

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

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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

+ + + + +

TBD-6001 WORK GROUP

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WEDNESDAY
JULY 7, 2010

+ + + + +

The Work Group met in the Zurich Room of the Cincinnati Airport Marriott, 2395 Progress Drive, Hebron, Kentucky, at 9:30 a.m., Henry Anderson, Chairman, presiding.

PRESENT:

HENRY ANDERSON, Chairman
R. WILLIAM FIELD, Member
MARK GRIFFON, Member*

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ALSO PRESENT:

TED KATZ, Designated Federal Official
ISAF AL-NABULSI, DOE*
DAVE ALLEN, DCAS
TERRIE BARRIE, ANWAG*
HANS BEHLING, SC&A*
SAM GLOVER, DCAS
STU HINNEFELD, DCAS
JOHN MAURO, SC&A
JIM NETON, DCAS
JENNY LIN, HHS
WILLIAM THURBER, SC&A

*Present via telephone

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

2 (9:32 a.m.)

3 MR. KATZ: We will begin with roll
4 call. Just a quick overview of the agenda and
5 then Andy may have to more to say but we are
6 going to both generically be addressing the
7 TBD-6001 procedure and then as time allows, we
8 will be specifically addressing two petitions:
9 one for Electro Met; and the second for United
10 Nuclear.

11 And then toward the end of the day
12 we will talk about the path forward and also
13 address, with respect to the path forward,
14 Hooker Electrochemical, which we will not get
15 to substantively today. But that's just to let
16 everybody know, just sort of the general
17 landscape.

18 We may run out of time anywhere in
19 the course of this. There's a lot to cover for
20 a day and I doubt we'll get through it all.
21 There's a long agenda. It is available to
22 people on the internet, on the DCAS website

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1 and I think all participants have a copy.

2 So we will begin with roll call
3 and for all the agency-related individuals,
4 Board and others, contractors, please state
5 whether you have a conflict with respect to
6 this site as well, when you respond to the
7 roll call.

8 So beginning with Board Members in
9 the room, with the Chair.

10 CHAIRMAN ANDERSON: Henry
11 Anderson, Wisconsin Division of Public Health.
12 I don't have any conflicts.

13 MEMBER FIELD: Bill Field, no
14 conflict.

15 MR. KATZ: And on the line?

16 MEMBER GRIFFON: Mark Griffon, no
17 conflicts.

18 MR. KATZ: Any other Board Members
19 on the line? Okay and those are the Members of
20 the Work Group. And then NIOSH/ORAU team in
21 the room?

22 MR. HINNEFELD: Stu Hinnefeld,

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1 interim director of DCAS. No conflicts at
2 these sites.

3 DR. NETON: Jim Neton, DCAS, no
4 conflicts.

5 DR. GLOVER: Sam Glover, DCAS, no
6 conflicts.

7 MR. ALLEN: Dave Allen, DCAS, no
8 conflicts.

9 MR. KATZ: And NIOSH/ORAU team on
10 the line? Okay. SC&A in the room?

11 DR. MAURO: John Mauro, SC&A, no
12 conflict.

13 MR. THURBER: Bill Thurber, SC&A,
14 no conflicts.

15 MR. KATZ: SC&A on the line?

16 DR. BEHLING: Hans Behling, no
17 conflicts.

18 MR. KATZ: Very good. Then, other
19 HHS or other agency personnel or contractors
20 to the agencies in the room?

21 MS. LIN: Jenny Lin, HHS.

22 MR. KATZ: And on the line?

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1 DR. AL-NABULSI: Isaf Al-Nabulsi,
2 DOE, no conflict.

3 MR. KATZ: Welcome, Isaf.

4 DR. AL-NABULSI: Thanks.

5 MR. KATZ: Okay and then, finally,
6 members of the public on the line; there are
7 none in the room.

8 MS. BARRIE: Terrie Barrie with
9 ANWAG.

10 MR. KATZ: Welcome, Terrie. Very
11 good. And I probably didn't even identify
12 myself. My name is Ted Katz. I am the
13 Designated Federal Official for the Advisory
14 Board and we are ready to get started then.
15 Andy, it's your agenda.

16 CHAIRMAN ANDERSON: First,
17 congratulations to Mark on his appointment.

18 It's good news that you are on the
19 line. It means there must not be some big
20 event occurring that we don't know about yet.

21 MEMBER GRIFFON: Yes, nothing that
22 you don't know about. The one you know about

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1 is the only one out there. But thank you.

2 CHAIRMAN ANDERSON: I really don't
3 have much else. I think we ought to just get
4 started. This, of course, Committee was broken
5 off from the TBD-6000 because of all the
6 different sites being addressed so the only
7 question I would have is, I looked at the
8 matrix and there didn't seem to be any
9 responses yet from NIOSH. Is there? Not yet.

10 MR. ALLEN: There weren't any
11 written responses.

12 CHAIRMAN ANDERSON: Okay. Okay.
13 Fine. Good, I wanted to be sure I didn't miss
14 something. So let's go on then and start up.

15 MR. KATZ: So, the first item is
16 Overview of TBD-6001 from DCAS, just a brief
17 summary and a chance for the Work Group to ask
18 questions about it.

19 MR. ALLEN: Okay, I think to start
20 with it takes kind of a brief summary of what
21 our contractor did for us as far as TBD-
22 6000/6001. The whole intent at the time was to

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1 gather up some information on the sites that
2 did very similar work and at the time it was
3 decided to divide these into three primary
4 categories with very different types of
5 exposure conditions.

6 One being uranium metal, largely
7 because it's a very similar type of -- you can
8 only do so many things with uranium metals so
9 all exposure conditions were fairly similar
10 and the smaller sites that did that type of
11 work were pretty abundant. And that became
12 TBD-6000.

13 TBD-6001 was intended for the
14 other chemical work, essentially with uranium,
15 the processing of the uranium compounds like
16 UF4, UF6, UO2, et cetera, and that became TBD-
17 6001 which was -- it's labeled as uranium-
18 refining operations.

19 There was to be a third one at the
20 time and that was for uranium-ore operations.
21 That was split out because of the natural-
22 occurring decay products, with the radium,

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1 thorium-230 et cetera, make for a very
2 different exposure conditions than refining
3 processed uranium.

4 CHAIRMAN ANDERSON: So, just a
5 quick question. On a product-flow basis, so
6 kind of 6000 was earlier in the process and
7 6000 --

8 MR. ALLEN: It was just the
9 opposite of what I introduced. It was --

10 CHAIRMAN ANDERSON: Okay, so 6001
11 is the ore processing, refining, and then
12 their output went to the facilities that were
13 6000.

14 MR. ALLEN: And then the ore would
15 have been first so, pretty much exactly the
16 opposite of what I introduced.

17 CHAIRMAN ANDERSON: That was what I
18 was wondering. I thought, gee, I had looked
19 through that document, it doesn't sound right
20 to me. Thank you.

21 MR. ALLEN: But that was the
22 thought process at the time. The decision on

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1 the ore was that it is very different and very
2 limited and the idea of a generic TBD was kind
3 of dismissed partway into that process so a
4 TBD to address that processing was never
5 developed. That was going to be just a site-
6 by-site type of Technical Basis Document.

7 TBD-6000, 6001 are both somewhat
8 generic type of documents. The intent is to
9 look at the exposure conditions for a type of
10 work with the type of material and then to
11 apply that to other work sites that did that
12 same type of task with the same materials.

13 The idea all along was to have
14 this generic and then have an appendix for
15 every site that it would apply to. The
16 appendix would analyze and document the
17 exposure estimate based on data from that
18 particular site and use the generic TBD-6001
19 and 6000 to fill in the blanks where there was
20 no data. That was the concept when we put all
21 that together.

22 And about the only other thing is

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1 that SC&A was tasked with reviewing both 6000
2 and 6001 some time ago. As you know there was
3 a previous Work Group to deal with both has
4 now been split up, obviously and in that Work
5 Group we never really addressed 6001 issues
6 because at the time there was no sites they
7 were interested in that actually used the
8 defaults out of 6001.

9 As I said, the appendices would
10 use defaults where there was lack of data, but
11 the sites we were looking at, there was no
12 lack of data, there were no defaults used at
13 that point in time.

14 So even though they were assigned
15 as an appendix to TBD-6001, there was no data,
16 no generic data that was actually pulled into
17 that appendix. And I think that is all the
18 background I have for you. I think that brings
19 everybody up to speed.

20 DR. MAURO: As a preface, though,
21 also I would like to add one thing, is this,
22 the use of TBD-6000 and 6001 is actually, does

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1 go to the heart of the surrogate data issue
2 and I know we all are aware that this is a
3 very important issue to the Board and to the
4 public, claimants.

5 So we are really in the trenches
6 on what I consider to be probably the biggest
7 surrogate data issue because as we process
8 this, and we less, or dismiss certain issues,
9 there's always the overarching question, well
10 wait a minute, plausibility, applicability,
11 all the criteria that have been developed by
12 the Board, now officially -- I believe the
13 criteria are official -- is sort of like an
14 overarching issue that we always have to sort
15 of keep in mind as we move through this,
16 whether we are doing it for TBD-6000 or any of
17 the sites, such as United Nuclear or Electro
18 Met.

19 DR. NETON: I guess I would just
20 point out, though, that these are generic
21 documents and really the test at the end of
22 the day comes to how it is applied to the

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1 specific site. The data that are collected
2 and assembled in TBD-6000 and 6001 are not in
3 and of themselves bad or wrong, one needs to
4 make the judgment when you apply that to a
5 particular site: is it appropriate or not.

6 So I think there's a real
7 distinction there. These are certainly the
8 data but until it really gets applied, you
9 cannot judge it against --

10 DR. MAURO: Agree with you.

11 CHAIRMAN ANDERSON: It's
12 applicability. It looked to me like it was
13 mostly kind of a library of available data.

14 DR. NETON: And that's what I was
15 going to point out. I was going to get to
16 this maybe a little bit later, but you almost
17 really have to judge it against the individual
18 site because we have three DRs out there now,
19 these little pieces --

20 DR. MAURO: Again, we're
21 overarching now, United Nuclear and Electro
22 Met: I don't know the degree to which they do

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1 draw upon 6001 so since this is on our table,
2 I know Hooker does, I know we're getting to
3 Hooker later, but I'm not sure whether -- I
4 know -- whether or not -- so we may not have,
5 I don't know if either of them do. Electro
6 Met? No. I am trying to think of if there's
7 any place where they did that and I don't
8 recall.

9 DR. NETON: I don't know what they
10 are doing in this Working Group.

11 MR. ALLEN: It's Appendix C.

12 DR. MAURO: Yes, way things are
13 grouped, there are I think five --

14 CHAIRMAN ANDERSON: But there's
15 considerable data.

16 DR. MAURO: For the particular
17 sites we will be dealing with starting today,
18 Electro Met and United Nuclear, I believe that
19 they didn't use too much if any data from --

20 DR. NETON: See, and that's what I
21 was getting at it because if there's a lot of
22 data, it's --

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1 DR. MAURO: You are right. Good.

2 CHAIRMAN ANDERSON: So, we can
3 knock it all off today.

4 DR. MAURO: We can just knock
5 everything off.

6 CHAIRMAN ANDERSON: Okay. Okay, so
7 --

8 MR. KATZ: What is SC&A's --

9 DR. MAURO: Oh, we're on.

10 CHAIRMAN ANDERSON: You're on.
11 Well, of the, this is basic TBD-6001.

12 DR. MAURO: Just by introduction,
13 Bill Thurber and I for several years, have
14 been really been the heart of doing all of the
15 AWE work, which means TBD-6000, 6001, all of
16 these appendices, all of the AWE work somehow
17 fell with us and a few others and really Bill
18 has been doing the heavy lifting on a lot of
19 this and I'd like to turn it over to Bill, who
20 is, I guess we will start with the TBD-6001
21 matrix and take it away.

22 MR. THURBER: Just a further

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1 comment on how this intertwines with, how TBD-
2 6001 is intertwined with the appendices, we
3 originally prepared our review about two and a
4 half years ago and it has been since that time
5 that we have looked at some of these site-
6 specific appendices or the SEC petitions
7 related thereto and in the course of that, a
8 number of problems have surfaced as to how you
9 can actually use TBD-6001 appropriately and
10 where the numbers come from that weren't
11 initially apparent when we did review and we
12 will get into a little bit of that as we go
13 along.

14 With regard to TBD-6001, all of
15 the -- virtually all of the internal exposure
16 data come from a journal article published by
17 two guys named Christifano and Harris in 1960
18 and these gentlemen worked for the AEC Health
19 and Safety Laboratory and in the course of
20 their work between 1948 and 1956 they had
21 accumulated some 20,000 samples, air samples,
22 from seven different AEC locations:

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1 Mallinckrodt, Harshaw, Electro Met et cetera.

2 And so it was on the basis of this
3 Christifano and Harris journal article that
4 the air concentration data and the attendant
5 exposures in TBD-6001 were derived.

6 Obviously, that's a very rich
7 resource. Some of the problems with it --
8 there are some problems with it, though, for
9 example there are no supporting references so,
10 as with a journal article, you don't really
11 understand all the details of how they
12 averaged their numbers and where all the data
13 came from and whether any of the data was
14 relatable to specific sites; you can't discern
15 any of that from the Christifano and Harris
16 paper. But that's where the internal exposure
17 data from TBD-6001 came.

18 In terms of external exposure,
19 where the exposure was related to drums of
20 uranium, uranium oxide, UF₄, whatever, the
21 drum exposure data in part came from modeling
22 studies using MicroShield and workers standing

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1 different distances from the source, and also
2 in the case of pitchblende, it was actually
3 based on measurements made at Mallinckrodt of
4 workers standing various distances from the
5 source.

6 In terms of the rest of the
7 operations that are involved in the uranium-
8 refining process, the digestion and nitric
9 acid, the solvent extraction, et cetera, et
10 cetera, the data on external exposure for
11 those operations came from Mallinckrodt, where
12 all of these operations were conducted.

13 Now a lot of the operations were
14 conducted at other places, as well, but the
15 data that was built into TBD-6001 was based on
16 Mallinckrodt data.

17 With those additional background
18 comments, let me get into our findings and I
19 think, hopefully people can read them. Our
20 first finding was that -- and this speaks to
21 the Christifano and Harris data -- as we said,
22 while there is a lot of it presented there,

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1 it's difficult to understand the pedigree of
2 the data and we tried to validate the
3 Christifano and Harris data, if you will, by
4 comparing it with Mallinckrodt data, which
5 presumably was a subset of it but which was
6 well documented in the Mallinckrodt reports.

7 And in doing that, we found that -
8 - and there are a number of examples in our
9 review and I won't go into them -- but we
10 found that in a number of cases, it looked
11 like the Mallinckrodt data yielded higher
12 exposures than the numbers in TBD-6001.

13 So that is the basis for finding
14 one. Finding two, again --

15 MR. KATZ: I'm sorry, Bill, could
16 I just make a suggestion, if we are going to -
17 - it's probably easier to go finding by
18 finding and have the others have a chance to
19 be prepared on any of these to provide their
20 input on them.

21 MR. ALLEN: Are you done with
22 finding one then, or --?

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1 MR. THURBER: Yes.

2 MR. ALLEN: One of the big --
3 there's some flaws in 6000 and 6001, I mean
4 I'll admit that freely, and the biggest one in
5 my book is what I was mentioning earlier was,
6 the intent was to separate out ore-processing
7 from pre-processed uranium refining and
8 Mallinckrodt did ore-processing. They
9 processed radium-bearing ores as well as other
10 uranium compounds.

11 TBD-6000, the flaw I mentioned was
12 that it was definitely not clear in there that
13 this was not to include ore. In fact it
14 mentioned pitchblende and some other things
15 that it really should not have. It has not
16 been used for any kind of ore-processing but
17 it's certainly not clear in TBD-6000 that it
18 is not supposed to be used for that.

19 DR. NETON: Six thousand one.

20 MR. ALLEN: Six thousand one,
21 sorry. A lot of the findings in SC&A's report,
22 since TBD-6001 is not clear on that, they

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1 reference Mallinckrodt data that actually is
2 higher due to the ore, the radium-bearing ores
3 et cetera, that should not be applied with
4 6001.

5 And obviously there is a -- we
6 would have to revise 6001 to make that clear,
7 obviously, and I think that's going to end up
8 being the --

9 CHAIRMAN ANDERSON: So is it
10 possible in the Christifano to sort that out?
11 Or are we sorting it out -- you can do it in
12 Mallinckrodt, but --

13 MR. ALLEN: It's possible to sort
14 out the tasks and eliminate some of those
15 tasks that could be either and in worst case
16 use ones that are ore in Christifano as a
17 bounding but I don't think we have to do that.

18 MR. THURBER: Christifano and
19 Harris as a category, do consider ore
20 digestion, which is, after the sampling, is
21 the first step, assuming you have obtained
22 concentrates from somewhere else or you have

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1 obtained pitchblende as a feeding material.

2 CHAIRMAN ANDERSON: The raw data is
3 not available from Christifano --

4 MR. THURBER: For ore --

5 CHAIRMAN ANDERSON: Twenty-thousand
6 samples or something?

7 MR. THURBER: Yes, yes it is. It is
8 available and they point out, they discuss to
9 some extent in their article the differences
10 in processing pitchblende or concentrates, not
11 only in the ore digestion step, but also in
12 the solvent extraction step, in terms of
13 external exposure. We have to be careful,
14 sometimes we are talking about one and some
15 times the other. But there is, they do
16 consider --

17 DR. NETON: Was Christifano and
18 Harris not really a journal publication that
19 was based on a lot of AEC --

20 MR. ALLEN: It was Health and
21 Safety Lab --

22 DR. NETON: Health and Safety

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1 Laboratory reports and to my knowledge it was
2 a fairly thick report that contained a lot
3 more background information than what it is in
4 the journal article.

5 MR. ALLEN: That's what I was going
6 to say, just to clarify what Bill said --

7 CHAIRMAN ANDERSON: The article is
8 sort of a summary. I mean, you have got ranges
9 and stuff but it really doesn't help you, so -
10 -

11 MR. ALLEN: We have a lot of Health
12 and Safety Lab data and I think that's what
13 Bill was referring to; just to be clear, the
14 article itself does not contain all the
15 individual samples.

16 DR. MAURO: There's 20,000
17 measurements.

18 CHAIRMAN ANDERSON: No, I mean --

19 DR. MAURO: In my perspective,
20 external is a lot more manageable issue,
21 simply because, beside measurements, you could
22 always resort to modeling, as you know --

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1 CHAIRMAN ANDERSON: Good, we can't
2 do that.

3 DR. MAURO: I know, modeling is the
4 -- but we are just talking about physics
5 modeling.

6 CHAIRMAN ANDERSON: Yes, I know, I
7 know.

8 DR. MAURO: Which are pretty -- I
9 mean, you are running MCNP, you run a point
10 kernel, you do it by hand. You really cannot
11 be too wrong, if you know the source.

12 CHAIRMAN ANDERSON: The bounding is
13 pretty easy.

14 DR. MAURO: The internal always is
15 the one that you trip over.

16 MR. THURBER: Okay, are we ready to
17 move on to finding two?

18 CHAIRMAN ANDERSON: So for finding
19 one, are you going to revise something, I
20 mean, is this something that as a Committee we
21 can say, okay, it was identified, it's sort of
22 been addressed, we are aware of it? I am not

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1 sure every time you find -- the effort to,
2 when you write it, as opposed to it's a
3 working document we know about it, is this one
4 that we need to do anything, do we need to
5 discuss anymore or is it basically --

6 MR. ALLEN: Well, I think the
7 problem I am having is a lot of the findings
8 that SC&A put together, you know, they look
9 for some examples and examples they have found
10 in a lot of cases are this ore stuff, and
11 that's the fault of TBD-6001 not making that
12 clear.

13 CHAIRMAN ANDERSON: Okay.

14 MR. ALLEN: But, that means you
15 throw a paragraph in TBD-6001 and the findings
16 don't seem to be valid anymore but they were
17 examples.

18 CHAIRMAN ANDERSON: So just to keep
19 our matrix alive, it may be worth putting in
20 there, if you agree that's what the issue is,
21 then, if others, these findings, really are
22 reflecting the same issue, then if, in fact,

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1 the ore is taken out is a -- or the processing
2 or however we want to state that -- is the
3 issue, let's identify that with the finding
4 and then we can kind of lay that out and get a
5 paragraph or we just remember every time.

6 MR. KATZ: I think you wanted a
7 finding-by-finding response, even if it may
8 apply to more, I think you want to go finding
9 by finding. And so, I mean --

10 CHAIRMAN ANDERSON: I mean --

11 MR. KATZ: -- suggested a response
12 to the first finding, which still needs I
13 think to be confirmed that everyone agrees if
14 that's the resolution and then you document
15 that and in the future you look for it to be
16 resolved by actually changing the document.

