathy, you've given us some ID
19 numbers here. Maybe we can chase those back to
20 individuals. We can -- if we can then we can
21 certainly look at what's been assigned in the
22 dosimetry file. We could also maybe for a
23 limited number go to the DOE records people and
24 pull the dosimetry files for those people, and
25 we could tell you what's in there. I don't

1 know what we'll find. It sounds like --

2 **MR. GRIFFON:** It may be -- it may be
3 inconclusive, let's put it that way.

4 **DR. ULSH:** Yeah, exactly.

5 **MR. GRIFFON:** Right.

6 **DR. ULSH:** Yeah. But we won't know until we
7 look at the dosimetry files.

8 **MR. GRIFFON:** Right. Right.

9 **DR. ULSH:** So I mean that's certainly something
10 we can do I would think.

11 **MS. ROBERTSON-DEMERS:** And -- And --

12 **DR. ULSH:** Okay.

13 **MS. ROBERTSON-DEMERS:** -- that's kind of what I
14 wanted you to do but I really think that you
15 need to pull the processing log for the time
16 period prior to 1983 and -- and look at the
17 frequency of -- of the loss of crystals that
18 are -- that's talked about in the petition.

19 **MR. GRIFFON:** So you're talking about in the
20 earlier time period with the --

21 **MS. ROBERTSON-DEMERS:** The -- The earlier TLD.

22 **MR. GRIFFON :** The Harshaw badges. The Harshaw
23 TLD's. Is that the --

24 **MS. ROBERTSON-DEMERS:** And how that was
25 handled.

1 **DR. ULSH:** Again, I -- without seeing the
2 logbooks I'm getting on dangerous ground
3 because I don't want to speculate too much
4 about what we're going to find but if -- if --
5 to the extent that the logbooks give a complete
6 record. So for instance I'll say for a
7 particular quarter in, I don't know, 1983, if
8 we can find the logbooks for -- that would re--
9 represent all of the badge reads for that
10 particular quarter then I guess you could go
11 through and count how many have problems and
12 how many don't. I'm not sure how big an effort
13 that's going to be because I mean there are --
14 certainly there's thousands of employees at the
15 site. I guess what I'm saying is we could get
16 --

17 **MS. ROBERTSON-DEMERS:** Just we -- we just want
18 a general -- general feel.

19 **DR. ULSH:** Yeah, but I -- I guess what I'm
20 saying is without seeing the logbooks I'm not
21 sure how they're going to be listed in terms of
22 are all the problems going to be listed on --
23 in one logbook on a couple of pages or is it
24 going to be sprinkled throughout? If it's
25 sprinkled throughout then we might be able to

1 take a representative sampling but if it's --
2 all the problems are listed, you know, in one
3 place, like they saved all those for last or
4 something, then in order to get a feel for what
5 proportion of -- of the logbooks represent or
6 what proportion of the measurements had
7 problems, you know, how frequently badges were
8 lost or were -- crystals were lost or whatever
9 then we'd have to look at the entirety of the
10 logbooks for that quarter. I -- I just don't
11 know without looking at the logbooks.

12 **MR. GRIFFON:** You really need to get the
13 logbooks.

14 **DR. ULSH:** Yeah.

15 **MR. GRIFFON:** Yeah.

16 **MS. ROBERTSON-DEMERS:** The -- The -- The
17 dosimeter processing logs that I recommended in
18 table 4 give you some years for the Harshaw TLD
19 so you can use it as a dual purpose.

20 **MR. GRIFFON:** Maybe that's the action at this
21 point is to look at those logbooks and evaluate
22 the possibility of -- of following up, Brant.

23 **DR. ULSH:** Yeah, I think that's --

24 **MR. GRIFFON:** I think that's as far as you --
25 you really can take it. I mean you don't want

1 to --

2 **DR. ULSH:** Exactly.

3 **MR. GRIFFON:** Yeah. Okay.

4 **MS. ROBERTSON-DEMERS:** Okay. Now, with respect
5 to the field logbook like the RCT logbook and
6 the shift supervisor logbook, what I've been
7 told is that there is documented dose
8 information in those logbooks for people and
9 that that does not match the dosimetry record.
10 Neither does the survey do that.

11 **DR. ULSH:** Okay, Kathy. I'm a little unclear
12 on this. Were these logbooks that were taken
13 while the jobs were actually -- were -- were
14 recorded while the jobs were actually being
15 performed?