17 MR. THURBER: I would, I have no
18 disagreement at all with what David says but I
19 would point out that the comment is broader
20 than just very front end of the process. The
21 validation work, if you will, that we did
22 using the Mallinckrodt data against the

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1 Christifano and Harris data indicated that for
2 other operations like denitration and oxide
3 reduction and recasting, the Mallinckrodt data
4 were higher.

5 So the comment is broader than
6 just the ore end, there's no problem with the
7 ore end relationship but it's a broader
8 comment.

9 DR. MAURO: By way of process, the
10 matrix usually is our score card.

11 CHAIRMAN ANDERSON: Yes.

12 DR. MAURO: And one of the things I
13 should you should perhaps, you may want to
14 decide, I know like Mark, when he runs his
15 Work Group, likes to prepare the matrix
16 himself or in other cases, you know, we work
17 with NIOSH to prepare the next version of
18 this. In other words, for example NIOSH may
19 provide a response, NIOSH makes a response, or
20 tracking what is going on, trying to find a
21 way to see, this discussion we just had, it's
22 certainly captured in the transcript, but

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1 there's always a degree to which, do we want
2 to try to capture it, the essence of this
3 discussion, in the matrix and how we are going
4 to do that.

5 I think this is something that the
6 work with, would like, I would like to go
7 forward.

8 CHAIRMAN ANDERSON: Yes, I don't
9 know, Bill, how you feel. Mark, you have been
10 doing it longer than most of us so any
11 thoughts on how we should do this?

12 MEMBER GRIFFON: Well, I mean, I
13 think, I don't necessarily, I don't think it
14 matters who prepares the matrix so much as --
15 but I think it would be worth, you know,
16 carrying it through and seeing a written
17 response from NIOSH before you close it out,
18 you know.

19 CHAIRMAN ANDERSON: Okay.

20 MEMBER GRIFFON: Because sometimes
21 we have caught ourselves with that, that we
22 think we closed it out in discussions but we,

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1 you know, never formally closed, and then we
2 have to reopen it and so I think it's always
3 better to, for me, it would be nice to see the
4 written-out response to make sure I am in
5 agreement and then have the Work Group Members
6 vote it through and, you know, then we are
7 done with it.

8 CHAIRMAN ANDERSON: Okay, good. So
9 that's the process, I guess, well.

10 MR. KATZ: I think for the time
11 being I think, if SC&A, they've started this
12 matrix, DCAS can send them a written response
13 documenting -- and they can keep it up to date
14 at this point. Moving down the road, I mean,
15 there's this work underway to do this all
16 online as part of this sort of database effort
17 that's being used for some other Work Groups
18 or at least for the Subcommittee on
19 Procedures. Eventually that will be expanded
20 and that could be done online.

21 But anyway, for the meantime, it
22 seems like it's good for SC&A to keep up the

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1 matrix and to receive input from DCAS for
2 their responses.

3 DR. MAURO: On this particular
4 item, there are some issues where let's say
5 it's very specific. I'll give you an example,
6 we may have some of these, where we say gee, I
7 think you guys made a mistake. Your number is
8 off by a factor of five, and you know, can we
9 explain why, and then I say, Dave, I say, yes,
10 you are right, this is not reasonable.

11 And then at that point, it becomes
12 very simple. NIOSH usually responds with the,
13 we agree that there is an error. We will
14 correct it. And what typically is done, during
15 other procedures and other Work Groups, that
16 item is not really closed. What it is, is it's
17 put in this place that we call in abeyance,
18 which means that okay, we all agree,
19 technically, this is the approach and it will
20 be closed when the next issue or revision
21 comes out where it's fixed, and then it's
22 closed.

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1 I mean this is really a choice you
2 folks have, or we could close it right there
3 and say, listen, it's technically agreed upon
4 that the solution is yes, at some time in the
5 future, we will be revising this particular
6 procedure and we agree that this factor of
7 five needs to be fixed.

8 This is purely, you know, whether
9 you want to close it on that basis and not to
10 back to it, or say no, let's leave it open and
11 we call it, in abeyance, which means where we
12 all agree but until it's actually fixed in the
13 document itself, we are not going to close it
14 out. Again, this is a choice that each one of
15 you makes for themselves.

16 MEMBER FIELD: Myself, I would
17 prefer the second.

18 DR. MAURO: Okay then and that
19 would be what we would do on any others.

20 CHAIRMAN ANDERSON: Well, as time
21 goes by, then you tend to forget and if it
22 doesn't get --

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1 DR. MAURO: That's exactly the
2 reason for it.

3 CHAIRMAN ANDERSON: On the agenda,
4 I mean, one or two, you can keep in your mind,
5 but as it piles up across all the --

6 DR. MAURO: But, now, where I was
7 leading, though, is, in this particular
8 finding --

9 CHAIRMAN ANDERSON: This will stay
10 open forever.

11 DR. MAURO: This is an important
12 finding. If it was simply that the work that
13 Bill has done in showing the examples where
14 the generic numbers really are not bounding
15 because when we look at Mallinckrodt and as
16 Bill pointed out it's more than just the ore
17 issue. I think the ore issue is going to solve
18 a lot of it.

19 But I think that -- where I'm
20 heading is I think we need a White Paper for
21 this issue and maybe others, namely, it's not
22 a simple story. There is enough richness to

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1 this issue where we have, okay, here's the ore
2 and perhaps in your White Paper you could
3 explain, you know, this, the concern that SC&A
4 raised about the examples, for example in our
5 work, where the, where we feel that the 6001
6 underestimated for some people, because of the
7 ore issue and that would solve that.

8 But as Bill pointed out, things
9 get a little bit more complicated when you
10 leave the ore issue and you actually get into
11 the process issue which is part of 6001,
12 appropriately, where we also have some
13 problems.

14 And I think that there's going to
15 need to be some work done initially, let's say
16 by NIOSH, to say, okay, let's take a look at
17 this and see if perhaps the distributions that
18 are currently in 6001 need to be broader, or
19 the median has to be shifted based on a closer
20 look at some of the data that I guess
21 originally Battelle compiled and it was 20,000
22 measurements.

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1 And bear in mind this is I believe
2 all air sampling measurements and that is
3 always an issue too. When you depend on air
4 sampling measurements, you have to be a little
5 careful and we all ran into this before,
6 whether it was breathing zone, general air, so
7 in other words, where I am getting at is that
8 I think that item one is a simple statement
9 but embedded in it is a richness and I think a
10 White Paper would be appropriate. This is my
11 recommendation to deal with this.

12 MR. ALLEN: Well, I would agree
13 with you except that I tried to sort through
14 the actual write-up and knowing what I knew
15 about the ore and you guys didn't realize that
16 at the time, and I tried to narrow it down to
17 what was significant and honestly, in the
18 examples, like I said, they were examples, and
19 I realize that, for finding one, I couldn't
20 find anything.

21 In fact there's a statement in the
22 review that says plant four and six data are

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1 significantly higher for ore one operation,
2 parentheses, ore digestion and about the same
3 as Christifano and Harris and all others.

4 DR. MAURO: Well, you know, if it's
5 that simple, I mean, I am not disagreeing with
6 you --

7 MR. ALLEN: No, I am not saying
8 that it's that simple but I am saying I am
9 kind of stuck, I think in all honesty it's
10 kind of in your ballpark to take this new
11 information that I have given out today and
12 kind of re-look at the issues.

13 DR. MAURO: Bill, right now, do you
14 feel that there are steps in the process that
15 are appropriately part of 6001 where we still
16 think there are some problems?

17 MR. THURBER: Well, what I
18 mentioned, if you go to section 8.1 of our
19 review, we showed that, for the steps I
20 mentioned before, for digestion, denitration,
21 oxide reduction and recasting, that the data
22 from Mallinckrodt were higher than those from

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1 TBD-6000 by factors of two to five.

2 DR. MAURO: So that's what I am
3 saying, I think that it's all in, all I am
4 saying is I think the ball is in your court
5 and with those examples, I guess if you could
6 convince yourself that they are fine, great
7 and then usually the next step is that a White
8 Paper shows up on SC&A's desk or the Work
9 Group and we will take a look and say, oh,
10 okay, it looks like they have fixed the
11 problem.

12 But right now I think our position
13 is we believe it extends beyond just the ore
14 issue and as Bill just --

15 CHAIRMAN ANDERSON: Well, we need
16 some, I think we need some written, you know,
17 I think we need a written response and then --

18 DR. MAURO: And then --

19 CHAIRMAN ANDERSON: And you know,
20 rather than just talk further here, I think
21 that, you know, and if you think a White Paper
22 is appropriate or not or how -- or if your

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1 points are, compare an actual document which
2 is two and a half years old, it may be that
3 needs to be updated as well so let's get it in
4 writing and then we can go back and forth.

5 MR. ALLEN: I will go through the
6 issue, review SC&A did and, you know --

7 CHAIRMAN ANDERSON: Yes. Great.

8 MR. ALLEN: -- start parsing out
9 that this is an ore, you know, this is ore,
10 this is ore, and try to find what is not
11 associated with it and respond in a White
12 Paper. If I find nothing, I will at least fire
13 off an email to everybody.

14 MR. KATZ: Well, I mean a White
15 Paper is just a generic term, you know what I
16 mean, a memorandum, whatever, it doesn't --

17 CHAIRMAN ANDERSON: I mean that
18 would be, but I am not sure we need that
19 amount of effort but let's see what you find
20 and if you think it's all ore issues that make
21 a significant difference, then clearly you
22 need to look at it and try to sort out what

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1 others remain.

2 Certainly ore is one of the
3 issues, is there any further --

4 DR. MAURO: And right now we think
5 there are.

6 CHAIRMAN ANDERSON: You think there
7 are and NIOSH hasn't been through it enough I
8 guess to really be able to --

9 DR. MAURO: It's good, by the way,
10 as we go through each finding -- who has the
11 action? And when we are done with the meeting,
12 usually what happens is I put together what I
13 believe to be action items and I will send
14 them off to NIOSH, say do you agree and then
15 this becomes our sort of score -- okay, and
16 everyone knows who has the action.

17 MR. KATZ: SC&A would list their
18 action items and DCAS would list their action
19 items and then you would have the whole pool
20 there.

21 CHAIRMAN ANDERSON: Okay. Finding
22 two.

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1 MR. THURBER: There's only 37
2 findings.

3 CHAIRMAN ANDERSON: Well, some seem
4 to be somewhat related to each other. Maybe we
5 can --

6 MR. THURBER: In part, finding two
7 is related to finding one because some of the
8 points we raised relative to finding two deals
9 with ore, deal with radium removal from the
10 ore and things like that. They don't all but
11 again some of them deal with that.

12 We quoted in section 4 a number of
13 other areas like hydrofluorination where we
14 felt that the TBD-6001 numbers may be
15 understating things.

16 DR. MAURO: Were there also some
17 steps that were in the process as you know it?

18 MR. THURBER: Yes.

19 DR. MAURO: Is that part of two or
20 is that --?

21 MR. THURBER: Yes, no, it is, it
22 may come up later too but -- let's touch on

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1 it. The authors of TBD-6001 said we haven't
2 done solvent extraction yet. We are going to
3 do it. And so, that still remains open.

4 DR. MAURO: Another, we have all
5 these findings, and we have a lot of findings,
6 but we are going to find that -- and it looks
7 like they are all separate but they are not
8 separate. They cluster nicely very often.

9 And here's a perfect example, for
10 example, I think if you're going to be working
11 on a White Paper, try to -- and if they're all
12 linked, if there's coupling, that makes sense
13 because then there's a story here. For example
14 the story is perfect, you are going to start
15 talking about the steps in the process.

16 Let's say there are 10 steps to
17 the refining process, the first three might be
18 ore-related, but then the rest may be, here's
19 the step where it's addressed what is a
20 problem because we think it's not a bounding
21 number that you're using or you haven't
22 captured the upper end because we have

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1 examples.

2 But then there's another aspect to
3 it. There are steps in the process that are
4 not even explicitly addressed in TBD-6001 or
5 perhaps Christifano and Harris.

6 So this is all, these are all
7 related. This all has to do with the steps
8 that comprise the process so I don't think we
9 should hold ourselves hostage to the findings
10 the way they are. If you find a way of putting
11 a White Paper together that tells a story that
12 knocks off three, four, five findings in one
13 shot, that's great.

14 CHAIRMAN ANDERSON: And the other
15 thing, as we go through these, that would be,
16 I mean the real guts of what we need to do are
17 the three sites that are in the appendices so,
18 as you say, with 37 here or however many, some
19 of these, like, what we just talked about, if
20 that directly impacts the United Nuclear,
21 Hooker or those, then that, I would say that
22 pushes that them up to be addressed earlier

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1 than these other --

2 DR. MAURO: In terms of priority of
3 issues.

4 CHAIRMAN ANDERSON: Priority of
5 issues so, you know I think there's a lot of
6 work, I mean, we have already identified a
7 couple of things where there's already work
8 for somebody. So you know, if we don't need to
9 do it quite as rapidly, let's identify that
10 now because I think I would like to at least
11 in a meeting or two, if we can, get through
12 the sites that we need to address, unless they
13 are directly impacted by some of these.

14 Because then if we are, then we
15 need to knock these off before we apply that
16 to the other sites.

17 DR. MAURO: I think we are going to
18 find, I mean you bring up an interesting point
19 in principle, if the real thrust here is let's
20 deal with United Nuclear and Electro Met and
21 the two of those don't even depend on TBD-
22 6001. You know we might be, perhaps we

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1 shouldn't have started here.

2 CHAIRMAN ANDERSON: No, I think we
3 needed to start here. As we go through a few,
4 say "and this relates to" --

5 DR. MAURO: It's Hooker, that's
6 going to be the one that is going to get
7 hammered.

8 CHAIRMAN ANDERSON: Well, let's
9 identify that, even though today we are
10 talking about these two.

11 MR. THURBER: Well, we are going to
12 show you an example of how an appendix is
13 intertwined with the numbers in here to give
14 you a feeling as to how those things meld
15 together or attempt to meld together.

16 CHAIRMAN ANDERSON: Okay.

17 MR. THURBER: Finding three?

18 MR. KATZ: So finding two, is sort
19 of wrapped up with finding one, is that what
20 it is?

21 MR. ALLEN: Same kind of thing like
22 John said, I'll try to see if I can intertwine

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1 responses into one White Paper then I'll do
2 that.

3 MR. THURBER: Good. Finding three
4 deals with an external exposure question and
5 namely it's how you estimate the external dose
6 to a worker who is standing on a contaminated
7 surface and this is also included in TBD-6000.
8 At the time we prepared our review, we didn't
9 think it had been appropriately addressed.
10 Since then, David has written a White Paper
11 which was presented to the TBD-6000 Work Group
12 and as indicated in the third column there, we
13 were satisfied that this issue had been
14 addressed.

15 There was a minor comment in our
16 response there, if you will, that there was --
17 it would be helpful if there was some
18 explanation as to why seven days was used in
19 TBD-6000 while the year, I'm sorry, there's a
20 typo there. It should say, "while a deposition
21 period of one year was used in TBD-6001."

22 But the basic concept of using a

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1 terminal settling velocity over a period of
2 time to come up with a surface contamination
3 level has been addressed.

4 DR. MAURO: Yes, this was a
5 longstanding concern that I raised quite a
6 while ago. The fundamental approach -- I think
7 there is a point where you conceptually
8 understand these things, because you can see,
9 this thread runs through so many sites.

10 The fundamental approach that is
11 taken in TBD-6000 and 6001 is that, if you are
12 concerned about the accumulation of uranium on
13 surfaces, one way you could -- and you don't
14 have good measurements of what that is -- one
15 way you could estimate it is, is well, if you
16 know the dust loading in milligrams per cubic
17 meter, you can assume that that dust is
18 falling out of the air, settling out of the
19 air at 0.00075 meters per second and that's a
20 good deposition rate, the particles that are
21 of this nature, like five micron particles.

22 I originally said, gee, you know,

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1 but that's not how surfaces get contaminated.
2 They don't get contaminated by just this
3 respirable dust that is falling on surfaces.
4 They get contaminated because of these big
5 flakes of junk coming off machining
6 operations.

7 Well, it turns out I was wrong,
8 you know, this was an intuitive thing, I said
9 I don't believe it. But David took the data
10 from a very good study that measured the
11 amount, the rate that stuff is falling out of
12 the air as 0.00075 and showed that that's
13 conservative.

14 So we accept that that deposition
15 rate -- so if you know the dust loading, you
16 can, from the dust loading alone, figure out
17 the rate at which milligrams per second per
18 meter squared, the rate at which it's coming
19 down can be estimated, very reliably, with the
20 approach that they are using.

21 Now, the only issue we have is
22 that, well, you have to assume some time

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1 period, how long is that going to go now. And
2 I think our question is, seven days we know
3 from the Adley report, that equilibrium --
4 this is coming down, right? It sure is coming
5 down but at the same time it's leaving and we
6 know that, in the Adley report, it was longer
7 than seven days, where we believed things
8 became sort of stabilized, where the
9 accumulation sort of stayed the same, the rate
10 of deposition equaled the rate of removal, and
11 I think seven days is too short.

12 So we still have an issue here,
13 but it's a narrow one.

14 MR. ALLEN: So you're actually, I
15 mean, from that White Paper, the time frame,
16 depending on what parameters you ratio et
17 cetera, it was anywhere from 5.8 to 27 days.

18 DR. MAURO: That was that short,
19 27?

20 MR. ALLEN: TBD-6001 uses 365 days.
21 The seven days was in TBD-6000.

22 DR. MAURO: Oh, okay.

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1 MR. ALLEN: Why there's a
2 difference, you are right --

3 MR. THURBER: It would seem to me
4 that it would be good for everybody at some
5 time, if there, if TBD-6000 and TBD-6001 are
6 set side by side and differing assumptions are
7 reconciled. But if --

8 DR. MAURO: This is tractable by
9 the way, very often, I mean this is really
10 coming to some agreement that, you know, what
11 assumptions are we -- there is some assumption
12 that makes the most sense.

13 CHAIRMAN ANDERSON: So is the
14 assumption then, if you use seven days, that
15 there is seven days' worth of accumulation on
16 the floor?

17 MR. THURBER: Right. And it stays
18 there.

19 MR. ALLEN: And it stays that way
20 with no removal.

21 CHAIRMAN ANDERSON: And you are
22 calculating the dose not from the particles as

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1 they are dropping, you'll have dust in the air
2 that is emitting external --

3 MR. THURBER: Yes.

4 CHAIRMAN ANDERSON: I mean the
5 amount of --

6 MR. ALLEN: The route of exposure
7 that is accounted for but this particular
8 issue is just the amount of surface
9 contamination.

10 DR. MAURO: External exposure. Good
11 way to think about it, again, overarching, you
12 are going to run across this every time. When
13 you are in this kind of working environment,
14 there's submersion, there's the external
15 exposure you experience because you are in a
16 cloud.

17 CHAIRMAN ANDERSON: Yes.

18 DR. MAURO: That dose is always
19 very, very, very small and easy to calculate
20 and it never contributes. The other thing is
21 the stuff that accumulates on the surfaces.
22 That is -- and you are standing there, so you

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1 are getting both beta and gamma radiation from
2 it. That's a little bit more significant and
3 that becomes important, not only during
4 operations, while the work is going on, but it
5 becomes the residual radioactivity that people
6 are exposed to after operations start, stop,
7 and so that becomes a very important issue.

8 And right now our position, again
9 this is a recurring theme, is that we believe
10 the approach they are using is good, can be
11 applied for external exposure to residual
12 radioactivity on surfaces, not only during
13 operations but also during the residual period
14 as a way to place a bounding estimate.

15 That third, and that's an
16 important contributor, but by far the biggest
17 contributor to external dose is standing next
18 to a 55-gallon drum of yellowcake, of ore or a
19 slab of uranium or uranium rods. That's the
20 big driver.

21 And on that aspect, we have long
22 since, and this goes back to TBD-6000, we have

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1 long since resolved that. In other words, we
2 are all in agreement that there are
3 measurements and there are models that confirm
4 the measurements and so I mean, I think that
5 that aspect, that third piece of the external
6 exposure contribution is by and large
7 resolved.

8 The amount of the surface is close
9 to being resolved if you could agree how long
10 you are going to allow this stuff to
11 accumulate. Is it one year? Is it 28 days? But
12 I think once that's resolved that problem goes
13 away.

14 And the other one, the external
15 exposure from the cloud, we agree with the way
16 we do that and not only that it doesn't matter
17 anyway because it never contributes.

18 CHAIRMAN ANDERSON: Yes, well
19 that's, that's --

20 DR. MAURO: I'm sorry --

21 MEMBER GRIFFON: John, this is
22 Mark.

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1 DR. MAURO: Yes.

2 MEMBER GRIFFON: I just thought it
3 might be useful to -- the, you are correct, we
4 discussed this in TBD-6000, I guess. But you
5 might want to give a little background,
6 especially for Bill and Henry on the Adley
7 report and I think NIOSH developed a White
8 Paper off of that, right, to sort of support
9 their position on the deposition?

10 But my other point here is that it
11 is, as I understood it anyway, it all hinges
12 on this one study, this Adley report that was
13 done in Hanford, is that correct?