16 **MS. ROBERTSON-DEMERS:** Tony, are you still on
17 the phone?

18 **MR. DEMAIORI:** Yep.

19 **MS. ROBERTSON-DEMERS:** Well, my understanding
20 was yes; am I correct?

21 **MR. DEMAIORI:** Yeah, daily logs. The CC logs
22 was negotiated in the collective bargaining
23 agreement.

24 **DR. ULSH:** Okay. So I guess it's -- it's not
25 clear to me how those could contain dosimetry

1 results because the dosimetry badges wouldn't
2 have been processed yet unless you're talking
3 about --

4 **MS. ROBERTSON-DEMERS:** Well --

5 **DR. ULSH:** I don't know.

6 **MR. GRIFFON:** Unless there were secondary --

7 **MR. DEMAIORI:** CC logs you would have all your
8 high RAD areas as they were discovered,
9 contamination incidents, contaminated
10 individuals. All that would be in the CC logs.
11 That's in the dosimetry logs for like the
12 EPD's, those came out of the RWP offices.

13 Those logs would have all the EPD information
14 that you can cross-reference to your actual
15 TLD's. Those also were daily logs by the job.

16 **MS. ROBERTSON-DEMERS:** In other words, does the
17 field data show indication that this person
18 should have gotten more than zero or do they
19 corroborate each other?

20 **DR. ULSH:** Okay. So you're saying then, Kathy,
21 that it's not dosimetry data that's in these
22 logs?

23 **MS. ROBERTSON-DEMERS:** I, you know -- I was
24 just told as dose for people.

25 **DR. ULSH:** But you didn't get a -- a -- a

1 feeling for how that was measured?

2 **MS. ROBERTSON-DEMERS:** No. But there were --
3 there was special dosimetry assigned by job and
4 --

5 **MR. GRIFFON:** Well, maybe it is secondary
6 dosimetry or maybe it's exposure rate measures
7 and sta -- You know, I don't know without
8 seeing I guess.

9 **MR. DEMAIORI:** Well, a bit of everything you
10 just said.

11 **MR. GRIFFON:** Yeah.

12 **MS. MUNN:** Would -- Would -- Wouldn't
13 contamination control logbooks be specifically
14 the area surveyed? Wouldn't that be what they
15 contain?

16 **MR. DEMAIORI:** Contam-- the contamination
17 control log-- logbook would be all your ab--
18 abnormalities.

19 **MS. MUNN:** Yeah, area -- area of readings,
20 right?

21 **MR. DEMAIORI:** Oh, yeah, that's, you know, if
22 there was a high dose area that was discovered
23 during a routine survey that would be reported
24 in the CC logbook.

25 **MS. MUNN:** Yeah. Yeah, and RBP would survey

1 that and record it, right?

2 **MR. DEMAIORI:** Absolutely if there's
3 contamination incident; if, you know, you lost
4 a room that would be recorded there. It would
5 say how many people were involved.

6 **MS. MUNN:** Yeah.

7 **MR. GRIFFON:** So it would have some -- some
8 more than just the survey data maybe. I --

9 **DR. ULSH:** I guess, Mark, maybe we're at the
10 same follow-up item. We can --

11 **MR. GRIFFON:** I think so. You got to pull some
12 logs at least to see what kind of information -

13 -

14 **MS. ROBERTSON-DEMERS:** Yeah.

15 **DR. ULSH:** Well, we can evaluate the
16 plausibility of doing that.

17 **MR. GRIFFON:** Right.

18 **DR. ULSH:** And we can try to get 'em.

19 **MR. GRIFFON:** Yeah.

20 **MS. ROBERTSON-DEMERS:** And what -- what I was
21 trying to do there is this is what I was told
22 they were called, okay?

23 **MR. GRIFFON:** Right.

24 **MS. ROBERTSON-DEMERS:** Now, through time they
25 were probably called something else but this is

1 the type of record that you're looking for.

2 **MR. GRIFFON:** Okay.

3 **MS. ROBERTSON-DEMERS:** I just had the
4 opportunity to look at a -- a logbook for a
5 similar area at LANL, and what I noticed is
6 that when they went in to do a job, a
7 particular job, the individuals involved in
8 that job were listed so there was some linkage
9 to names. And Tony, I would assume that yours
10 are similar?