14 DR. MAURO: Yes.

15 CHAIRMAN ANDERSON: So it, was it a
16 laboratory story?

17 MEMBER GRIFFON: So I think it's
18 worthwhile for them to get familiar with that
19 report, at least to -- if you can give me an
20 overview that would be great.

21 DR. NETON: It was a little more
22 than that.

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1 DR. MAURO: It's a great report.

2 MR. ALLEN: It was a work area at
3 Hanford, there were various tasks and I'm
4 trying to remember.

5 DR. MAURO: It did everything. It
6 is a very large operation --

7 MR. ALLEN: In a small area.

8 DR. MAURO: Hanford metalwork
9 facility, something -- remelt -- and just
10 about every type of uranium processing
11 activity is there and an immense amount of
12 measurements were made, every aspect, every
13 step in the process was measured and data were
14 gathered including setting plates out to
15 measure the rate at which uranium accumulates
16 from falling out.

17 And that was done over an extended
18 period of time. I forget how many plates were
19 set out over different seasons, to see if
20 winter is different than the summer. It is
21 quite a report, quite frankly. When I read
22 that I said, this is sort of like the Holy

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1 Grail. With this document you have the data
2 indeed to determine whether or not reports
3 like TBD-6000 and 6001 hold up and have the
4 data behind it that says, yes, these are good
5 number. So we rely very heavily on that, that
6 and certainly Christifano and Harris and there
7 is one other one. There are several very
8 important source documents that are the
9 underpinning of everything we have been
10 talking about, not only on TBD-6000 and 6001
11 but also on many of the appendices that we
12 have been talking about.

13 CHAIRMAN ANDERSON: Okay.

14 DR. MAURO: I know I am talking a
15 lot but there is one more thing that is
16 important, and this is this, from the external
17 point of view I made it a little too simple.
18 The idea that you have to get a slab of
19 uranium. Now we know that if you have a slab
20 of pure uranium, it's two mR per hour. That's
21 it. That's what you get, it's a penetrating
22 dose. And if you hold your hand against it,

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1 it's about 200 mR per hour, penetrating and
2 non-penetrating dose.

3 Now, but there's one exception.
4 And we thought that this is more for TBD-6000.
5 It is when you have freshly cast uranium
6 ingots, you do get a build-up of some of the
7 shorter-lived progeny of the uranium, namely
8 thorium-234, 234 or 238, 234, on the outside
9 of the ingot, which creates a field that is 10
10 to 20 times higher than the numbers I have
11 just told you, very unusual metallurgical
12 phenomenon.

13 Bill's a metallurgist and to this
14 day you say you are not quite sure why that
15 happens, but it happens. It doesn't always
16 happen but it happens often. So that's a
17 little nuance to external exposure that's been
18 a fly in the ointment but I think we have got
19 to the point in TBD-6000 where that issue has
20 been resolved.

21 I am trying to paint the broader
22 picture. We sort of left TBD-6001 but when I

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1 was talking about external I wanted to make
2 sure that everybody had a sense that a lot has
3 been accomplished in coming to grips with a
4 lot of these issues.

5 CHAIRMAN ANDERSON: So what we have
6 really to resolve here is seven days versus a
7 year.

8 DR. MAURO: That, for this issue,
9 yes.

10 DR. GLOVER: One thing I would like
11 to mention. Many TBD-6000 sites are mom and
12 pop shop, small, short, they may only have
13 four days of rolling in their history, and so
14 I don't know how many TBD-6001 sites have a similar
15 short-term operations. There may be some very
16 different reasons why you would perhaps have
17 some of these -- well, different, they only
18 roll, they only have four days of operation,
19 that's it. Why do I use a year?

20 DR. MAURO: And that will be good.
21 Right?

22 DR. NETON: You have a year of

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1 operation, typically you are going to have air
2 samples taken.

3 CHAIRMAN ANDERSON: Yes, I hope so.

4 MR. THURBER: There's no question
5 that the assumption used in TBD-6001 was
6 conservative.

7 CHAIRMAN ANDERSON: Yes.

8 MR. THURBER: The 365 days.

9 CHAIRMAN ANDERSON: Yes, okay.

10 MEMBER FIELD: Let me ask a
11 question about the contaminated dust. Is
12 contaminated dust always the same or there's
13 room for the score to vary depending on the
14 source?

15 MR. ALLEN: This -- TBD-6000, 6001
16 are for uranium operations.

17 DR. MAURO: And we are talking
18 about basically a five micron, AMAD, uranium
19 oxide. It could be type M, it could be type S
20 and that's basically --

21 CHAIRMAN ANDERSON: So, it's not
22 total dust we are really --

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1 DR. MAURO: It's not total -- well
2 the reason, certainly, there are probably
3 other dusts but these operations generate
4 dust.

5 And the measurements could be in
6 milligrams per cubic meter and we assume that,
7 you know, all the measurements -- and then --

8 CHAIRMAN ANDERSON: And the
9 assumption is it's all --

10 DR. MAURO: Yes. Well, they take a
11 sample and they do a fluorometric analysis or
12 they will do a gross alpha analysis so you
13 know it's uranium.

14 DR. NETON: There's one slight
15 added twist that after 1952 it could be
16 recycled uranium as it went through some --
17 transuranic contamination to a small extent.

18 MEMBER FIELD: And the
19 concentration of the uranium in the dust is
20 not a factor?

21 DR. MAURO: It's all uranium oxide.

22 DR. NETON: When you say uranium

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1 dust, you mean all uranium.

2 MEMBER FIELD: All uranium.

3 MR. THURBER: Or it's reduced to
4 that in the analyses, one way or the other.

5 DR. MAURO: And it's not an
6 unreasonable assumption because these places
7 were --

8 DR. NETON: Literally there were
9 visible clouds of uranium in the air. You get
10 to 30 milligrams per cubic meter you can see
11 it pretty easily.

12 CHAIRMAN ANDERSON: Yes. Just as
13 the uranium -- does it stick to the floor at
14 all? I mean is it like --

15 DR. NETON: Become fixed?

16 CHAIRMAN ANDERSON: Yes, so that
17 you, you know, it's like if you have lead, you
18 would end up with a slick floor from the --

19 MR. ALLEN: It's not as malleable
20 as lead.

21 CHAIRMAN ANDERSON: No, I know
22 that. But the issue is when you say it

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1 accumulates over a year, if they were cleaning
2 on a regular basis, it still would have some
3 residual that would be, you know, in the
4 cement floor.

5 MR. ALLEN: Right, and that's been
6 the rub all along kind of, it's -- I mean, you
7 get cracks in the floor, some of this stuff is
8 very fine powders and it can get down in there
9 and not come up. The assumptions in the TBDs
10 are it's all essentially loose and available
11 for resuspension and that was, when we looked
12 at Adley, that allowed us to get the rates and
13 the actual contamination versus airborne
14 concentrations et cetera and get a better
15 handle on that.

16 DR. MAURO: Bear in mind, we are
17 talking about AWE facilities that operated in
18 the late `40s, early `50s, maybe up to the
19 late `50s, where these are very dirty
20 operations and this stuff accumulated on the
21 floor, they didn't clean it up every day. And
22 when you talk to workers, what was it like,

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1 you could see it walking, you would kick it
2 and it would come up. It is not like -- you
3 could have a significant amount, but you don't
4 see it, you know, you could see it, this is
5 like -- and it was re-suspendable. It gets
6 crunched on and even if it was a large
7 particle that fell, it gets crunched up and it
8 becomes certainly re-suspendable.

9 Now later on, when you have
10 decontamination, they will say, you didn't
11 remove that and do some clean-up, well then
12 there's always an issue, okay, how much of it
13 is re-suspendable now, and you eventually will
14 encounter some of that when we get to some of
15 these sites.

16 CHAIRMAN ANDERSON: Moving right
17 along, so you guys are going to resolve one
18 year versus --

19 MR. THURBER: It's not relevant to
20 this. It's just a matter of, it's more
21 relevant to TBD-6000's in a sense, to explain
22 why you picked a short period.

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1 CHAIRMAN ANDERSON: Yes.

2 MR. THURBER: But 365 days for this
3 group of sites is certainly conservative.

4 MR. ALLEN: In any case it's a
5 different document altogether, I mean, I
6 honestly think, and I agree that the
7 documents, the assumptions made should be
8 consistent, you know, throughout the
9 documents.

10 MR. THURBER: Yes.

11 MR. ALLEN: But in this particular
12 case, I think we can close this particular
13 finding out, for TBD-6001.

14 MR. THURBER: As far as TBD-6000, I
15 am satisfied.

16 DR. MAURO: The only point I wanted
17 to make is, your starting point, though, is
18 airborne dust loading has been, given that the
19 airborne dust loading is a good number for a
20 particular category of operation, that
21 approach works. But we don't necessarily agree
22 that the airborne dust loading that was

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1 selected for a particular operation on the
2 TBD-6000 over the distribution that was
3 selected is necessarily the appropriate
4 distribution.

5 So, you see what I am, that aspect
6 of it --

7 CHAIRMAN ANDERSON: The cascade,
8 the front end of the cascade --

9 DR. MAURO: Exactly --

10 CHAIRMAN ANDERSON: -- might be
11 problematic, Okay.

12 MR. KATZ: So, is this finding
13 closed?

14 DR. MAURO: I would say yes.

15 MR. KATZ: This is for this Work
16 Group.

17 MR. THURBER: Yes. For this Work
18 Group, this finding is closed, because what we
19 are really agreeing on is that the use of a
20 terminal settling value of 7.5 times 10 to the
21 minus four meters per second is a good number.

22 Now, the rest of the pieces that

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1 go to get to an exposure, a dose, as John
2 says, some of those are still open issues.

3 MR. KATZ: But that's separate. MR.

4 THURBER: Right, that separate.

5 MR. ALLEN: Clear as mud?

6 CHAIRMAN ANDERSON: No, no, I mean,
7 well in the initial response, NIOSH talked
8 about seven days but in 6001, it specifically
9 uses one year.

10 MR. THURBER: And that's fine, it
11 might increase --

12 CHAIRMAN ANDERSON: I mean this
13 probably started when 6000 and 6001 were
14 together, so as far as closing it out, you
15 need to be very clear it's 6001.

16 MR. KATZ: Right, this Work Group
17 can't close 6000 issues.

18 CHAIRMAN ANDERSON: Do we need a
19 vote on that?

20 MR. KATZ: Just as long as it's
21 clear for all Members that it's closed.

22 CHAIRMAN ANDERSON: Anybody object

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1 to -- Mark?

2 MR. KATZ: Mark? Mark are you still
3 with us? Are you on mute? We may have lost
4 him.

5 DR. GLOVER: He's trying to find a
6 copy -- we are going to send him a matrix
7 copy, apparently he doesn't have one so we are
8 going to try to get him.

9 CHAIRMAN ANDERSON: Oh, okay.

10 DR. GLOVER: We are taking care of
11 it.

12 CHAIRMAN ANDERSON: Okay.

13 MR. THURBER: Finding four?

14 CHAIRMAN ANDERSON: Finding four.

15 MR. THURBER: In TBD-6001 there are
16 two, comprehensive summary tables relating to
17 external exposures and how external exposures
18 should be calculated for various job
19 descriptions, denitration operator, solvent
20 extraction operator, whatever. But, and within
21 those categories, the document provides how to
22 calculate the external dose for operators, for

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1 laborers, for supervisors and for clerical
2 personnel. It provides data on various
3 durations of work weeks because in the early
4 days, a lot of the operations were probably on
5 a six-day work week.

6 So these are quite comprehensive
7 tables. The fundamental problem we have had
8 with them is that the transparency and the
9 traceability of the data that is in them is
10 not apparent from TBD-6001 and when we get
11 done with this, I would like to give you an
12 example of that.

13 So if we could, I would like to
14 pass on from this until we get through the
15 rest of the list and then come back to this
16 with some specific examples of the
17 transparency/traceability issues related to
18 external exposure.

19 Oh, the tables also cover the
20 different external exposure modes that we are
21 talking about: direct contact; submersion in a
22 cloud; standing on a contaminated surface and

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1 it provides exposures for all of those
2 different environments.

3 CHAIRMAN ANDERSON: And the data
4 source for that is?

5 MR. THURBER: The data source for
6 the external exposure is, a lot of it comes
7 from Mallinckrodt where there were comparable
8 operations, or it comes from, in the case of
9 exposure to 55-gallon drums of whatever, it
10 comes from MicroShield calculations, or from
11 actual measurements of 55-gallon drums
12 containing pitchblende ores, that impacts on
13 the ore thing a little bit, but -- so that's
14 where the data, virtually all the data in
15 these tables come from.

16 MR. ALLEN: Yes, plus the type of
17 calculation we were already talking about, the
18 air submersion, the surface contamination --

19 MR. THURBER: Yes, that's for the
20 direct --

21 CHAIRMAN ANDERSON: The source-
22 terms is more than the calculation --

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1 MR. THURBER: Yes, that's for the
2 direct exposure, the standing-on-a-cloud comes
3 from the calculations we have discussed, the
4 submersion comes from the kind of calculations
5 we have discussed.

6 CHAIRMAN ANDERSON: Okay.

7 MR. THURBER: So, I would like to
8 pass --

9 DR. MAURO: I know, but when you
10 talk about Mallinckrodt data, you are talking
11 about, we have a group of workers that we know
12 were doing a particular operation, they were
13 wearing a film badge and you can see what
14 their exposures are, so that is one way you
15 can get at what kind of exposures.

16 Because those exposures reflect
17 not only the radiation field the person is in,
18 but also how long they worked and how close
19 they worked. Because you know, when you run
20 the model, what it tells you is, here's your
21 millirem or microR per hour, at this distance,
22 at this distance, at this distance, and you

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1 know those numbers are good.

2 The real question is, well, for
3 real workers, how long were they standing --
4 how long were they in contact? And that's
5 where the Mallinckrodt experience helps you
6 get an insight of what assumptions should be
7 made.

8 So it's like, the field is one
9 thing, but those are based on physics
10 calculations and it's straightforward. The big
11 question is, how long do we assume a person
12 is, and at what distance, from this -- what
13 source, the size of the source, and the type
14 of source?

15 So, and I think, correct me if I'm
16 wrong, it's both of those that is the
17 Mallinckrodt experience and the models that
18 are married and that's how these tables were
19 produced, the 7-3, I believe, it's for any
20 given worker, I would say it's like you said,
21 a denitration operation or whatever it is, the
22 exposure distribution that's in there for,

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1 let's say a supervisor, a matrix table, that
2 has embedded in it some assumption regarding
3 duration of exposure, like hours per year?

4 MR. THURBER: Now, I believe that
5 those are based on actual measurements.

6 DR. MAURO: Okay, so, all right,
7 all right.

8 CHAIRMAN ANDERSON: So this is
9 really a surrogate exposure?

10 MR. THURBER: Yes.

11 CHAIRMAN ANDERSON: Because you
12 are, I mean, mostly your table is generated
13 based on the distance and the time and stuff
14 from Mallinckrodt. Then the question is, are
15 the other facilities, do the workers spend,
16 are they so identical and the process is so
17 identical that worker A in nuclear spends the
18 same amount of time afoot from whatever it is,
19 and --

20 MR. ALLEN: Like we said from the
21 start, TBD-6001 is surrogate data, that's
22 pretty much the purpose of the document and

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1 then the applicability, as you're saying, is
2 essentially a site-specific thing. You can't
3 really judge it on the generic document basis.

4 CHAIRMAN ANDERSON: Okay. We will
5 come back. Your job is to remember. We're
6 going to come back at 4:30 and you're going to
7 be stuck here.

8 MR. THURBER: Okay, finding number
9 five. This again deals with inhalation
10 exposures and the issue here is this.
11 Christifano and Harris provide data from 1948
12 through 1954, I believe. Some of these
13 operations began as early as 1942. So the
14 question is, and certainly there is a lot of
15 anecdotal evidence that suggests that in the
16 very early days things were much worse than
17 they were at the time that Christifano and
18 Harris began their measurement protocols.

19 And clearly during the course of
20 the time that Christifano and Harris did their
21 air sampling, beginning in 1948, there was
22 continuous improvement, continuous lowering of

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1 the dust levels.

2 So, in the absence of data prior
3 to 1948, NIOSH is -- well, the NIOSH approach
4 was this: they took the average value for that
5 period where they had data, 1948 to 1954, and
6 they said the data in the first year where we
7 have data was 6.8 times higher than the
8 average, so 1948 was 6.8 times, roughly,
9 higher than the average for the period `48 to
10 `54.

11 So we are going to take that 6.9
12 factor and we are going to use that going
13 backwards in time and we are going to hold it
14 at that level back to 1942. And we make some
15 arguments in our review saying that that is
16 not claimant favorable, that if you develop
17 some kind of a regression line for the period,
18 you will find that the numbers are higher than
19 that approach would yield. So that is what
20 underlies this finding.

21 DR. MAURO: Any chance we could put
22 this up?

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1 MR. THURBER: I don't know.

2 CHAIRMAN ANDERSON: I can see it
3 becoming --

4 DR. MAURO: Yes, you have probably
5 seen this if you took a look at the report.
6 You can see when you go before 19, let's say,
7 '46 and all the way back to 1942, we deemed
8 that the correction factors may be too low by
9 a factor of 10 so for those years, the generic
10 approach used by TBD-6001 to account for the
11 early years being worse. But we think that
12 correction factor is too low and I guess this
13 is a question worth posing to NIOSH, do you
14 think that -- there is a correction factor
15 that can be derived but we think it's about 10
16 times higher, if you want to go back to 1942.

17 MR. ALLEN: I believe we had, when
18 the document was created, was you had
19 essentially a war effort in '42 to '45, about
20 the last thing on anybody's mind was health
21 and safety, it was a very low priority. That
22 same process is pretty much continued until it

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1 was, the weapons program was turned over to
2 the Atomic Energy Commission once it was
3 created.

4 And one of the first organizations
5 to start worrying about health and safety --
6 not that there was no worry about it -- but
7 one of the first ones to put some significant
8 effort into it was the Health and Safety Lab
9 and that's kind of what created them were
10 these AWEs, I think the big seven that Naomi
11 Harley talks about.

12 And you can see that very clear in
13 the data, that when they started up, 1948, you
14 see the data as considerably higher than even
15 1949 and just steady improvement right down
16 the line.

17 The individual reports from 1948,
18 it's very clear there was no controls to speak
19 of at these facilities. They made a lot of
20 recommendations at least some of which got
21 implemented and then more and more as they
22 continued to try to improve.

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1 DR. NETON: Yes, I don't quite see
2 the basis for a straight-line extrapolation
3 back if the processes were similar. They only
4 generate so much dust with certain types of
5 equipment, and we agreed, this was manual,
6 shoveling, lifting.

7 DR. MAURO: Let's just circulate --
8 this is my copy -- let's send this around the
9 table, it's self-explanatory.

10 DR. NETON: I understand what
11 you're saying, that you're going a straight-
12 line extrapolation back.

13 DR. MAURO: The question is what do
14 you do?

15 DR. NETON: The question is why
16 would you believe that a straight-back
17 extrapolation is appropriate, other than the
18 fact it's more conservative, because of
19 process similarities. I mean, you can look at
20 the equipment being used and say this process
21 is very similar to what was being done in
22 1950, 1948, going back, and there's no local

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1 capture ventilation all those sort of
2 parameters, you know, I'm having trouble --
3 other than the fact it's more conservative, I
4 just don't know that that is necessarily going
5 to make it right.

6 DR. MAURO: I agree with that but
7 right now we are in this funny place. You see,
8 you picked 6.8 as your maximum multiplier that
9 goes all the way back to 19 -- and if you were
10 to extrapolate according to the graph, it
11 would be 10 times higher. Now, which is the
12 right number? I don't know. And you know, in
13 the world we are in, unless you can make a
14 case, as you are starting to make right now,
15 why 6.8 is the right number all the way back
16 to forty --

17 CHAIRMAN ANDERSON: It couldn't
18 have been any worse than it was in '48 is what
19 you are saying.

20 (Simultaneous speaking.)

21 DR. MAURO: And we are not
22 convinced of that.

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1 MR. ALLEN: In most cases the
2 improvements, the slope of that graph is
3 caused by Health and Safety Lab starting to
4 sample in that year.

5 DR. MAURO: So you would argue that
6 starting in wherever the break point is on
7 that graph, that before that, that at that
8 point in time, that's how bad it always was.

9 And then it got better after that.

10 DR. NETON: Especially since you
11 have no controls for six years, that's about
12 as bad as it's going to be. It's not like they
13 --

14 DR. MAURO: Well still, I remember
15 talking to Bill about this --

16 DR. NETON: Well, we will have to
17 look at --

18 CHAIRMAN ANDERSON: Well, I mean,
19 the other issue would be you've got data from
20 '48 to '56 and you know, will you go back
21 further than that?

22 You could simply say we aren't

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1 going to assign, you can't assign, there's no
2 data from there. All that we know is it was
3 bad. But we don't know, could it have been
4 worse? In some of the place, it could have
5 been better. You never know.

6 DR. NETON: When you look at the
7 processes, I mean, with that logic I don't
8 know why you wouldn't do an exponential curve.
9 I mean, what difference does it make? But I
10 think we owe it to justify those, that --

11 MR. THURBER: We are not saying
12 that this is the way to go. As we indicated,
13 we are merely saying this is an alternative
14 and I would point out that one has essentially
15 the same problem in Electro Met when we get
16 into that, because there was very little data
17 early in the process and so NIOSH took the
18 approach that since the process was the same,
19 that that was not an unreasonable thing to do.

20 We argue in our NIOSH, our review
21 of Electro Met, I'm sorry, that there was some
22 evidence to support that assumption and there

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1 is also some evidence that refutes that
2 assumption. So it's clearly a question that
3 needs some more attention.

4 We are the first to admit this is
5 not the right answer but we don't think a
6 horizontal extrapolation without good
7 justification is the way to go.

8 CHAIRMAN ANDERSON: Do we have from
9 any of these sites workers' testimony? I mean
10 is there anyone saying, boy, you know, that
11 was bad in `48 but I was there in `44 and it
12 was, you know, you couldn't be in there.

13 MR. ALLEN: You are kind of getting
14 into the issue of this generic document and
15 you know the applicability to an individual
16 site. Like we said before, Electro Met, United
17 Nuclear kind of had their own data. We are not
18 even really using values out of those, so you
19 now, you don't get a lot of specific comments
20 from workers on a generic issue, you know, it
21 is something to be addressed on an individual
22 site specific TBDs.

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1 DR. MAURO: I guess a good question
2 is, you know, when, I guess, when the
3 measurements were made, they go back to 19 --
4 I guess they started in '48, '46? '48.

5 MR. THURBER: Christifano and
6 Harris.

7 DR. MAURO: Christifano and Harris.
8 Now whether or not their data, air sampling
9 data that go earlier than that, I bet you
10 there are. I mean we are talking about, I
11 mean, my guess is they took --

12 DR. NETON: I am not sure.

13 MR. ALLEN: Mallinckrodt you can
14 find some, other than that, I mean, that's --

15 MR. THURBER: There's a little
16 Electro Met data in the early period and as I
17 recall, there was a change where they put in a
18 vacuum cleaner or something and so on a month-
19 to-month basis they got a big improvement so
20 that's some of the kind of information that
21 may prove relevant to developing a position on
22 this question.

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1 DR. MAURO: And this is an ongoing
2 discussion. You know, when you were talking
3 about, okay, what's a reasonable default dust
4 load. Now, we are not asking the question,
5 what's reasonable that represents typical
6 discussions occur across the complex of AWE
7 facilities at that time.

8 We are really asking the question,
9 what's the upper end that it is likely to
10 represent so that if we are going to pick a
11 number and we have a guy, and we know a guy
12 who worked there in 1942 and we are going to
13 assign some dust load onto him, you don't want
14 to assign to him your best estimate. You are
15 going to say listen, I want to assign to him a
16 number that I am feeling pretty sure it was
17 not higher than that. You know, we want to
18 place, we want to give him the benefit of the
19 doubt.

20 And in our opinion, one of the
21 recurring themes that we are going to see over
22 and over again is, there's a difference

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1 between saying what is a reasonable number
2 that represents typical conditions at the
3 facility in a given year and a typical
4 operation, and what we believe to be the right
5 number to pick, to assign to a person that you
6 are sure probably didn't have much of an
7 exposure that was higher than that.

8 So it's, you know, this
9 extrapolation is sort of a way to say, you
10 know, even the numbers themselves, the actual
11 numbers that are plotted, are we plotting the
12 95th percentiles here, of these
13 concentrations? You know what do you -- I am
14 always concerned that -- this project is not
15 concerned with coming up with realistic
16 estimates of typical workers. It's concerned
17 with coworker models that provide a level of
18 assurance that when you assign a number to a
19 guy, a real person, that you are not
20 underestimating him.

21 So you always want to pick a
22 number that you can argue, it's very unlikely

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1 this guy had a higher exposure than that. And
2 this curve, I think, that's why this curve
3 troubles us.

4 DR. BEHLING: John, this is Hans
5 Behling. Can I make a comment here?

6 DR. MAURO: Sure.

7 DR. BEHLING: One of the things
8 that I looked at when I looked at MetLab,
9 which is really time zero for this whole
10 program, and that is, and you'll see it
11 referenced throughout some of the TBDs or Site
12 Profiles in the early years, and that is the
13 tolerance level and when you look at the
14 tolerance level it gives you some
15 understanding how high the air concentrations
16 could have been without concern for the
17 protection of workers.

18 And in my reports for the Met Lab,
19 and it was part of the 250 day issue, I cited
20 tolerance levels that were astronomical by
21 today's standards and clearly define a very,
22 very different set of acceptable limits for

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1 air concentrations, body burdens et cetera.

2 DR. MAURO: So, I think, to close
3 this down, when you addressed this issue of
4 extrapolation back in '42, you can make your
5 case whether it's flat or it goes up, I think
6 it's important also to, the overarching thing
7 is that when we go back in time, you want to
8 do it in a way that we can say with a degree
9 of confidence, it's unlikely that anyone would
10 have experienced an annual exposure higher
11 than this dust loading -- not the best
12 estimate, because that would be claimant
13 neutral. If you picked the best estimate, you
14 are being claimant neutral. You want to be,
15 you want to make sure that all workers that
16 worked at that time are unlikely to experience
17 concentrations higher than that over the
18 course of a year.

19 We realize in any given day the
20 numbers can be very high but over the course
21 of a year, you know, the exposure a person
22 might have experienced because of his job,

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1 unlikely to be higher than this.

2 DR. NETON: Well, I think we've had
3 the action --

4 CHAIRMAN ANDERSON: Yes.

5 DR. NETON: -- in this document,
6 why we believe our values are appropriate.

7 MR. THURBER: So are we good on
8 finding five?

9 CHAIRMAN ANDERSON: Yes.

10 MR. THURBER: Six. This relates to
11 the fact that radon was not included. I think
12 that given what David said earlier, that we
13 can probably pass this on by, if that's
14 agreeable to everyone?

15 MR. ALLEN: That was going to be my
16 response so --

17 DR. MAURO: If there's no water,
18 there's no radon.

19 DR. NETON: So that's close.

20 MR. THURBER: Now we have a number
21 of observations. These should go more quickly,
22 because the more generic issues were findings

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1 -- the first observation deals with the fact
2 that it would be helpful if some basis for the
3 selected time period was provided. It just
4 appeared as `42 to `58. Why?

5 And we noted that in another place
6 in the document it said `44 so this is a -- I
7 don't think it requires much more discussion
8 than that, but if anybody has any clues?

9 CHAIRMAN ANDERSON: Fifty-eight end
10 is --

11 MR. ALLEN: That's I believe the
12 end of the data was `58. And the beginning
13 was essentially meant prior to `58 and you can
14 see where we went to some effort to try to
15 back-extrapolate prior to the data showing and
16 whether you agree with that or not, the basis
17 was prior to `58.

18 MR. THURBER: Observation two.
19 Actually, we already touched on this. The TBD-
20 6001 said that data on the solvent extraction
21 step was under development and that's probably
22 worth an indication of what is going to happen

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1 with regard to that piece of the operation.

2 MR. ALLEN: Again, frankly, we
3 haven't found any situations where we needed
4 that information. I mean, this solvent
5 extraction pretty much happened at the bigger
6 sites where we have data from that site
7 instead of needing the generic numbers. So --

8 MR. THURBER: Mallinckrodt
9 attributable. Yes. Okay.

10 MR. ALLEN: Yes, Fernald and
11 Mallinckrodt. I don't know if we actually
12 intend to fill that in until it's needed.

13 MR. THURBER: Again, if you revise
14 the document, you might say that.

15 MR. ALLEN: Yes.

16 CHAIRMAN ANDERSON: Well, yes, I
17 mean if you're saying it's under development
18 but it isn't, you could simply change that to
19 say, do you recognize this is an issue but up
20 to this point, it doesn't seem to be a generic
21 assessment that's needed.

22 MR. THURBER: Perfect.

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1 CHAIRMAN ANDERSON: That way, it
2 would lay it to rest.

3 MR. ALLEN: If we were to revise
4 the document.

5 CHAIRMAN ANDERSON: Again, if it
6 says it's under development and you say well,
7 yes, we are working hard on it, we don't need
8 it, but we don't need it, we don't need it.
9 Okay.

10 MR. THURBER: Observation three
11 relates to ore handling and radon exposures
12 and that's been addressed.

13 DR. MAURO: That's like a radon
14 problem. Radium-226 and thorium-230 go away if
15 you don't have water.

16 MR. THURBER: Okay.

17 CHAIRMAN ANDERSON: So --

18 MR. KATZ: It's a non-issue.

19 CHAIRMAN ANDERSON: We need to
20 state up front though, that these facilities
21 don't contain these?

22 DR. MAURO: No, this TBD --

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1 MR. THURBER: This document doesn't
2 cover --

3 DR. MAURO: Doesn't cover that.

4 MR. THURBER: Doesn't cover floor
5 handling.

6 MR. KATZ: That's handled in the
7 finding one, already handled by the finding
8 three decision.

9 CHAIRMAN ANDERSON: Yes.

10 MR. ALLEN: There's some action
11 necessary but it's covered in the finding.

12 DR. NETON: I frankly wonder if
13 there is a little more than that, though.

14 MR. KATZ: This is handled by that.

15 DR. NETON: It is, but maybe these
16 could be like, marked held in abeyance until
17 the document is revised to state that.

18 MR. ALLEN: Well, they're covered
19 under finding one and two and --

20 DR. MAURO: That's what I was
21 saying earlier.

22 MR. ALLEN: Where, you know, we

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1 just need to go on without that.

2 DR. NETON: Well, what I'm saying
3 is that these can be specifically closed right
4 now, if we just say we are going to revise the
5 documents and say it's not applicable. But you
6 can't close finding one just by saying that.
7 That's my point.

8 DR. MAURO: Oh, okay, I see what
9 you are saying.

10 MR. THURBER: No, I understand.

11 MR. ALLEN: What is the process on
12 observations? Are we closing these? Are we
13 treating them like findings or are they just
14 noted?

15 MR. THURBER: I think some of these
16 require some action as we'll see.

17 DR. MAURO: In the past, some of
18 our authors feel that it's important to
19 separate things that we really think that are
20 important from things that are less important.
21 I think even though something might in the
22 author's judgment

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1 be designated as an observation, I would not
2 automatically say that this need does not to
3 be addressed.

4 In fact, when I was looking at
5 these observations, some of them I would have
6 called findings. So I think that though they
7 have been categorized, some clearly are
8 observations that are really not that
9 important and in fact we have a whole section
10 where we found typos and inconsistencies, all
11 of which have to be cleaned up, so, house
12 cleaning.

13 But I think some of these, I
14 wouldn't discount some of these yet so I would
15 like to go through the observations.

16 CHAIRMAN ANDERSON: Yes, I want to
17 go through them --

18 DR. MAURO: And they need to be
19 addressed.

20 CHAIRMAN ANDERSON: I'm also
21 thinking in terms of the rest of the Board,
22 when we come back to them they are going to

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1 have this matrix and somebody is going to say,
2 well, what about this?

3 So somehow we need to have at
4 least a mention in here that, you know,
5 observation three, that because this, 6001
6 address doesn't address ores that contain or
7 processes that --

8 DR. MAURO: Let me ask you, when we
9 reissue this matrix, there's a column called
10 "NIOSH initial" -- the next column over you
11 see is the response. Basically we deferred the
12 response.

13 CHAIRMAN ANDERSON: Yes.

14 DR. MAURO: Are you folks going to
15 fill that in?

16 MEMBER FIELD: Yes, we'll fill that
17 in.

18 MR. ALLEN: Yes, we can, I was just
19 having a hard time with that very first
20 finding on the, telling you this was, ore was
21 not associated with it, to address these is
22 more of a big White Paper rather than a

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1 paragraph or a sentence and --

2 DR. MAURO: Well, I can see on the
3 radon and the thorium-230 and the radium-226,
4 simply say this issue is being addressed under
5 finding one.

6 MR. ALLEN: Yes, I think most of
7 the observations are going to be a one
8 sentence --

9 MR. KATZ: For finding one, in the
10 matrix, you can just write, "White Paper
11 addresses."

12 MR. THURBER: Yes. But recall now,
13 as Jim said, as we expanded our discussion on
14 finding one, we pointed out there were several
15 places that went beyond the ore question and
16 that's why, again, as Jim said, we shouldn't
17 pile a lot of these things into finding one. I
18 think a simple statement that TBD-6001 was not
19 intended address ore processing or something
20 to that effect, does that job.

21 DR. NETON: Because that way you
22 don't have to rely on closing finding one to

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1 close all these other things.

2 DR. MAURO: You could close this.

3 I understand what you are saying. I am fine
4 with that.

5 MR. THURBER: Absolutely.

6 Absolutely.

7 DR. MAURO: I'm fine with that.

8 CHAIRMAN ANDERSON: Okay, why don't
9 you --

10 DR. MAURO: Because of one item,
11 right.

12 MR. THURBER: Observation four
13 points out that there is no discussion of
14 handling recycled uranium or enriched uranium,
15 the ores we have already talked about. It
16 seems at a minimum there should be a statement
17 of intent that this is not intended to address
18 sites that handle recycled uranium or enriched
19 uranium or some provision as to how those
20 should be handled.

21 MR. ALLEN: Yes, it actually, there
22 actually is a table in there with the, on page

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1 five of the TBD that has the recycling,
2 recycled uranium components, plutonium,
3 neptunium, technetium et cetera. It says to
4 address those after 1952.

5 MR. THURBER: I missed it I'm
6 sorry. Yes, I mean it's, it should be, you
7 know, tell us that.

8 MR. ALLEN: I know. That part is in
9 there. The enriched uranium it doesn't
10 mention, and just like it needs to be revised
11 for -- but you know, make it clear that it
12 doesn't cover ore, I think it also needs to
13 mention that about the enriched uranium, I
14 think you're right on that one.

15 MR. THURBER: Good. Observation
16 five. The document says that you should use a
17 default air concentration of seven dpm per
18 cubic meter for non-operational areas.

19 That requires some further
20 discussion I think, because if you look at
21 some of the available data for clerical people
22 and others in the Mallinckrodt documents,

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1 you'll find that nurses and whatever are
2 exposed to higher levels than seven dpm per
3 cubic meter.

4 So it seems to me that either you
5 need to think a little bit more about whether
6 that is an appropriate default value, or
7 somehow explain what non-operational areas of
8 the plant are, or both.

9 MR. ALLEN: Yes. I am --

10 CHAIRMAN ANDERSON: Let the record
11 show he's nodding and shaking his head at the
12 same time.

13 MR. ALLEN: I understand the
14 comment. It's difficult in a generic basis to
15 address this kind of thing rather than site-
16 specific. I mean I'll come up with some sort
17 of response for this matrix at least but I'm
18 not clear where I go at this point.

19 MR. THURBER: Well, if there's, if
20 there's data that says that seven dpm per
21 cubic meter is not a good number, then you can
22 think about revisiting that number.

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1 CHAIRMAN ANDERSON: What's the
2 basis of the number?

3 MR. ALLEN: I don't know. I was
4 going to say I don't recall off the top off my
5 head.

6 MR. THURBER: It somehow is tied in
7 with one percent of 100 MAC or something like
8 that.

9 CHAIRMAN ANDERSON: But it isn't
10 based on measurements or anything?

11 MR. THURBER: No. It was based on -
12 -

13 DR. NETON: I think a lot of this
14 depends on what we define as a non-operational
15 area. Maybe that needs to be clarified.

16 MR. THURBER: Well, that's why I
17 say, that's a possibility and, but I did
18 notice somewhere that --

19 CHAIRMAN ANDERSON: So it's a
20 calculate --

21 MR. ALLEN: I mean, it gets
22 difficult --

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1 CHAIRMAN ANDERSON: You could call
2 it a bottled number.

3 MR. ALLEN: I mean, when you're
4 having a hard time with them sampling
5 operational areas and you know they are not
6 sampling all of them. You can see there's not
7 a lot of data for office buildings and that
8 sort of thing.

9 DR. MAURO: These rules of thumb,
10 we run into this seven dpm per cubic meter and
11 on a number of occasions we have seen it as
12 being, we are going to assign this -- and
13 their rationale originally, as I recall, was
14 that, there was an observation that when you
15 were measuring numbers in an operational area,
16 then you went off some place where there
17 wasn't an operational area, in general the
18 concentrations in the non-operational area are
19 about one percent of the concentrations in the
20 operational area.

21 Now, the implications being that
22 operational areas in these kinds of facilities

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1 typically have 700 dpm per cubic meter. So,
2 therefore seven dpm per cubic meter is
3 probably a good number for a non-operational
4 area.

5 So I think there are two aspects
6 to this issue. One is, is 700 a good number to
7 represent a bounding concentration for an
8 operational area at these classes of
9 facilities, and yes, we agree that the one
10 percent, because we see the data, that yes, on
11 many occasions we see non-operational areas
12 are much, much lower than operational areas
13 and the issue becomes, all right, from an
14 implementation point of view, you have got to
15 be careful when you do that.

16 And Bill, you gave lots of,
17 several examples on page 20 of this report
18 where it shows that there are places where 175
19 dpm, per cubic meter, this was a dispensary at
20 a facility. Another location where some
21 numbers as high as 50 were observed.

22 Now, whether or not the average

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1 over the course of the year, which is what you
2 can do when you do these dose reconstructions,
3 or whether, you know, what do you, the 1.5 to
4 175 for example for the dispensary, were those
5 annual average or those individual
6 measurements? I'm not sure.

7 DR. NETON: Also, were those at a
8 facility that only processed uranium and not
9 uranium ore? That can make a big difference.

10 DR. MAURO: Yes, okay.

11 DR. NETON: We measured some short-
12 lived daughters in there --

13 DR. MAURO: And I will be the first to
14 admit I'm not --

15 DR. NETON: I would be surprised if
16 it would be several MAC --

17 DR. MAURO: I understand but when
18 you see these numbers track --

19 DR. NETON: If you get airborne
20 though, I mean, this sounds to be --

21 DR. MAURO: I would, again, this
22 is, I would agree, the fact that you went into

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1 a dispensary and at one point in time picked
2 up 175 dpm per cubic meter in a given day,
3 that doesn't mean that's what you're going to
4 experience over the course of a year.

5 And I think that, you know, so if
6 you're go with the seven, you have got to make
7 your case a little stronger.

8 DR. NETON: I guess we are not
9 arguing, we just -- prepare some kind of
10 response.

11 DR. MAURO: And this crosses a lot
12 of sites, where I've seen this number at least
13 10 or 12 times.

14 DR. NETON: You have got to come up
15 with some kind of lower bound, I mean,
16 sometimes we have used like 10 percent of the
17 air concentration and one percent of the
18 actual value in the plant. But --

19 MR. ALLEN: Well, many of these
20 smaller sites, we don't have the information
21 to place somebody in an office versus an
22 operational area and you end up essentially

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1 putting everybody in the operational area.

2 DR. MAURO: You give them the big
3 one anyway.

4 MR. ALLEN: It's moot in most of
5 these facilities.

6 DR. NETON: We don't know whether
7 the secretary had walked through the plant.

8 CHAIRMAN ANDERSON: Yes, I mean,
9 the practical reality --

10 DR. MAURO: We don't use it.

11 CHAIRMAN ANDERSON: It would be
12 nice to know, when we argue over something
13 like previously has never been used, if this
14 is, if we are just kind of doing this for
15 completeness sake, well --

16 MR. ALLEN: Honestly, I think
17 that's the situation. I can't say as we had
18 actually ever used that number but it is
19 there.

20 CHAIRMAN ANDERSON: Okay.

21 MR. THURBER: Observation six. The
22 comment is that the document doesn't tell you

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1 how the doses are apportioned from between the
2 operators, laborers and supervisors and so
3 forth. Now, I presume that if you read on to
4 the next section of the document, it tells you
5 how it's done there, which was the section on
6 internal dose. So this is kind of perhaps kind
7 of a cheeky comment, but it's just one of
8 those things that makes the functionality of
9 TBD-6001 a little troublesome.

10 You know, you don't tell me,
11 anybody, a viewer, and this is a problem, some
12 of these are problems more for the reviewer
13 than the user. The information is not
14 provided.

15 MR. ALLEN: Well, not conveniently
16 anyway.

17 MR. THURBER: I mean, it's only
18 provided by inference, you know, you tell me
19 what you are going to do with the internal
20 dose.

21 DR. MAURO: When I was looking at
22 this, it seemed to me that how, the sorting

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1 of, we're going to, supervisors we are going
2 to assign this distribution, and laborers we
3 are going to assign this distribution. It
4 wasn't apparent how you got there from the
5 Christifano and Harris data, the data behind
6 that. How did you do it?