11 **MR. DEMAIORI:** Yeah, we -- we had a bunch of
12 different logbooks on the floor, not just a
13 contamination control logbook. During
14 processing days we had the processing logbooks
15 and most of those will be classified. Also the
16 shift manager kept logbooks. If it was
17 (unintelligible) breathing air job we kept
18 separate logbooks with dosimeter readings,
19 (unintelligible), that sort of thing in those.
20 And our RWP desk did all the issuing of the
21 dosimeters, DPD's, the pencil dosimeters,
22 whatever. They kept a day-to-day log of all
23 those records of penetrating.

24 **MR. GRIFFON:** Kathy, do you have -- the last
25 item says SC&A to conduct inter-comparison. Do

1 you have any logbooks currently, any of these
2 logbooks currently?

3 **MS. ROBERTSON-DEMERS:** No.

4 **MR. GRIFFON:** You haven't received any of these
5 yet? Okay.

6 **MS. ROBERTSON-DEMERS:** No.

7 **MR. GRIFFON:** But your -- your notion here is
8 to have NIOSH do an inter-comparison or -- or
9 for SC&A to do it or for parallel? What --
10 What -- What's -- I'm unclear on that I
11 guess.

12 **MS. ROBERTSON-DEMERS:** Well, the first thing I
13 need to do and I didn't put it in this document
14 for obvious reasons is to provide NIOSH with
15 the names that go along with these logbooks.

16 **MR. GRIFFON:** Right.

17 **MS. ROBERTSON-DEMERS:** I -- I think that we
18 kind of wanted to do it independently and
19 compare results.

20 **MR. GRIFFON:** Okay. I'm just -- I'm trying to
21 think through the logistics of how that would
22 work. I mean would you both take the same -- a
23 copy of the same logbook and -- and go back?
24 How -- How do you envision that working?

25 **MS. ROBERTSON-DEMERS:** We -- We could very

1 well do that.

2 **MR. GRIFFON:** Okay.

3 **MS. ROBERTSON-DEMERS:** And I would really be
4 happy to --

5 **MR. GRIFFON:** I think -- I think, Brant, we're
6 on that, too, is -- is the first step is to see
7 if we can find these logs or -- or logs that
8 generally fit this title or these types of
9 titles and, you know, maybe bring them back to
10 the work group or subcommittee or wherever
11 we're at and -- and talk about the plausibility
12 of doing such a, you know --

13 **DR. ULSH:** I mean I think -- I think where
14 we're going to be, Mark, is if -- I mean this
15 is common. We've -- We've been here with
16 other SEC petitions. It's a question that I
17 think I heard Wanda say this morning on -- on
18 Y-12, it's a question of how much is enough.
19 And I -- I really don't have an answer for
20 that.

21 **MR. GRIFFON:** Well, and I --

22 **DR. ULSH:** Certainly the things that we're
23 talking about here are going to take some time
24 and we're willing to do that, given enough
25 time.

1 **MR. GRIFFON:** No, I think the other -- the
2 other factor here, and this is why I said one -
3 - another reason I said this this morning was
4 how much is enough may vary from petition to
5 petition. I mean the -- the petitioner in this
6 case made -- made, you know, several specific
7 allegations within the petition so I think to
8 the extent we can we need to follow up on the,
9 you know --

10 **DR. ULSH:** Right.

11 **MR. GRIFFON:** So it's just -- more than just a
12 general review but also address their specific
13 allegations.

14 **DR. ULSH:** No, I understand.

15 **MR. GRIFFON:** Yeah.

16 **DR. ULSH:** And -- And really I'm not trying to
17 --

18 **MR. GRIFFON:** I know, I know.

19 **DR. ULSH:** -- influence what the Board decides.
20 I mean that's really not my place to do that
21 but we -- I guess I also have to make it clear
22 that NIOSH is under a statutory obligation to
23 issue the evaluation report, and to do that we
24 had to operate on the data that we had on the
25 table at the time. And certainly we recognize

1 that there are more records out there and --
2 and three months from now there will still be
3 more records out there and, you know, I mean we
4 have to -- we're put in a position -- NIOSH is
5 put in a position where we have to issue the
6 evaluation report and make a recommendation.
7 And I -- I'm still comfortable, you know, with
8 the report that we've issued. But again, I
9 mean if the Board decides that you would like
10 us to take more time and, you know, delay
11 things a bit we'll certainly do that. We'll do
12 whatever we can to support it.

13 **DR. WADE:** The rule -- This is Lew. The rule
14 allows for that. I mean NIOSH will present the
15 evaluation report and then the Board can, you
16 know, ask for additional information or, you
17 know -- you know, let its desires be known.
18 But we'll deal with that next week. I mean --

19 **MR. GRIFFON:** Yeah, yeah, I think -- exactly.

20 **MS. ROBERTSON-DEMERS:** Well, what I can try to
21 help you do is to get to the right logbooks
22 because there was a -- there's -- during my
23 trip there was an interchange between the
24 records people and myself on what might be the
25 right logbooks. And we could have them pull a

1 couple and copy sample pages and see if that's
2 really the logbook we're looking for.

3 **MR. GRIFFON:** So that's something you can work
4 with Brant offline on.

5 **MS. ROBERTSON-DEMERS:** Right.

6 **MR. GRIFFON:** That -- That'd be great.

7 **DR. ULSH:** Yeah, anything that you can do to
8 narrow the search, that would -- that would
9 only help things.

10 **MR. GRIFFON:** Right. And I would say, John,
11 you know, this -- this -- this rule always
12 applies in between meetings that, you know, if
13 you guys need to have offline conversations to
14 expedite this process, you know, as long, you
15 know -- if it's noteworthy I guess keep minutes
16 but, you know, I think that's fine and -- and
17 encourage that at this point.

18 **DR. WADE:** Right. Common sense.

19 **MR. GRIFFON:** Yes. Is there anything else on
20 the -- on this report, Kathy or Joe?

21 **MS. ROBERTSON-DEMERS:** No. That's -- That's
22 pretty much it.

23 **MR. GRIFFON:** Okay.

24 **DR. WADE:** Okay. Well --

25 **MR. GRIFFON:** I think -- I think where --

1 where we stand, Lew, is, you know, we've got an
2 update on the matrix. I will update the
3 matrix, Brant, and to include these things as
4 well.

5 **DR. ULSH:** Yeah, I heard you typing, Mark, so -
6 -

7 **MR. GRIFFON:** Yeah. And -- And it may not be
8 as quick as the last turnaround but I'll try.
9 But the other thing is I think we need to at
10 least give a status report at the Advisory
11 Board meeting and maybe a plan forward because
12 we also need SC&A to -- to review the
13 evaluation report. But I think, you know, with
14 two days left before the meeting, two working
15 days or whatever, I know we're all going to be
16 working on the weekend but, you know, the focus
17 on most folks is going to be Y-12 to -- to
18 finalize that -- I -- I would definitely
19 prioritize that for SC&A if I had -- I mean
20 not that I'm the -- the task -- prioritizing
21 your work but I think that -- that seems to be
22 a priority at this point.

23 **MS. MUNN:** I think that's appropriate.

24 **MR. GRIFFON:** Yeah. Try -- Let's try to -- to
25 -- to fine tune that one and -- and -- and then

1 we'll -- we'll give a status report on Rocky
2 and go forward and the Board can advise on what
3 direction we need to go with, you know, with
4 Rocky.

5 **DR. WADE:** Sounds like a plan.

6 **MR. GRIFFON:** All right.

7 **DR. WADE:** Well, you -- you're all to be
8 complimented and --

9 **MR. GRIFFON:** Another long day.

10 **DR. WADE:** A long day but a productive day.
11 Mark, I'll -- I'll give you a call --

12 **MR. GRIFFON:** (Unintelligible) if other work
13 groups go shorter than (inaudible)

14 **DR. WADE:** We'll talk -- I'll give you a call,
15 Mark, tomorrow and we can talk specifically
16 about next week and the organization but thank
17 you, and thank everyone who participated.
18 Thank the petitioner, Tony, we appreciate your
19 forbearance. And, you know, we'll be seeing
20 you all in beautiful Colorado next Tuesday.

21 **MR. GRIFFON:** Thanks, everyone, for the hard
22 work, too. I know it's -- these are crunching
23 weeks.

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

25 **MR. GRIFFON:** Take care.

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3
4

(Whereupon, the working group meeting was
adjourned at 5:35 p.m.)

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

I, Steven Ray Green, Certified Merit Court Reporter, do hereby certify that I reported the above and foregoing on the day of April 20, 2006; 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 12th day of June, 2006.

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