7 I mean I would like to be able to
8 go in and say, here's the 20,000 measurements.
9 I could reasonably sort them by people, say
10 okay, you know, 1,000 of them were people that
11 we could say were supervisors and we know
12 that, pull them out, then I could say and look
13 at that number, the numbers for the
14 supervisors that are in that 20,000
15 measurements and say, oh yes, that
16 distribution, that is a sign you can use for
17 supervisor, it looks pretty good. We can't do
18 that. Right now, we can't do that and I think
19 that's needed. That's the front end of the
20 problem that clearly goes towards this report.
21 And then of course the more difficult problem
22 is when you eventually use -- let's say it

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1 turns out that is good, let's say the numbers
2 you have picked for supervisors, the
3 distribution that's in there, the dust
4 loading, is -- you go back and you check it
5 and you find out yes, those are good numbers.

6 Then you have the headache of
7 saying all right, now I have a real site, I
8 know this guy worked at the site and he was a
9 supervisor, sometimes you have them, yes, he
10 was a supervisor. But we always run into this
11 situation. The name of a person's job, for any
12 given individual, is always troublesome
13 because we find out when we interview workers
14 that yes, I was a supervisor but I used to
15 spend my time all over the place.

16 And it almost becomes, when we do
17 -- I do a lot of dose reconstruction audits
18 and I see that they took a guy, looked at what
19 his job was and he described himself, and they
20 might drop him into a category when it's not
21 apparent that that's the most claimant
22 favorable assumption.

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1 So you know, that's the back-end
2 of the problem, that is, even if you have a
3 good distribution for supervisors, when you
4 get a real good case, do you use that or do
5 you say no, I'm just going to give this guy
6 the benefit of the doubt and assume that he
7 also, he might have been exposed to something
8 higher?

9 So I, this matrix, when it's time
10 to implement it, is a problem, especially if
11 you get a guy who ends up getting a 45 PoC and
12 the reason he got a 45 PoC is because you
13 assigned him as a supervisor and there's some
14 question of well, how do we know he always was
15 in that mode and maybe he spent a lot of time
16 someplace else. And this is not unusual. You
17 talk to these workers and you find out these
18 labels, these designations mean very little.

19 MR. THURBER: On that subject, I
20 would mention that TBD-6000 specifically says
21 if you have doubt as to what the worker's job
22 description was, use the maximum values and

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1 that is very good guidance and it would be
2 nice if that same kind of guidance was in TBD-
3 6001 to kind of clarify, demystify that
4 question.

5 MEMBER FIELD: That sounds like a
6 different issue though, I mean, it's like, it
7 sounds like you are sure but you question how
8 reliable that category is, versus you are not
9 very sure, I understand what you are saying
10 but it seems like two different issues.

11 CHAIRMAN ANDERSON: Well, I mean,
12 if this, as a generic guidance for surrogate
13 data, the question is, okay, now you are at a
14 facility where the guy -- it's a plant that
15 would be a 6001 and he says he's a laborer but
16 there's no data from the site. And now you are
17 going to go to 6001 and say he's a laborer, go
18 to the table and this is how we are going to
19 assign his exposure.

20 So really the question is, how
21 confident are you that a laborer in this
22 facility is the same as a laborer, I mean, you

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1 use the example of a supervisor, that's
2 probably more problematic because somebody
3 doesn't show, it's a small work force,
4 supervisor steps in because he knows all the
5 jobs, those kind of things, where once you are
6 a mechanic or you are a whatever, you are
7 shifting back and forth maybe not as much.

8 So, I mean, how confident are we
9 that the variability between what a laborer is
10 in one place versus another in a different
11 part the country, in different unions, all of
12 that. Is that something we can use or do we
13 need a default, let's say, that if you don't
14 have site-specific --

15 MR. ALLEN: I think people do get
16 kind of hung up over the titles in this thing.
17 But essentially what we try to do is the
18 operator is somebody that's routinely
19 operating with the material, or the equipment
20 that is containing the material; supervisor or
21 laborer is usually somebody that is routinely
22 in the area but not necessarily hands-on

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1 working with the material; the other --

2 CHAIRMAN ANDERSON: You will
3 probably need to then have a definition -- you
4 know that kind of a --

5 MR. ALLEN: Yes, I agree. I agree.

6 CHAIRMAN ANDERSON: Because I
7 think, I mean, when they say it to me, I tend
8 to place their job title into a union -- or
9 something more, you know, what you're saying,
10 it really isn't, you are looking at what the
11 work was and now you are, instead of having
12 everybody being unique, you are now saying
13 this person fits this work profile, this
14 exposure profile of a --

15 MR. ALLEN: Our dose reconstructors
16 are well aware of that. The term I always use,
17 the job title I always use is clerk. That can
18 mean anywhere from a payroll clerk in an
19 office building to a materials control and
20 accountability clerk that is stamping numbers
21 in uranium ingots.

22 So yes, we realize we have got to,

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1 we do do a telephone interview on the
2 individuals, as much information as we can get
3 there, from what we know of the site, and job
4 titles there, and we try to, you know, case-
5 by-case, put it all together and put them in
6 the right category. That's, I think, way off
7 the topic.

8 DR. MAURO: Our primary concern is
9 that we could not track the distributions for
10 supervisors, laborers and clerks, the data
11 distribution that is in the look-up table back
12 to the original 20,000 measurements and how
13 they were created, you know, like -- this is
14 what we could say, yes we looked at this.

15 Because one of the things we try
16 to do, especially when we are doing SEC-
17 related issues, I mean, you know, you are
18 saying, wait a minute, let's look at the data,
19 and right now, you know, that hasn't been done
20 and I think it's important.

21 This is the rock you are going to
22 stand on for many sites, at least five anyway,

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1 and we have to look, we have to see that data
2 and a case has to be made why that
3 distribution is the right distribution for a
4 person that you know was a supervisor. Whether
5 or not you are going to assign it to that
6 person, that's another question.

7 CHAIRMAN ANDERSON: Okay. So you
8 know --

9 MR. ALLEN: I think I know what the
10 question is.

11 CHAIRMAN ANDERSON: Whoever is
12 going to be next filling out the matrix, they
13 need to, you know, have we made what we want
14 clear enough for you? Okay.

15 MR. THURBER: Are we okay?

16 CHAIRMAN ANDERSON: Yes.

17 MR. THURBER: All right.
18 Observation seven. In using the Christifano
19 and Harris data, what NIOSH does is they take
20 the raw data by the various categories, like
21 denitration, and they convert the raw data to
22 an assumed log-normal distribution and they

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1 calculate the geometric mean and the geometric
2 standard deviation and the 95th percentile, if
3 it's appropriate, or whatever.

4 So for each of the data tables
5 which come, the raw data tables which come
6 directly from Christifano and Harris, NIOSH
7 prepares a companion table where they show the
8 log-normal statistics that they have derived
9 from the raw data.

10 One of the problems is that in
11 several cases, the tables show the geometric
12 standard deviation as less than one, which it
13 cannot be.

14 CHAIRMAN ANDERSON: Well, we don't
15 have statistician here, so -- we can't argue
16 with you on that.

17 MR. ALLEN: That would be a tough
18 argument anyway.

19 DR. NETON: It's a calculation
20 error.

21 CHAIRMAN ANDERSON: Or a typo.

22 MR. ALLEN: I think it's a typo. I

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1 am still digging into the numbers.

2 MR. THURBER: The observation
3 eight, as John mentioned, as we went through
4 this, we just as an aside made a list of typos
5 and fuzzy statements and things that might or
6 might not be helpful to NIOSH when and if they
7 do revise the document so I don't think that
8 requires any further discussion.

9 CHAIRMAN ANDERSON: What is the
10 process for fixing these kinds of things?

11 MR. ALLEN: Well, I mean, we can
12 revise the document, ideally we would settle
13 or come to a resolution on all the findings
14 and issues and revise it one time rather than
15 piecemeal put a whole bunch in there.

16 CHAIRMAN ANDERSON: I mean, when we
17 do it, not on this kind of a thing, you fix it
18 and now you put it up on your database as the
19 revised and give it a new number and it's not
20 as though you have to go through any kind of
21 real laborious approval and 17 sign-offs.

22 DR. NETON: Well, we have our

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1 review process but it's all internal.

2 CHAIRMAN ANDERSON: Okay.

3 DR. NETON: We don't submit these
4 for external review at this point. It's not
5 that difficult, it would be Revision 1 at this
6 time.

7 CHAIRMAN ANDERSON: Yes.

8 DR. NETON: And we keep the old
9 revisions so there's a paper trail. But we
10 would want to get some resolution on this
11 issue.

12 CHAIRMAN ANDERSON: I mean, at some
13 time, we'll have accumulated enough of these
14 that, you know, rather than wait for final
15 resolution, we got all of this stuff kind of
16 rolling around there.

17 DR. NETON: The good news here
18 though I think is not many dose
19 reconstructions, if any, have been done
20 against the findings that we are seeing.

21 CHAIRMAN ANDERSON: Well, that was
22 going to be my next question.

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1 DR. NETON: And that's the good
2 news, so when we revise it, we are probably
3 not going to have to go back and redo a lot of
4 dose reconstructions. That might not be true
5 100 percent, but I think it's true as far as I
6 can think.

7 CHAIRMAN ANDERSON: All right.
8 Moving right along.

9 MR. THURBER: All right.
10 Observation nine, we noted what appeared to us
11 to be a calculational error in calculating a
12 specific geometric standard deviation.

13 MR. ALLEN: I don't disagree. It
14 goes along with observation seven, there are
15 some typos or calculational errors.

16 MR. THURBER: Yes, and actually
17 there are a number of other ones and David and
18 I have discussed some of these and we will get
19 into a couple more of them but probably there
20 ought to be an audit of the data, the data
21 tables in general. As we have pointed out in
22 our review, we did not go in and look at every

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1 number in TBD-6001. We just did a few spot
2 checks and some of these observations are
3 really a result of things that we have been
4 doing since then we have tried to use it or
5 apply it to some other site-specific things.

6 DR. MAURO: I have to say that when
7 both Bill and I looked at this, we felt that
8 this document was rushed, that its errors, it
9 is not -- it is as if they tried to rush it
10 out real quick. Too many inconsistencies, too
11 many typos, we have a whole list, two pages of
12 it. And I think we could slow the train down,
13 take a look at this thing and clean it up.
14 This is not one of the better TBDs. There's a
15 lot of problems.

16 MEMBER FIELD: Can I ask you a
17 question? For the geometric standard
18 deviation, did you have data to figure out if
19 any of them are correct?

20 I am just curious if it is a
21 systematic error in whoever calculated the
22 GSDs or it's just anecdotal or just every now

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1 and then you see one. I just wonder if you
2 found any correct ones.

3 MR. ALLEN: They -- I have a
4 spreadsheet on what they used for most of the
5 -- actually, several spreadsheets and I am
6 missing pieces of the data here and pieces of
7 the data there and I am trying to get a hold
8 of the original author to --

9 MEMBER FIELD: That would be
10 interesting to see.

11 MR. ALLEN: Yes. Yes.

12 CHAIRMAN ANDERSON: But this is
13 three, four years old?

14 MR. ALLEN: Yes. If it was a
15 contractor who no longer works for us --

16 CHAIRMAN ANDERSON: You were
17 dealing with this two-and-a-half years ago and
18 probably took two years to put together so --
19 we are looking at history here at a time when
20 the program was rushed and hurrying.

21 MR. ALLEN: The effective date is
22 December `06.

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1 MR. THURBER: Procedurally, there
2 is a companion document which we mentioned
3 here called Strom 2006 or something, which is
4 a statistical compendium as how to apply log-
5 normal statistics or whatever to various
6 situations and presumably the authors of this
7 document used that compendium, which gives you
8 some straightforward cook-book procedures, if
9 you will, on how to calculate these statistics
10 from very limited data.

11 DR. NETON: This document is under
12 contract with Battelle.

13 MR. THURBER: Okay? Again, probably
14 a minor point, but some of the confusing
15 instructions that TBD-6001 provides, it says
16 in one sentence, it says, "Use the default
17 values above" and then in the next sentence it
18 says, "Don't use the default values above, use
19 ICRP 66."

20 And in looking further, we don't
21 think that ICRP 66 is the correct reference.
22 We think it should be ICRP 68.

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1 MR. ALLEN: Yes, I actually
2 remember that one. It was the first three or
3 four parameters are definitely 66 and then it
4 mentions the solubility at F1 value which then
5 comes from 68 and that is why somebody decided
6 you cannot say use defaults from 66 and
7 changed it to use the table above and
8 apparently didn't get a sentence deleted.

9 MR. THURBER: Anything further on
10 that?

11 CHAIRMAN ANDERSON: No. Pretty
12 straightforward.

13 MR. THURBER: Observation eleven, I
14 think we can pass on because that again
15 relates to the settling assumption, which, as
16 we have discussed earlier, has been resolved.

17 Observation twelve is virtually
18 the same as the previous observation, dealing
19 with the basis for the seven dpm per cubic
20 meter air exposure in non-operation areas. I
21 take it you covered that.

22 And observation thirteen.

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1 CHAIRMAN ANDERSON: So back to
2 seven, that's kind of a default value, but on
3 a site-specific basis? Would you use the
4 percentage issue or not?

5 I mean let's say you had a
6 facility where this is based on the 700 value
7 in an operational, now if you had one where
8 the operational value was 1,000, would you now
9 use the one percent increase from seven to 10
10 or would you only use the seven or is it at
11 all tied to any data at the site or is the 700
12 the max at all of these facilities?

13 MR. ALLEN: It's kind of the catch-
14 22 question, you know, if you have the data at
15 the site you generally don't use the default
16 values in here that we are talking about so
17 it's --

18 CHAIRMAN ANDERSON: Okay. But if
19 you had, I mean you wouldn't have a non-
20 operational result typically in any facility,
21 so would you then use a percentage basis
22 thing?

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1 MR. ALLEN: Typically, we would use
2 some percentage of the operational value then.

3 DR. NETON: I just looked up the
4 pedigree of those values where they were high
5 and that was a Mallinckrodt value data which I
6 think are most suspect because of the radon.

7 There are hundreds of MAC radon
8 air, hundreds of picocuries per liter of radon
9 there and even if you are left with some decay
10 you are going to get some high concentrations.

11 CHAIRMAN ANDERSON: Okay, sorry.

12 MR. THURBER: No problem. Look the
13 final point, I'm sorry there's a typo, it
14 should refer to section 8.5.2, and section
15 8.5.2 deals with resuspension of dust when
16 operations are not going on, either they are
17 suspended between campaigns or after the
18 processing has been finished.

19 And the calculational approach in
20 that section is different from the
21 calculational approach in the prior section
22 3.4.2 in the same packet. And in part, it

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1 deals with the number of days that the
2 deposition occurs, it appears in the section
3 8.5.2 that the deposition occurred over some
4 strange number of days and to your earlier
5 section, it was over 365 days. So there's
6 something that seems amiss there.

7 MR. ALLEN: I didn't think that was
8 the case. I thought it was the starting air
9 concentrations that was the difference. I am
10 trying to look it up right now real quick
11 while I am reading. I thought they both used
12 365 days. Yes, I would also, rather than bore
13 everybody here I need to respond to this
14 particular point.

15 DR. MAURO: It is what it is.

16 MR. THURBER: And I would, I note
17 that the same information is included in
18 section 8.3 as in 8.5.2. This is the
19 duplication one.

20 MR. ALLEN: Yes, I agree, I mean --

21 MR. THURBER: Okay I think that
22 covers our comments on TBD-6001 except for

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1 this other story on the transparency problem.

2 DR. MAURO: The Hooker example?

3 MR. THURBER: Yes, the Hooker
4 example. Do we want to go on to that or --

5 CHAIRMAN ANDERSON: Do you want to
6 go back now to that one? Yes, I would like to
7 kind of finish up on the 6001 and then decide
8 on what our next steps are, all right? One is
9 going to be in a time line of, you are going
10 to put in the responses, there's going to be a
11 White Paper. Those seem to be the main --

12 MR. ALLEN: Yes.

13 CHAIRMAN ANDERSON: Most of the
14 responses are -- the next step will be to
15 close those out.

16 MR. ALLEN: Yes and then we can
17 probably start closing things out, narrow it
18 down to --

19 CHAIRMAN ANDERSON: It seems that
20 finding one is where we may have to have some
21 more discussion. But we'll see on that.

22 MR. ALLEN: Do you have any

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1 objection to a comfort break at this point?

2 CHAIRMAN ANDERSON: Oh, well, how
3 much time do we think this next, to go back,
4 and --

5 MR. THURBER: Fifteen minutes.

6 CHAIRMAN ANDERSON: Okay, let's
7 take a quick --

8 MR. KATZ: Five-minute comfort
9 break?

10 CHAIRMAN ANDERSON: Break, I would
11 say, then break for lunch before we --

12 MR. KATZ: Twenty of? Twenty of, we
13 will be back?

14 CHAIRMAN ANDERSON: Yes.

15 (Whereupon, the above-entitled
16 matter went off the record at 11:34 a.m. and
17 resumed at 11:42 a.m.)

18 CHAIRMAN ANDERSON: I think we lost
19 Mark.

20 MR. THURBER: What I would like to
21 do is give you of a real world example, if you
22 will, of how TBD-6001 is used for a specific

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1 site and in this case it's Hooker Chemical. We
2 were recently tasked by the Board to do a
3 review of Hooker Chemical. The review is in
4 progress so I am not going to comment
5 particularly on the review but I wanted to
6 give you an example of how it interplays with
7 the TBD-6001.

8 What went on at Hooker Chemical
9 was they received some uranium-bearing slags,
10 they treated the slag with hydrochloric acid
11 to increase the grade of the uranium from
12 about a pound per, I'm sorry, 0.2 percent up
13 to two percent, on that order.

14 So, and the reason they did that
15 at Hooker was that Hooker was engaged in some
16 other work for the AEC and they had some
17 excess hydrochloric acid and so they thought
18 it was a good way to use that excess acid.

19 The specific example I am going to
20 discuss is the external exposure during a
21 residual period and, in particular, the
22 exposure that a worker gets from standing on

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1 the contaminated surface that we talked about
2 earlier this morning.

3 And if you look at table AA-3 in
4 the Hooker Appendix, and I will show you an
5 excerpt from that table in just a second, you
6 see that the external exposure is 0.376
7 millirem per day per an operator and this is
8 based on the scrap recovery operation from
9 TBD-6001.

10 So, quickly, this is the excerpt
11 from, this is what you would see if you looked
12 at table AA-3 of Appendix A or a part of what
13 you would see and we are talking about, as I
14 say, an operator called in this case Plant
15 Floor High. The period is the residual period
16 from 1946 to '76, the whole body dose is 0.376
17 mR per day and we are referred to table 7.3 of
18 TBD-6001 and this is one of those big tables
19 that I mentioned earlier and said we would
20 come back to.

21 So let's go to table 7.3 of TBD-
22 6001. We have the scrap recovery operation.

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1 Again this is an excerpt from a very large
2 table. In this case, we are talking about the
3 operator, the external dose pathways that are
4 examined and you will see that this operator
5 is assigned that dose of 0.376 mR per day and
6 that's based -- and that is his median
7 exposure.

8 The assumed geometric standard
9 deviation is five. This is a standard
10 assumption that is provided in this other
11 document I mentioned earlier, prepared by
12 Battelle, Strom 2006. It is a default
13 assumption when you don't have enough data to
14 actually calculate the geometric standard
15 deviation from the log-normal distribution.

16 One of the things that is very
17 confusing is this table is, assumes a calendar
18 day and a lot of the data is reduced to a
19 calendar-day basis for the convenience of the
20 dose reconstructor. But the problem is that
21 TBD-6001 seldom tells you whether you are
22 talking about the work day or a calendar day

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1 so that adds to the difficulty in trying to
2 understand what the document is purporting to
3 tell you.

4 Here's what TBD-6001 says in terms
5 of, well, the question is where does this
6 number of 0.376 mR per calendar day come from?
7 And the guidance here in TBD-6001 says we use
8 the deposition velocity that we talked about
9 this morning, 7.5 times 10 to the minus four
10 meters per second. We allow it to deposit for
11 365 days and then we multiply that number by
12 the air concentration and then we get the
13 floor concentration in terms of dpm per square
14 meters.

15 So we need two things, then. We
16 need to know what the air concentration is and
17 we need to know what the dose conversion
18 factor is, and really it's the exposure
19 conversion factor because we are talking about
20 exposure in terms of mR per day and not dose
21 in terms of millirem per day.

22 So, and TBD-6001 says well, to do

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1 this, use the dose factors in table 6.1 of
2 TBD-6001. So let's look at what that -- oh, I
3 am sorry, we will come to that in a second.

4 First of all, let's talk about the
5 air concentration number. TBD-6001 doesn't
6 tell you where the air concentration came
7 from. I talked to David about this. He says
8 you go to table 8.23, which is the scrap
9 recovery table and you take the data for scrap
10 recovery operators and you average those
11 numbers and that's where you get the air
12 concentration.

13 Again, here's an excerpt from the
14 table in TBD-6001 and you can see that the
15 general area samples for the furnace area are
16 900 dpm per cubic meter and 200 dpm per cubic
17 meter. Those numbers were averaged with an
18 assumed geometric standard deviation of five.

19 The geometric mean of 151 dpm per
20 cubic meter was calculated and using that and
21 the deposition velocity, we get a value for
22 the floor concentration. Again, none of this

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1 is revealed in the document. You have to find
2 a helpful person like David to get to this
3 point.

4 Now, recall that the guidance we
5 looked at says, "Go to table 6.1 to find the
6 dose conversion factors." You go to table 6.1,
7 you will find the dose conversion factors are
8 in terms of millirem per day, not mR per day.

9 The dose conversion factors in
10 table 6.1 are based on seven dpm per cubic
11 meter, not the 151 dpm per cubic meter that we
12 calculated and the data in table 6.1 don't
13 tell you whether you are dealing with calendar
14 days or work days. So this is kind of useless.

15 So then we go further back into
16 the document and we go to table 3.10 to seek
17 out these exposure conversion factors. Table
18 3.10 gives us a conversion factor and of 5.6
19 times 10 to the minus 10 mR per day per dpm
20 per square centimeter, the surface
21 concentration.

22 We had independently, in our

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1 review of TBD-6000 commented on this
2 conversion factor and provided some
3 calculations that showed it was too low by, I
4 forget, do you remember John? A factor of two
5 or more?

6 Because it did not include
7 Bremsstrahlung nor did it include the direct
8 contribution from electrons, which would cause
9 exposure in the skin and other organs close to
10 the surface. So, that basic number has been
11 questioned elsewhere, so let's, but let's just
12 leave it at that for the moment.

13 Now, if you do the calculation,
14 then you find out that the exposure you
15 calculate is 0.002 mR per hour. And again, in
16 talking with David, David said well the
17 spreadsheet shows 0.2 mR per hour, a factor of
18 100 different and apparently there was an
19 error in the spreadsheet and, which is
20 propagated through the calculation.

21 So then what one needs to do is to
22 take this value, and we will stick with the

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1 0.2 mR per hour number, the number that is too
2 high by a factor of 100, and see how that gets
3 converted to this number of 0.376 mR per day.

4 So first thing we have to do is
5 convert it to exposure per calendar day and
6 for some reason, the calculation assumed that
7 there were 350 days in a year. You know, it's
8 not a big deal, is whether it's 365 or 350,
9 but it just leaves the whole thing kind of
10 suspect.

11 The second thing is that they then
12 took this number, 1.37 mR per calendar day and
13 said this is the geometric mean of a log-
14 normal distribution, which you will recall,
15 that we had already assumed that the original
16 data was for a log-normal distribution and so
17 it's not clear why you take a log-normal of a
18 log-normal, which obviously reduces the values
19 you are dealing with.

20 So, to summarize, TBD-6001 doesn't
21 contain enough information to trace the values
22 to the summary tables. There are errors in

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1 calculating the external exposure. It
2 incorrectly converts exposures to a calendar
3 day basis and for reasons not obvious, it then
4 takes a value which is based on a geometric
5 mean and further reduces it to another
6 geometric mean.

7 So that kind of summarizes some of
8 the practical problems that you get into when
9 you try to apply the TBD-6001 data to a site-
10 specific situation.

11 CHAIRMAN ANDERSON: Comments? It
12 seems to follow. I didn't quickly do all this
13 math to see if your math was off as well.

14 MR. THURBER: Yes, as I say, you
15 now, we could never have sorted this out at
16 all without David's help.

17 DR. MAURO: I mean that's the first
18 problem. The problem is we sit down and read
19 it and we can't figure it out so we call
20 David, and say can you help us out. So now we
21 understand -- problem one, is it shouldn't be
22 like that. The document should be complete

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1 enough that an independent reviewer should be
2 able to go through it and not say -- in fact
3 Bill called and he says, "John, I can't figure
4 out what they did."

5 And I said, "Well, you now, call
6 David." He says, well, you know, I don't know,
7 should we doing that? I say, call David, you
8 know, so we call, and because we, again --

9 CHAIRMAN ANDERSON: You block
10 caller IDs.

11 DR. MAURO: The funny thing is that
12 you know, we are allowed to get clarification.
13 The ground rule is that as long as we are not
14 resolving an issue and we just want to figure
15 out, please explain to us what you did here,
16 whereabouts did you do that, and we do that
17 and, but it shouldn't come to that.

18 You know, we are often in this
19 very uncomfortable position of saying, listen,
20 are we stupid, maybe we should be able to
21 figure this out. Why are we having so much
22 trouble figuring this out?

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1 And so, we keep digging to try to
2 figure it out, you know, and then two or three
3 days pass and we still can't figure it out and
4 I said listen, you know, if we could put a
5 couple of people on it for a couple of days
6 and we can't figure out what they did, this is
7 not our problem. It should not be that hard.

8 So we call and we get help. The
9 reality is it shouldn't be that way. It should
10 be something where another health physicist
11 with some experience should be able to figure
12 out what was done and David explained it to
13 us. Now, problem number one is just being
14 transparent, and maybe even put an attachment
15 to the report that walks you through this is
16 how we got the numbers.

17 The second problem of course is
18 once you've understood what was done, you
19 think it was done incorrectly. Well, we could
20 never have known that if we didn't call David
21 to find out what they did.

22 So we think that, you now, as

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1 applied to Hooker, and that this is -- now,
2 so, in a way it applies to TBD-6000 in terms
3 of being transparent. It also applies to TBD-
4 6000 in terms of we think there might be some
5 problems here in the numbers and they need to
6 be fixed, and of course it has some real-world
7 implications for Hooker, which is right now
8 before us as an SEC, what we are doing right
9 now.

10 So that becomes very important and
11 I guess this is the example. I think there's a
12 lot of problems with TBD-6001 that have to be
13 cleaned up so that another -- to get errors
14 corrected and once they're corrected, it
15 should be transparent, exactly what was done
16 so that another person can read it and check
17 the numbers and say yes, everything was okay.

18 MR. KATZ: Just for the record, you
19 should never spend a couple of days trying to
20 figure out what was -- get on the horn and
21 spare yourself two days of useless labor.

22 DR. MAURO: I agree.

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1 MR. KATZ: Even if it's useful at
2 the end it's two days wasted.

3 DR. MAURO: Well, let me take it a
4 step further and while we get a chance, let's
5 -- I call it a couch trip. When we are doing a
6 dose reconstruction audit, you folks haven't
7 seen these, but they are very, very
8 sophisticated.

9 They are at a point in the process
10 where some very sophisticated spreadsheets and
11 workbooks are being developed and it takes
12 quite a bit of time to get to the point where
13 we understand the mechanics and the rationale
14 behind these workbooks.

15 These are not self-evident and I
16 believe you folks probably have a pretty
17 extensive training program for your dose
18 reconstructors to get to the point where they
19 can function.

20 So the reality is, this is, it
21 does take time for independent reviewers to
22 figure out what is going on and very often you

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1 find out everything is fine.

2 But it is not always apparent what
3 was done and this goes, this is a longstanding
4 issue, is that when you guys are putting
5 together your products whereby your dose
6 reconstructors for example are giving
7 instructions on a spreadsheet or a workbook,
8 the product that is used, the degree to which
9 you can make it understandable to someone
10 independent, like us, so we can figure it out
11 and right now we are spending too much time
12 trying to figure things out.

13 This is one example where you're
14 right, we shouldn't have spent two days. But
15 it's not unusual for us to find ourselves in a
16 position of trying to understand what was done
17 here. We could certainly use a little help on
18 these products that come out, a little bit
19 more explanation so that, you know, we don't
20 have to call.

21 CHAIRMAN ANDERSON: Just kind of a
22 process question here. Is this kind of a, I

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1 mean, you went through it and found this
2 problem. Is this, is one of your risk
3 assessors, when they are doing this, or dose
4 reconstructors, would they have identified
5 this problem or are they more rotely going to
6 the, quickly going to a table, pulling out a
7 number, putting it into the formula and
8 calculating and not working this through?

9 MR. ALLEN: A dose reconstructor
10 normally wouldn't have seen this. They are
11 going to with the appendix that says to assign
12 this external dose per day and that is what
13 they are going to assign. I mean, if they are
14 curious and start digging into the basis they
15 might see an issue, but that's something
16 that's supposed to be caught during the review
17 of the documents.

18 CHAIRMAN ANDERSON: Yes. Because
19 I'm just wondering how much of this is because
20 6001 has not been really applied that much so
21 that a lot of these facets aren't picked up or
22 is it simply that now that we have, somebody

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1 really has gone through and reviewed it, we
2 are finding these and the question then,
3 really, as you raised, is you haven't done
4 this exhaustively for all of the tables so
5 what is your, what is the likelihood that this
6 is --

7 MR. ALLEN: This particular error
8 is essentially, is in the Hooker Appendix but
9 it's carried forward from TBD-6001 so somebody
10 reviewing the Hooker Appendix, you know,
11 probably went as far as to say, okay, yes,
12 that's the number that's in TBD-6001 and I
13 mean that would have been -- the review of
14 6001 is where that should have been caught but
15 that's the point where it was missed and it's
16 up to the reviewer. They could carry it back
17 further if they wanted to or they could stop
18 with an already-approved document, you know,
19 and saying that's where it came from.

20 DR. MAURO: But if TBD-6001 had an
21 appendix which held the reader's hand and
22 listed, this is where we can go right back

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1 through the original data, to the database of
2 20,000 measurements sitting someplace on the
3 site query database and it's explained that
4 they sorted the data into a spreadsheet, which
5 I'm sure they did, took the data and this is
6 what they did and just walk the reader -- and
7 what would happen if that type of description
8 is provided as an appendix, you would have
9 picked it up.

10 It's, you know, it would not have
11 gotten to the point where we have a product
12 out here that has some errors in it and
13 contradictions in it. So in a funny sort of
14 way, one of the things we find out when we are
15 writing our reports, when we are writing our
16 reports, we try to write it in a way that
17 someone could read, say, oh okay, and all the
18 calculations are there, and in the process of
19 writing it, you catch your errors. That's when
20 we catch our errors.

21 I think that in this case, this is
22 just a recommendation that if the final

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1 product contains a hand-holding description of
2 exactly how we got the numbers that are in
3 this report, the errors would have been caught
4 and they wouldn't have to come to here to be
5 caught.

6 CHAIRMAN ANDERSON: How many TBDs
7 are there?

8 DR. NETON: Lots.

9 CHAIRMAN ANDERSON: Well, I mean,
10 to go back, it seems to be pretty massive.

11 DR. NETON: Well, I think this
12 might, I am not going to say this is an
13 isolated example but TBD-6001, I think was
14 rocky. I will admit that. So, hopefully, you
15 know, this is not --

16 CHAIRMAN ANDERSON: So I guess --

17 DR. NETON: -- indicative of a
18 whole problem.

19 CHAIRMAN ANDERSON: I am looking
20 for some reassurance.

21 DR. NETON: We have been through an
22 in-depth review of many, many TBD documents.

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1 DR. MAURO: Oh, we've reviewed
2 hundreds, hundreds of procedures, you know,
3 literally hundreds of documents.

4 CHAIRMAN ANDERSON: So, is the, the
5 kind of the bottom line, is NIOSH going to go
6 back through this and do another internal
7 audit of all of this?

8 DR. NETON: We need to go back and
9 refine it.

10 DR. MAURO: Six thousand is much
11 better.

12 Well, 6000 is a simpler document
13 since you're only dealing with uranium
14 machining. In other words, this is a more
15 complex document. You've got all these
16 measurements that you're working with as, you
17 know, so this is a tougher nut to crack but it
18 shouldn't be that difficult for us to check
19 numbers and you know --

20 DR. NETON: And you look at what
21 happens here, I mean this is no excuse, but
22 you know you are getting down into what I call

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1 second-order dose assignments. You are talking
2 about 0.3 mR per day exposure, millirem per
3 day for a guy standing -- it doesn't make it
4 right that it's wrong, but I'm saying when you
5 get down into these --

6 CHAIRMAN ANDERSON: It's the
7 impact.

8 DR. NETON: -- the impact of these
9 very small, calculated doses, it doesn't make
10 it right but possibly the attention to detail
11 is not as great as if it is the big, big-
12 ticket exposure items and that is I think what
13 has happened here.

14 MR. ALLEN: And in all honesty,
15 with 6000 they were able to take the
16 description that, you know, what we can claim
17 we did, you know, run some numbers, verify
18 that, you know. It might not have had the
19 hand-holding as nice as you would want but you
20 can verify the numbers from the description
21 pretty much.

22 The reason they were not able to

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1 in 6001 was there was calculational errors
2 behind the scenes so you couldn't verify what
3 they were saying. So it'd kind of indicative
4 of this document not, you know, a systemic
5 problem or anything.

6 CHAIRMAN ANDERSON: But it does
7 seem to me, before we take up Hooker, this is
8 probably going to need to be redone, or --

9 DR. NETON: I am not sure, I mean,
10 Hooker is a very --

11 MR. ALLEN: It uses a very small
12 piece of this.

13 DR. NETON: I think you can sort of
14 investigate the little piece we use in some
15 detail and get your hands around it fairly
16 quickly.

17 CHAIRMAN ANDERSON: Okay, well I,
18 you know, I just --

19 DR. NETON: I would prefer not to
20 wait until we resolve all these issues that
21 are best taken up elsewhere.

22 CHAIRMAN ANDERSON: Well, I mean,

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1 that's kind of what my question is, is this
2 sufficiently, that you know, we go back to the
3 Board and somebody is going to raise, well,
4 gee, until you have done that we have got to -
5 - or, and then, or can we basically --

6 MR. THURBER: No. I don't think
7 that, from our perspective, we need to have
8 these questions answered. They are adequately
9 answered so that we understand them. As you
10 say Jim, this is peanuts in terms of exposure.
11 The question is how endemic the problem is
12 from a TBD-6001 perspective.

13 But in terms of what we need to do
14 for Hooker, I think we are okay with some, any
15 clarifications here.

16 CHAIRMAN ANDERSON: So that's all I
17 needed to hear.

18 DR. MAURO: The big issue on Hooker
19 is going to be Hooker uses TBD-6001 as a
20 surrogate. It's going to become a surrogate
21 data issue and the heart of the matter is
22 going to be, assuming that the numbers are

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1 corrected, you know, see, I look at this as
2 what I call a Site Profile issue. There's some
3 bad numbers in the report; we've got some
4 contradictory diagrams, all of which can be
5 fixed, right?

6 Now, the real question is going to
7 be, okay, once that's fixed, the question then
8 becomes all right, at Hooker, and you brought
9 this up before, at Hooker, let's say they used
10 this particular number or distribution from
11 TBD-6001 and we know what they did to get
12 that.

13 And then the question is going to
14 be, does that really, is that a good surrogate
15 for this particular guy or any particular area
16 at Hooker? And it becomes a surrogate data
17 issue that's going to -- and that's where the
18 SEC is going to comply.

19 In the end, the real, you know,
20 the judgment calls, and this is the tough one
21 and these are things that 16 Members of the
22 Board are going to say, whether or not -- does

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1 this represent a reasonable surrogate for the
2 guys that worked in Hooker or not?

3 And you know that's going to be a
4 difficult discussion to have but that's where
5 it's going to end up, you know. The technical
6 issues will be worked out. It's the judgment
7 issues that are going to be the tough ones.

8 CHAIRMAN ANDERSON: Okay, so next
9 steps on this.

10 MR. ALLEN: We owe responses on all
11 these -- I think I can get you some short
12 responses quickly and some others, we'll be
13 saying, this will be addressed in a White
14 Paper to come or I can wait until the whole
15 White Paper is done and it will be a little
16 longer.

17 CHAIRMAN ANDERSON: What, when we,
18 what kind of a time line, holding your feet to
19 the fire, when could, I mean a White Paper
20 seems to be something that is really going to
21 be helpful for us.

22 MR. ALLEN: Yes, I agree. I don't

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1 know if you wanted the one-word answers, you
2 know, the one-sentence, two-sentence answers
3 first or just wait for the whole, you know --

4 CHAIRMAN ANDERSON: While it's sort
5 of fresh in your mind I would like to try to
6 fill in short things --

7 MR. ALLEN: That's what I was
8 thinking.

9 CHAIRMAN ANDERSON: -- pretty
10 quickly then --

11 MR. ALLEN: That's what I would
12 like to do.

13 CHAIRMAN ANDERSON: I would like
14 to, by, you know, the meeting out in Idaho, be
15 able to at least report back when, what the
16 time line for the --

17 MR. ALLEN: Okay.

18 CHAIRMAN ANDERSON: I would think
19 by then we ought to have the short answers and
20 hopefully in time for you to look at them and
21 say, yes, well, it's kind of, we can look at
22 it and say, yes, that's what we remember and

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1 then what would be a time line for a White
2 Paper and I don't have a sense of how much
3 time and effort that will take.

4 MR. ALLEN: I don't think I have a
5 good sense on that at this point but I can
6 come up with short responses --

7 CHAIRMAN ANDERSON: Yes I would
8 like to hear some kind of a target date you
9 know, that we can begin to look at and again
10 as the surrogate issues, I would like to be
11 able to report back some confidence level on
12 the -- some of the 6001 components so we are
13 arguing more on the policy and the other
14 issues than we are, oh well, this is still you
15 know, I don't want to add any more uncertainty
16 to the picture than we need.

17 DR. NETON: Can you put the date in
18 the response, I mean, would a date for the
19 White Paper, would that be in the response?

20 MR. ALLEN: Yes, that's what I was
21 saying.

22 CHAIRMAN ANDERSON: Okay, that's

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1 fine.

2 MR. ALLEN: I can give you the
3 short responses --

4 CHAIRMAN ANDERSON: Yes. Great.
5 Yes. Good.

6 MR. ALLEN: -- and in the email I
7 am sending those I will give you a target date
8 for White Papers.

9 DR. MAURO: And SC&A has no action
10 item, so we are clean, right? So the only
11 action item I guess, Ted, once that White
12 Paper is issued, are we authorized to move
13 immediately or do we wait until you authorize
14 it? So the action item on our end is when the
15 White Paper becomes available, we are
16 authorized to immediately go ahead and take a
17 look at it and get it back to you.

18 CHAIRMAN ANDERSON: And you will,
19 when you get the initial responses, you will
20 fill in the --

21 MR. KATZ: Updated matrix.

22 CHAIRMAN ANDERSON: Yes.

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1 MR. KATZ: There will be an updated
2 matrix.

3 DR. MAURO: The first cut at the
4 updated matrix is from the review folks.

5 MR. ALLEN: Yes, the short
6 responses will be in the, essentially in the -
7 -

8 DR. MAURO: And then we will look
9 at that.

10 MR. KATZ: Is your matrix a PDF or
11 a --

12 DR. NETON: It's in Excel, isn't
13 it?

14 (Simultaneous speaking.)

15 MR. KATZ: A lot of your stuff is
16 in PDF so you need to send it to them in a
17 writeable file form.

18 DR. MAURO: Can we get them to send
19 this -- this probably went out as a PDF.

20 DR. NETON: But it's probably a
21 Word table.

22 DR. MAURO: Certainly we could send

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1 it out as a Word version.

2 MR. THURBER: Okay, well, I am
3 sorry, what do you want?

4 MR. KATZ: So, SC&A's item is just to
5 send a writeable file.

6 MR. THURBER: A Word version of
7 that.

8 (Simultaneous speaking.)

9 CHAIRMAN ANDERSON: Well, and there
10 were a few typos which you identified too.

11 (Simultaneous speaking.)

12 DR. MAURO: Don't worry about it,
13 Bill, they got it in Word.

14 MR. THURBER: Well, we will, in due
15 course we will fix those typos.

16 DR. NETON: I mean normally I
17 understand most people send PDFs because then
18 you don't want people to start changing things
19 around.

20 DR. MAURO: Right, but not in this
21 case.

22 CHAIRMAN ANDERSON: Okay, do we

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1 have anything else on overview 6001? Shall we
2 take a lunch break and hustle back and then we
3 can hopefully get through the other two, at
4 least the start of it? How much --

5 MR. KATZ: Normally --

6 CHAIRMAN ANDERSON: I suppose this
7 is where we eat. We could take the van over to
8 the airport and eat at the airport, I suppose,
9 otherwise. What is your plan?

10 MR. KATZ: Normally, we take an
11 hour break.

12 CHAIRMAN ANDERSON: Okay. I have
13 got to check out anyway.

14 MR. KATZ: So it's 12:15 now, we'll
15 break until 1:15 and then reconnect the phone.

16 CHAIRMAN ANDERSON: Anyone on the
17 phone?

18 DR. NETON: Mark is.

19 DR. BEHLING: Yes, we are still on
20 the phone.

21 CHAIRMAN ANDERSON: Okay.

22 MR. KATZ: Okay so we will back at

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1 1:15.

2 CHAIRMAN ANDERSON: Be back at

3 1:15.

4 DR. BEHLING: Thank you.

5 MR. KATZ: Thank you for hanging in
6 there.

7 (Whereupon, the above-entitled
8 matter went off the record at 12:14 p.m. and
9 resumed at 1:16 p.m.)

10

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1 A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

2 (1:16 p.m.)

3 MR. KATZ: This is the TBD-6001
4 Work Group. We are just reconvening after a
5 lunch break. Let me check on the line and see
6 if we have Mark Griffon back.

7 MEMBER GRIFFON: Yes, I am here,
8 Ted.

9 MR. KATZ: Great. And then we can
10 proceed. I think we are ready to address
11 Electro Met.

12 CHAIRMAN ANDERSON: Yes.

13 MR. KATZ: So first on the agenda
14 is a brief presentation by DCAS, by Sam Glover
15 of the evaluation and petition.

16 DR. GLOVER: Does everybody have a
17 copy of the Evaluation Report or -- it's a
18 little different format than we have done in
19 the past so it's sort of presenting the piece
20 so --

21 CHAIRMAN ANDERSON: All I have is
22 the --

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1 DR. GLOVER: You have the ER, do
2 you have the presentation that we gave? I
3 don't have the detailed --

4 CHAIRMAN ANDERSON: No.

5 DR. GLOVER: -- from you guys.

6 MR. KATZ: You don't have to re-
7 present it in its entirety the way you would
8 have for the Board, but just to refresh
9 everybody.

10 DR. GLOVER: Sure.

11 MR. KATZ: And get the ball
12 rolling.

13 DR. GLOVER: Let me just pull it
14 up, though, because that is probably the
15 simplest thing, to start where we left it at
16 in 2009 when we presented it to the Board.

17 So this has not been taken up in
18 front of the Committee yet, right? You got to
19 realize, I picked this site up after it was
20 initially presented so this is new to --

21 MR. KATZ: This Work Group has not
22 met before --

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1 DR. GLOVER: This is brand new.

2 MR. KATZ: This is brand new.

3 DR. GLOVER: October 2009, we
4 presented the Electro Metallurgical
5 Corporation SEC Report. We concluded that we
6 could do all aspects of dose at the facility.
7 Just very quickly, they began in 1943. SC&A
8 correctly points out we had some discrepancies
9 in some start dates but in the very beginning
10 the MED, the Manhattan Engineer District, they
11 began producing uranium metal and so they ran
12 through 53 intermittently, basically going
13 from uranium tetrafluoride to uranium metal
14 using a thermal reduction process that was
15 done, I believe, at Iowa. Is it Iowa? What's
16 that? Iowa State. Yes. Ames. Yes. It was
17 developed there.

18 So it was basically a single
19 facility that was carved out by the AEC to
20 produce it all. It sounds like there was some
21 preparatory work that may have been done at
22 some other facilities ahead of that. They

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1 have gone through a series of successions.
2 They were acquired by Union Carbide. They had
3 a couple of stand-by periods. Essentially, we
4 concluded they only had one uranium, one
5 nuclear component which was uranium but SC&A
6 had some other concerns that they identified.

7 The petition was started on
8 November 17, 2008. We qualified it in March of
9 2009 and we issued the report July 23, 2009.
10 The proposed Class was all workers that worked
11 in any area of Electro Met from August 13,
12 1942 through December 31, 53.

13 We evaluated the Class from April
14 1, 43 through June 30, 53, in part I believe
15 based on our premise that work did not
16 actually start there until April 1, 1943.

17 I won't go through all the
18 different sources of information other than to
19 say that we have continued to conduct searches
20 of the facilities, including -- we have been
21 working quite a bit with the Army Corps of
22 Engineers, so we have gone up there and

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1 conducted site research for all AWE facilities
2 up there.

3 We have also realized that Hanford
4 had not queried their full data sets,
5 databases and so we searched on Electro Met
6 and all other AWE facilities that we have
7 active and so we have even some classified
8 reviews and some documents and I have shared
9 those with Kathy Robertson so she has a
10 complete listing of all of our Hanford terms
11 that were searched. So those are in the
12 process.

13 And also, as you guys participated
14 in NARA, the National Archives, there have
15 been a lot of ongoing data access, data
16 retrieval.

17 So just to give you an idea of the
18 number of claims for the site, we have 98
19 claims. This is back on August 1, 2009.
20 Ninety-two of those were completed for dose
21 reconstruction; 44 percent of with a PoC
22 greater than 50 percent.

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1 So the petition basis was that a
2 few workers were monitored for external
3 exposure and also the efficacy of the health
4 protection and industrial hygiene programs.

5 It was evaluated. Our evaluation
6 concluded that they intermittently monitored
7 workers. They did issue some dosimeters in 44
8 and then later, 48 through 49, for which we
9 have results, and we only limited bioassay
10 from 44 and 49.

11 Now we did have breathing zone and
12 area monitoring from 44 and 47 through 49 and
13 we had basically production processes. Now we
14 concluded that the production processes were
15 essentially the same for the entire MED in AEC
16 period when we did this report. There are
17 clearly documents in the thing that, in the
18 SRDB, that we have that mention that health --
19 that changes were done to the health
20 practices.

21 So we made a conclusion here that
22 the production processes hadn't changed. So

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1 that was the basis for how we did our review.
2 We know that they were exposed to extremely
3 high levels of internal -- there were some
4 very high -- very high air concentration data
5 from 1948. And it is not replicated in the
6 earlier time frames, way back 600 MAC air.
7 These are near 800, 900 MAC I think, very
8 large, very very high.

9 And the, basically, personal
10 protection was, as we all agree, that it was
11 much less than modern standards.

12 We conducted a number of sample
13 dose reconstructions. The basis for these is
14 that we essentially used the highest operating
15 conditions for the worst-case person in 48
16 through the whole time frame.

17 And so we generated very, very,
18 very high dose assessments for all the people
19 who were evaluated and so the dose
20 reconstructions are available to you guys but
21 let's see if they summarized them on this
22 piece here.

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1 Even if you look at the external
2 photon dose to the skin, it's 25 rem, 126 rem
3 electron, X-rays are almost -- are very small:
4 15 rem of dose, rem from uranium, this would
5 just be from the external standpoints. So very
6 high doses are used to evaluate it. Not that
7 very high is meaningful but I'm just trying to
8 give you guys a feel for the magnitude of
9 doses that were used at Electro Met.

10 I am trying to see if we have the
11 internal; from 43 to 53, we used 60,000 dpm
12 per day intakes during operational periods and
13 473 dpm per day for stand-by periods. In
14 addition we used an ingestion of 1,178 dpm per
15 day of natural uranium.

16 So obviously with those kinds of
17 intakes, respiratory tract cancers, unless
18 it's something, you know, unless it's a
19 latency issue, are going to be almost always
20 paid.

21 So, but very, very large intakes.
22 However they also had very -- they had some

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1 potential during the reduction operations for
2 some very large airborne measurements that
3 were taken. So anyway, based on our -- our
4 feasibility conclusion was that we can do
5 internal, gamma, beta, neutron and medical X-
6 rays. That's where we left the report and
7 hopefully that's at least a little bit of an
8 overview and a kick-off.

9 CHAIRMAN ANDERSON: How many staff
10 -- you said you really only had measurements
11 from 44 and 48, is that it?

12 DR. GLOVER: There are, let's see,
13 I would have to pull up the specifics in the
14 report but it's --

15 CHAIRMAN ANDERSON: How many
16 samples do they have?

17 DR. GLOVER: You mean for bioassay
18 or for -- well actually the SC&A summarized
19 that on table one. I'll just go ahead and use
20 theirs because it's readily available right to
21 me.

22 For bioassay, for air samples what

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1 do you need? What are you asking me?

2 CHAIRMAN ANDERSON: It's just --

3 DR. GLOVER: Air samples --

4 CHAIRMAN ANDERSON: Just a sense of
5 what's --

6 DR. GLOVER: Let's see, they
7 mentioned having four air samples in 43, 15 in
8 44, less than 10 in 47, a much larger,
9 obviously, in 48 when the AEC begins
10 operations, with 154 in 48 and 215 in 49.

11 CHAIRMAN ANDERSON: In the SEC?

12 DR. GLOVER: The AEC taking over.

13 CHAIRMAN ANDERSON: Yes, I know, I
14 know, but I mean these, there, the SEC
15 petition ends when?

16 DR. GLOVER: Well, the building was
17 actually destroyed, or what do you want to
18 call it, it was removed. Let's see.

19 MR. THURBER: Fifty-seven, I think,
20 Sam.

21 DR. GLOVER: Fifty-seven?

22 MR. THURBER: I think that's when

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1 the demolition was done.

2 CHAIRMAN ANDERSON: Okay.

3 DR. GLOVER: So.

4 CHAIRMAN ANDERSON: I got you.

5 DR. GLOVER: Right, but the active
6 period was, I think 53 is when all of the
7 activity on site other than the demolition
8 would have --

9 CHAIRMAN ANDERSON: And how much
10 biomonitoring do you have?

11 DR. GLOVER: With the bioassay it
12 looks like we had 67 in 44 and nothing again
13 until 49. Now in our report, we only relied on
14 air monitoring data. We did not use the
15 bioassay to try to, we just took the air
16 monitoring data and ignored any application of
17 bioassay.

18 So that's where we came.

19 CHAIRMAN ANDERSON: Okay. Okay.
20 Shall we move on to the -- are there any other
21 questions you have?

22 MEMBER FIELD: Yes, what was the

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1 percent PoC again?

2 CHAIRMAN ANDERSON: Forty-four
3 percent.

4 DR. GLOVER: What do you mean, how
5 many were above 50 percent? Forty-four
6 percent.

7 CHAIRMAN ANDERSON: Which is higher
8 than the overall --

9 DR. MAURO: You used the type M,
10 type S, in other words, depending on the organ
11 of your intakes, in other words did you use
12 uranium intake, or did you automatically
13 assume it was all S, or --?

14 DR. GLOVER: It said S here. That
15 does not necessarily make sense but it
16 probably -- because, I mean --

17 CHAIRMAN ANDERSON: Is Mark on the
18 phone?

19 MR. KATZ: Mark is on the phone.

20 DR. GLOVER: I would have to
21 double-check to see what the reality is.
22 Usually we use the most claimant favorable --

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1 DR. MAURO: That's what I was
2 asking.

3 DR. GLOVER: We all -- and S is the
4 standard default. It said type S in the ER
5 evaluation. We always would have used the most
6 favorable version. So --

7 CHAIRMAN ANDERSON: Mark, do you
8 have any questions?

9 MEMBER GRIFFON: Not right now, no.

10 CHAIRMAN ANDERSON: Okay.

11 MEMBER FIELD: I just have one
12 question. You based it all on air monitoring,
13 is that what you said?

14 DR. GLOVER: At this time it was
15 all based on air monitoring, that is correct.

16 MEMBER FIELD: And you have
17 bioassay data. I just wonder if the bioassay
18 data would reflect what the air monitoring
19 showed. Would you have already looked at that?

20 DR. GLOVER: That is something that
21 I think NIOSH would -- partially because we
22 would have back-extrapolated from 1948 into

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1 the MED time frame. Tolerance levels and a
2 number of things that were already discussed
3 in TBD-6001, we need to see what --

4 So what we have done, just to give
5 you a bit of a -- I know SC&A is going to
6 provide a matrix on some of what they have
7 done. But we are going through everything, all
8 of the documents right now, all of the
9 material we have, and getting a comprehensive
10 listing of all of the data, external,
11 internal, bioassay, air monitoring, so we can
12 actually see, what do we have to fill in for
13 gaps and so that's where we are.

14 CHAIRMAN ANDERSON: Okay. You're
15 up.

16 MR. THURBER: All right. Let me
17 talk a little bit about what we understand to
18 be the physical situation of Electro Met.

19 Electro Met was a ferro-alloy
20 manufacturing plant. They made ferrochrome,
21 ferrosilicon, silico-manganese; products that
22 they sold to the steel industry which were

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1 used as alloy additions to make stainless
2 steel for example, ferrochrome, whatever.

3 So that was their business. This
4 business was done in large electric arc
5 furnaces. When they undertook their contract
6 with the Atomic Energy Commission, they built
7 a small facility in one corner called the Area
8 Plant and the Area Plant was basically where -
9 - well, the Area Plant was where all the
10 uranium production was done.

11 Now there may have been done some
12 work done in the laboratory. We'll get to
13 that. It was probably small, but -- so they
14 had this facility called the Area Plant, where
15 they did the operations that Sam described.
16 They got the green salt, the uranium
17 tetrafluoride from Linde, they mixed it with
18 magnesium, put it in a thermite reduction
19 bomb, converted it to uranium metal, cleaned
20 up the uranium metal, remelted it in a vacuum
21 induction furnace and shipped the finished
22 billets off to somebody else to be fabricated.

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1 So that was the operation that
2 they did there. One of the concerns that we
3 have, and it is reflected in finding one, is
4 really the definition of the exposure cohort.
5 You can see that, as Sam mentioned, the
6 exposure cohort was designated to be all of
7 the employees that worked at Electro Met.

8 And we think that this needs to be
9 examined further because there was a cadre
10 that worked in the Area Plant, based on the
11 interviews that we have conducted and some of
12 the documentation that NIOSH originally
13 uncovered, there was pretty significant
14 separation between the Area Plant and the
15 commercial facility.

16 There was a fence, it was guarded,
17 people had to have badges to get in and out.
18 There was some evidence that some maintenance
19 workers might come in a couple of days a
20 month, but it was basically a separate, self-
21 contained operation.

22 And so we think it is important to

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1 determine whether it is appropriate to
2 consider everybody at the plant as part of the
3 exposure cohort when most of them didn't work
4 in the Area Plant.

5 And so that is what this first
6 finding speaks to and I would note that if you
7 look at the original petition -- so there were
8 actually were two petitions made to consider
9 the possibility of a Special Exposure Cohort
10 for Electro Met, and one of the petitioners
11 said on behalf of her husband, I believe, that
12 it should cover the Area Plant.

13 The other petitioner said that it
14 should cover all of the employees at Electro
15 Met. The two petitions were merged by NIOSH
16 into a single petition which formed the basis
17 of their Petition Evaluation Report.

18 Now if you look at the information
19 available on the two petitioners, it's not
20 clear that either of the petitioners worked in
21 the Area Plant. In one case there is a letter
22 that was provided to the petitioner who I

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1 believe was the spouse of the deceased
2 employee from Union Carbide and it said, on
3 the basis of this -- what Union Carbide told
4 the woman -- on the basis of our employment
5 records, it looked like this man worked his
6 entire career at the carbon products division
7 of Union Carbide, which is a totally separate
8 thing even from Electro Met.

9 I mean Electro Met was a
10 subsidiary of Union Carbide, the carbon
11 products division was a subsidiary of Union
12 Carbide. Linde was a subsidiary, but their
13 records showed that this guy didn't even work
14 for Electro Met.

15 Now their records may be wrong.
16 I'm not saying that all corporations keep good
17 records, but that is the evidence that is
18 available.

19 With regard to the second
20 petitioner, if you look at the information
21 provided, it's clear that he worked for
22 Electro Met, it's reasonably clear that he did

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1 not work in the Area Plant. So I just offer
2 that as background.

3 But anyway, the stupid computer is
4 gone. I talked too long.

5 DR. GLOVER: It may be worthwhile
6 to just briefly discuss that because we
7 obviously don't set the covered facility. And
8 the Department of Labor, we can, if we find
9 things we can offer them, you know, what we
10 find. It's their job to determine if a person
11 is at this facility and right now if you go to
12 the covered facility, it says Electro Met
13 Corporation. Electro Metallurgical is the
14 facility that is covered.

15 So clearly there is a building
16 where this work was done at. We have
17 intermittent records, you know, as far as
18 occupational, we have to apply some kind of an
19 analysis as to what kind of dose these guys
20 could have received. So --

21 MR. KATZ: But you can specify, if
22 there are no radiological exposures, you can

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1 certainly, you don't have to define a Class
2 for individuals who have no radiological
3 exposure whatsoever, even if the covered
4 facility includes that.

5 So, I mean, as they are saying --

6 DR. GLOVER: There is no record
7 support that they have --

8 MR. KATZ: Whether they can
9 implement such a Class is a whole other
10 question --

11 MR. HINNEFELD: The issue would be
12 whether the Class could be administered.

13 MR. KATZ: Right.

14 MR. HINNEFELD: And absent evidence
15 that people were in one place or another.

16 MR. KATZ: Right.

17 MR. HINNEFELD: You know, if you
18 have maybe the security clearance records,
19 which apparently don't exist, they apparently
20 had a destruction schedule shorter than 50
21 years.

22 And so, ask them for some piece of

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1 information that would say this employee
2 worked in this part of the plant, all we get
3 is employment verification that they worked
4 somewhere then.

5 We don't know of any other record
6 that provides a more precise placement of the
7 employees. We don't know, we don't have a
8 segregation of the work force, a record of the
9 segregation of the work force that remain
10 today.

11 MR. THURBER: But isn't it true,
12 Stu, that there are records of who the
13 monitored employees that worked in the Area
14 Plant are, by name, by badge number?

15 MR. HINNEFELD: Well, there
16 probably are, but it's always a little tricky
17 from our standpoint to say that people who
18 were not monitored were not exposed. Yes,
19 there could have been, I mean, I would think
20 that people were assigned there all the time.
21 We have this discussion all the time. You
22 know, people who were assigned there all the

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1 time, well sure, they were probably monitored.
2 But what about maintenance craftsmen who
3 perhaps had the necessary requisites to get in
4 but they didn't monitor them.

5 I mean we don't have -- unless we
6 have the evidence of the monitoring program
7 being sufficiently robust, that they always
8 caught people, people were always monitored,
9 you know, we have really been hesitant to try
10 to delineate from that much, from monitored
11 versus un-monitored. Anyone want to help me
12 out here?

13 DR. NETON: I guess, I was
14 distracted here for a second but I am not sure
15 what the issue is. We are saying we can do
16 dose reconstructions.

17 DR. GLOVER: We didn't offer a
18 Class. The finding one, however, is that we
19 didn't confine, I guess, our --

20 CHAIRMAN ANDERSON: But your dose
21 reconstruction --

22 DR. NETON: But the point is that

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1 we are saying we can dose reconstructions in
2 the area where these exposures occurred.
3 Right? That's what we are saying? So it
4 doesn't really matter --

5 MR. THURBER: But no, you are
6 saying more than that. You are saying we can
7 do dose reconstructions for the entire Electro
8 Met facility.

9 DR. NETON: Right, and you are
10 saying the exposure only occurred in a certain
11 part of the facility.

12 MR. THURBER: Right. And we are
13 further saying that the access to that
14 facility was constrained by a fence and badges
15 and so forth.

16 DR. NETON: I mean, the question
17 here is, where the exposures occurred, can we
18 do those dose reconstructions with sufficient
19 accuracy. And I guess what you are saying is
20 we are assigning dose to everyone as if they
21 all worked in that facility and Stu just
22 chimed in, which was true, that this is very

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1 typical of our abilities to administer, to
2 define Classes.

3 We are hard-pressed, I don't think
4 we have ever been able to go back, with some
5 minor exceptions, and define Classes more
6 narrowly than the entire facility,
7 generically.

8 MR. KATZ: This almost, this
9 predates the Class. You are saying you are
10 doing dose reconstructions for individuals who
11 worked outside of the area where there were
12 radiological exposures. So you are saying you
13 couldn't even, in their interviews and so on,
14 place them in- or outside of the radiological
15 area?

16 DR. NETON: This is an issue at
17 General Electric Aircraft Engines at
18 Cincinnati, this is a huge 8,000-person
19 employer.

20 DR. GLOVER: Its exposure said in
21 1942. This is 70 years ago and since it was
22 classified --

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1 DR. NETON: Usually what happens is
2 you have people, workers will say, actually,
3 yes, they might have had access controls, but
4 as you already alluded to, maintenance staff
5 were common for those areas, they would go in
6 there, administrative support services would
7 go through those facilities. We typically end
8 up taking a very expansive view of this.

9 MR. THURBER: Well, I point it out
10 for the record, that's all, you know, I mean,
11 it is not in a sense a technical question, but
12 I think it's --

13 DR. NETON: Well, what I was trying
14 to get out of this is, were you trying to say
15 that, given that we don't know who went in
16 there, it should be a Class because we are
17 assigning these large doses to all members,
18 because I think would that be --

19 MR. THURBER: No.

20 DR. NETON: If that's not your
21 point then this --

22 MR. THURBER: No. I am not saying

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1 that. That's not the point at all. No.

2 CHAIRMAN ANDERSON: Is there
3 anything in the record that, when they did the
4 biomonitoring, was everybody --

5 DR. GLOVER: It was very small. I
6 mean, if you look at the --

7 CHAIRMAN ANDERSON: I mean, we had
8 67 people --

9 DR. GLOVER: In 1948, there were
10 1,156 external dosimetry results. There were
11 164 bioassay results. So, and you know, we
12 also, how do we know we have everything in
13 these records? We would have to have a record
14 to compare.

15 I don't know if we have ever gone
16 to Union Carbide and said, do you have a list
17 of people who only worked in that facility. I
18 would have to find that out. We would have to,
19 that would be the only way it could be more
20 restrictive. And the Department of Labor is
21 really responsible for putting them in the
22 building.

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1 MR. HINNEFELD: Well, the fact that
2 they were employed in the covered facility --

3 DR. GLOVER: In the covered
4 facility.

5 CHAIRMAN ANDERSON: The question is
6 --

7 MEMBER GRIFFON: Henry.

8 CHAIRMAN ANDERSON: -- if it comes,
9 is that --

10 MEMBER GRIFFON: I just wanted to
11 ask you a question for clarification.

12 CHAIRMAN ANDERSON: Go ahead.

13 MEMBER GRIFFON: Is this for 42
14 through 53 and is there another part from 53
15 to 59 or something like that?

16 DR. GLOVER: There is a shut-down
17 period from 1953 to 57.

18 MEMBER GRIFFON: Okay.

19 DR. GLOVER: That would be kind of
20 a residual contamination time frame.

21 MEMBER GRIFFON: So there was
22 another petition submitted for that later

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1 period, is that correct, or -- because I am
2 looking on the website. It looks like there
3 were two.

4 DR. GLOVER: I will pull up our
5 report. We actually would have described those
6 in the summary.

7 MEMBER GRIFFON: Okay.

8 MR. THURBER: Both petitions were
9 for the same period, I believe.

10 MEMBER GRIFFON: Oh they were? All
11 right.

12 MR. THURBER: I think so.

13 MEMBER GRIFFON: Maybe I am
14 misreading that. But it looked like two
15 petitions and it looked one went up to 1959.
16 The proposed covered period, anyway, by the
17 petitioner.

18 MR. THURBER: Yes, and I believe
19 that was modified.

20 MEMBER GRIFFON: Oh, okay. Okay.

21 MR. THURBER: But let me see if I
22 can be more precise about that.

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1 MEMBER GRIFFON: Because that
2 might, my other question would be, I guess, if
3 it's only going up to 53, it's pretty easy to
4 believe the assumption of no recycled uranium
5 issues or anything like that.

6 MR. THURBER: Yes.

7 MEMBER GRIFFON: If it goes to 59,
8 then I guess I was wondering -- but it sounds
9 like there were no, it wasn't operational; it
10 was residual period after 53.

11 MR. THURBER: And what actually
12 happened here is that the one petitioner who
13 originally proposed that it cover the period
14 from 1952 to 1959 but then NIOSH went back to
15 her and she agreed that it was acceptable to
16 change the covered period to be from 1942 to
17 1953.

18 MEMBER GRIFFON: Well what is the
19 covered period established by DOE?

20 MR. THURBER: That.

21 MEMBER GRIFFON: That is, okay, so
22 she had, yes, it wasn't really NIOSH

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1 determining that, it was, okay. Okay.

2 DR. GLOVER: The covered time
3 period is 1942 through 53. So that is all we
4 can evaluate.

5 MEMBER GRIFFON: Okay. And there
6 was no thorium work done at this site at all,
7 right, it was just --?

8 MR. THURBER: No.

9 MEMBER GRIFFON: Okay. All right.
10 Thank you.

11 MR. THURBER: Should we go on?

12 CHAIRMAN ANDERSON: Well, I mean,
13 what kind of an answer are we looking to, to
14 that first one?

15 DR. GLOVER: I think we can
16 summarize --

17 CHAIRMAN ANDERSON: Is finding one
18 an observation or is it a --

19 DR. NETON: No, I think we can
20 provide a response --

21 CHAIRMAN ANDERSON: Okay.

22 DR. NETON: -- which I think we all

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1 agreed to, is that this is a covered facility
2 and this is no way to apportion that --

3 CHAIRMAN ANDERSON: Yes. Yes.

4 DR. NETON: -- that work at
5 anything less than the whole facility.

6 MEMBER FIELD: At most, you could
7 probably ask DOL to ask if they have
8 information for who worked in that building.
9 Is that something that is part of the process?

10 DR. NETON: That would be the
11 process if we were deciding to add a Class,
12 but we are saying that we could do the work,
13 reconstruct exposures for all workers at the
14 plant, we could.

15 MR. ALLEN: One technicality on
16 this is it's labeled as a Department of Energy
17 facility and it only goes through 53 and that
18 usually means there's some proprietary
19 interest, which would be that Area Plant you
20 are talking about, the AEC built that plant or
21 owned, had some ownership in it, and with that
22 being the covered facility, I think that

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1 essentially means the Area Plant is the
2 covered facility.

3 So any claimants we are getting
4 technically, DOL has decided are part of that
5 Area Plant, not part of the commercial plant
6 that is adjacent to it, whether they are doing
7 this accurately or whether, you know, how they
8 are doing that, I don't know.

9 MR. THURBER: As they say, one
10 petitioner said the Area Plant, the other one
11 said Electro Met and when the petitions were
12 merged, it's my understanding that whoever
13 makes those decisions said that it will be the
14 entire Electro Met plant.

15 DR. GLOVER: I will commit to
16 clarifying the covered facility definition,
17 what they really are doing. How does that
18 sound? I will make sure we respond to that.

19 CHAIRMAN ANDERSON: I mean, the
20 issue, if there are so many workers that
21 weren't even exposed there but you are going
22 to -- it certainly could be viewed as claimant

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1 favorable, but certainly is not an accurate
2 reflection of what their exposure was for the
3 rest of Electro Met.

4 So you are way over.

5 DR. GLOVER: Only if I can put him
6 there.

7 CHAIRMAN ANDERSON: I know, but I
8 mean if the whole thing is, if you worked at
9 Electro Met, even in their commercial
10 facility, during this period of time, but they
11 weren't -- see, that, --

12 MR. KATZ: You are not estimating
13 those. You are not estimating doses beyond the
14 AEC doses. So that's not --

15 DR. NETON: Dave Allen's point is a
16 good one. By the time we get these, the
17 Department of Labor has determined they worked
18 at the covered facility. I mean, they worked
19 at an AEC facility. That's what they are
20 saying, and so that exposure is covered and so
21 we reconstructed the exposure for the AEC
22 period.

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1 CHAIRMAN ANDERSON: So you would
2 only, you would have to put them into the --

3 MR. KATZ: DOL is putting them in.
4 In effect, DOL is saying these people are part
5 of that building, even whether they are
6 accurately doing that or not, they are.

7 CHAIRMAN ANDERSON: And that
8 building is not in that whole commercial
9 plant.

10 MR. THURBER: No.

11 CHAIRMAN ANDERSON: That's where I
12 am confused.

13 MR. THURBER: Yes. If an employee
14 of Electro Met in this relevant time period
15 applies for compensation, NIOSH will do a does
16 reconstruction and decide on the basis of the
17 procedures here, the guidance that
18 the dose reconstructor uses, whether the man
19 is compensated or not, regardless of where he
20 worked within that facility. Is that correct,
21 Jim?

22 MR. HINNEFELD: Well, there's one

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1 step between their application and our dose
2 reconstruction, and that is that the
3 Department of Labor verifies that they were
4 employed at the covered facility. And so --
5 at the end the Department of Labor sends it to
6 us for dose reconstruction.

7 So what Dave's point was -- now,
8 let me, here I am talking again. Dave's point
9 was that this site is characterized as a DOE
10 site, not as an Atomic Weapons Employer. What
11 that means is that there was some piece of
12 Electro Met that the DOE built. I think the
13 contract even said they essentially had built
14 or AEC had built, or MED, for this purpose.

15 And so it was essentially their
16 building, their facility. And so
17 realistically, then, the people who worked in
18 the AEC part of Metallurgical are the ones who
19 are the covered employees. And so, by
20 extension, by the fact that it is in -- by
21 considering it a DOE site, then our conclusion
22 logically is that the Department of Labor, in

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1 verifying the employment of that person, has
2 essentially reached the decision that that
3 person worked in the DOE site of Electro Met.

4 Now, in reality, are they doing
5 that? I doubt it. I imagine they are writing
6 to Union Carbide, Union Carbide says, they
7 worked at Electro Metallurgical and that's all
8 we know. I don't know if that's the case or
9 not, but it, very often that is what happens.

10 So I mean, we can ask DOL what
11 they are getting, you know, what they are
12 asking for and what they are getting, we can
13 do things like that. But, you know, from our
14 standpoint, in terms of the logic of the law,
15 to the extent that there is logic in this law,
16 the logic of the law is that the decision has
17 been made, essentially, by the Department of
18 Labor that these people work in the DOE site
19 at Electro Met.

20 And so we can proceed with, you
21 know, we can, you know, it's to our advantage
22 to just say, okay, then we are doing the dose

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1 reconstruction. I mean, that's the logic of
2 the process.

3 MR. KATZ: Right. The only
4 distinction I would make to that though is
5 when it comes to an SEC petition, I think,
6 unless there's someone who has already been
7 through a dose reconstruction process, it
8 falls in our laps to determine that they are a
9 qualified petitioner.

10 MR. HINNEFELD: A qualified
11 petitioner.

12 MR. KATZ: Petitioner, right. So
13 that we would then have to verify that they
14 were employed by the proper AEC site. But if
15 they already came through the dose
16 reconstruction process and they are a
17 petitioner, we would assume that DOL had done
18 that.

19 MR. HINNEFELD: Okay.

20 DR. MAURO: But, if the definition
21 of the Class that's been qualified is Electro
22 Met, not the Area Plant but Electro Met, by

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1 definition, there is -- that's -- it's
2 presumed that if you -- because by definition
3 --

4 DR. NETON: But that's the
5 definition of facility. You can't qualify
6 anything else.

7 MR. HINNEFELD: All we did was --

8 DR. MAURO: And that is fine, I
9 mean, all we are doing is pointing out that
10 there's this very large facility with lots of
11 people where clearly, based on the research we
12 did, most of the people that worked at Electro
13 Met were not involved in any of this activity.

14 The degree to which that can be
15 demonstrated, proven to be, to the
16 satisfaction of, I guess, the Department of
17 Labor, but the best we can tell, this was a
18 very large facility involved primarily in
19 metallurgical, commercial activities. A very
20 small part of it was involved in this
21 particular area.

22 The way in which the Class is

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1 defined is Electro Met. So by definition, if
2 you just go by the Definition of the Class,
3 anyone that worked at Electro Met --

4 DR. NETON: Well there is no other
5 option to define the Class.

6 DR. MAURO: And that's fine. We
7 are just letting everyone know that we've got
8 the situation.

9 CHAIRMAN ANDERSON: And my point
10 being is if 90 percent of the people working
11 at Electro Met had no exposure, how reasonable
12 -- I mean we have to look at it, is
13 reasonable, are you --

14 DR. MAURO: That's the only reason
15 we bring it up.

16 CHAIRMAN ANDERSON: -- dose
17 reconstruction for those people. How, you
18 know, can you really dose reconstruct for
19 everybody at Electro Met?

20 MR. KATZ: This is becoming
21 circular. But, again, the facility definition
22 is actually just the DOE portion of that --

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1 Electro Met. That is the facility definition
2 is what I am hearing from David.

3 MR. HINNEFELD: Well, it depends
4 on whether you are choosing the words or
5 whether you are choosing the designation
6 category. The words say Electro Met.

7 CHAIRMAN ANDERSON: Yes.

8 MR. HINNEFELD: The designated
9 category says it's an AEC facility or DOE
10 facility. So it's, you know, that's where the
11 --

12 CHAIRMAN ANDERSON: I don't have
13 any problem --

14 MR. HINNEFELD: -- departing from.

15 CHAIRMAN ANDERSON: -- with the
16 facility where it was work. My concern is
17 when you now open the Class far broader than -
18 - and is what -- if DOE is saying it's just
19 the facility at Electro Met where they did,
20 where they owned the building, whatever it is,
21 that's quite different. Now how they, if they
22 qualify everybody regardless of where they

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1 worked, if their intent was just that
2 facility, then the dose reconstruction for
3 that facility --

4 MR. KATZ: What I am saying to you
5 is if this were an AWE facility, you would
6 then have concern because the entire facility
7 would be covered and you would have concern
8 about any radiological exposures anywhere in
9 the facility. In this case, because this is a
10 DOE facility, the only radiological exposures
11 that DCAS has to be concerned about are those
12 that occurred in the building of concern
13 because those are the only covered
14 radiological exposures.

15 MR. THURBER: In principle, but,
16 as Stu said, in practice, it's not happening.

17 MR. KATZ: No, but you are missing
18 my point. You are missing my point. The only
19 radiological exposures that have to be
20 reconstructed are the ones that occurred under
21 the AEC operation. That's the only
22 obligation.

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1 If people are pulled into the
2 Class because they worked elsewhere in Electro
3 Met by the way this is administered, it's not
4 a concern for DCAS because they only have to
5 accurately estimate with sufficient accuracy
6 the radiological exposures that are covered.
7 And those are the ones within the DOE
8 facility.

9 It's not -- it's a non-issue
10 whether they are capturing any other exposures
11 because they are not covered under EEOICPA.

12 CHAIRMAN ANDERSON: But you are
13 assigning exposures.

14 MR. KATZ: But that's not the --
15 they don't have to be accurate for any
16 exposure outside as long as they are capturing
17 the exposures within -- that are covered, it
18 does the job. And if DOL is funneling
19 individuals in that didn't work in that
20 building, that's not an issue for DCAS in
21 terms of estimating doses with sufficient
22 accuracy because they are not estimating any

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1 other doses.

2 CHAIRMAN ANDERSON: But is the
3 dose that you are estimating, based on your
4 assumptions, accurate?

5 MR. KATZ: If DOL is saying we
6 can't distinguish who worked inside the DOE
7 facility so we are going to funnel everybody
8 through this, that's sort of a given. You are
9 given this individual, you have to assume this
10 individual did work in the building because
11 DOL cannot distinguish. So that is just a
12 given assumption.

13 CHAIRMAN ANDERSON: Moving right
14 along --

15 MEMBER FIELD: Is the next step to
16 say you will clarify with DOL?

17 DR. GLOVER: I submit and I will
18 clarify --

19 MR. HINNEFELD: -- we can find out
20 what they are doing.

21 CHAIRMAN ANDERSON: I think that's
22 all, that's really all I want because it

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1 sounds like, you know, their intent is there,
2 which is really what we are after.

3 MR. KATZ: Just, my point is, you
4 could not -- the Board could not decide to
5 create an SEC Class for the individuals who
6 did not work in the building because these are
7 too high exposures because there is no
8 coverage, there's no other covered exposures
9 to have an SEC Class outside of the people who
10 worked in that building. There's no coverage.

11 You can't create an SEC Class for people who
12 aren't covered.

13 CHAIRMAN ANDERSON: Right.

14 MR. KATZ: Or for operations that
15 aren't covered. That's all I'm trying to say.

16 CHAIRMAN ANDERSON: Okay. Number
17 two. We are going to check.

18 MR. THURBER: We do the hardest
19 ones first. Okay. There is some evidence
20 that a limited amount of work may have been
21 done outside of the Area Plant, particularly
22 in the research laboratory.

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1 I suspect that the amount of work
2 was small, but I think it's important that
3 this aspect be addressed and it be
4 demonstrated that whatever went on in the
5 laboratory doesn't really affect the ability
6 to reconstruct the dosage, or it would change
7 them in any way. That's all. Second finding
8 in the process.

9 DR. GLOVER: I didn't re-read your
10 piece when I re-read that but, so, since we
11 just had a discussion of facilities, do you
12 mean outside the covered building?

13 MR. THURBER: Outside the Area
14 Plant. Everything is covered.

15 DR. GLOVER: Yes, well, outside
16 the Area Plant.

17 MR. THURBER: Outside the Area
18 Plant, yes, there's a research laboratory
19 right next door, and there's some evidence
20 that some work was done there prior to the
21 start-up of the Area Plant.

22 DR. GLOVER: That would not be a

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1 DOE facility, perhaps.

2 MR. KATZ: Not covered.

3 MR. ALLEN: You would have to go
4 to DOL and get them to recognize that as an
5 AWE.

6 DR. GLOVER: It would have to be a
7 separate designation.

8 MR. THURBER: Okay. Fine.

9 DR. GLOVER: I am not, I am just -
10 - okay, I just want, since we are clear, to
11 figure out, that's a, the finding two, I can -
12 - we can begin follow-up on that.

13 MR. THURBER: Yes. Sure.

14 CHAIRMAN ANDERSON: Did -- did
15 they know about it?

16 DR. GLOVER: Well, I saw some of
17 the things, we can look at that and see if
18 there's a reason, we can give them what
19 information; we do not create a covered
20 facility.

21 CHAIRMAN ANDERSON: Right.

22 DR. GLOVER: We can give them the

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1 evidence, and it's their choice.

2 CHAIRMAN ANDERSON: No, I mean, if
3 they are saying all of Electro Met, then it
4 would be covered. If they're not, it isn't,
5 that's really -- what would you do?

6 DR. GLOVER: Right.

7 CHAIRMAN ANDERSON: I assume you
8 haven't gotten any lab techs who have applied
9 yet, so they haven't made it through the
10 clearance site.

11 MR. HINNEFELD: I wouldn't
12 guarantee we didn't.

13 CHAIRMAN ANDERSON: Well, I mean,
14 if you did, then it would mean there's a
15 moderate likelihood, but moving right along.

16 MR. THURBER: Good.

17 CHAIRMAN ANDERSON: Go ahead.

18 MR. THURBER: Finding three is
19 kind of related. It says that there is some
20 evidence that a little work was done prior to
21 the start-up of the Area Plant. Was it
22 significant and does it change the start date?

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1 That's something that is given to you, you
2 know, we understand.

3 But, and on the other end of that,
4 there was no provision for residual exposure
5 in your Evaluation Report, and there was
6 several years, three or four years, I guess,
7 between the time that the AEC contract ended
8 and the building was demolished, so there is a
9 question of whether there was residual
10 exposure or not. And so that all ties in with
11 being sure that the --

12 DR. GLOVER: We could only do the
13 covered -- because DOL closes it in 1953, that
14 ends when we can actually legally evaluate it
15 so -- but anyway, that is why it had to be
16 terminated at that point.

17 MR. THURBER: Okay.

18 DR. GLOVER: But the start date I
19 think, you know, you mentioned the start date,
20 and I think we may have started in April of
21 '43, and there is discussion there about them
22 doing work before that in November of --

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1 MR. THURBER: In the fall,
2 November of `42,

3 DR. GLOVER: `42.

4 MR. THURBER: You know, that sort
5 of thing.

6 DR. MAURO: You lost me a little
7 bit. So you are saying by definition, any
8 exposure workers might have experienced after
9 the covered period are not going to be
10 included in the dose reconstruction?

11 DR. GLOVER: That is absolutely
12 correct.

13 MR. HINNEFELD: For a DOE facility
14 there is no residual aspect. The residual
15 contamination part of the law --

16 DR. MAURO: I've been spending too
17 much time working on AWES.

18 MR. HINNEFELD: -- applies to AWES

19 MR. THURBER: Okay. We kind of
20 talked a little bit about this finding four
21 this morning. And the basic assumption that
22 NIOSH made regarding their ability to

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1 reconstruct the doses was that even though
2 there was very little information prior to
3 1947 or 1948, that one was dealing with the
4 same process the entire period and so it was
5 not unreasonable to take the `47, `48-era data
6 and back-extrapolate that, if you will, to the
7 beginning of operations in 1943.

8 We provide a number of arguments
9 in our review paper that both support and
10 refute that position. One of the arguments is
11 cited here. There was a report from the AEC
12 to Congress, and it says that many changes
13 were made in the end of 1947 to improve the
14 process.

15 So if that is the case, is it
16 reasonable to say 1942 through `47 were the
17 same as `48 and on, and we think that that
18 point needs to be addressed more vigorously.
19 And we provide, as I say in our document, a
20 number of other arguments that speak to both
21 sides of that coin.

22 DR. GLOVER: I think we also

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1 agreed back-extrapolating in that time frame.

2 We are getting all the data together, as I
3 previously mentioned. We will look at how
4 bioassay affects our decision, how we best
5 move forward, maybe we compare that event to
6 the '48 data.

7 I will say that we are, I believe,
8 just off the top of my head -- 1,000 MAC
9 numbers which are near what we consider the
10 boundable, sustainable dust-loading from these
11 operations, I think. So, because we need to
12 look at all the different --

13 DR. NETON: I just talked to Sam,
14 we have some 1948 bioassay data, and one could
15 balance that against the intakes that were
16 projected back in the 1,000-MAC era and sort
17 of see if they make sense.

18 DR. GLOVER: If the same people
19 work.

20 DR. NETON: If you have the same
21 people working, if they had worked during the
22 -- early years.

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1 DR. GLOVER: We will certainly
2 pursue that.

3 MEMBER FIELD: The way I'm reading
4 this comment here, this second part, it sounds
5 like there are changes --

6 DR. GLOVER: Yes.

7 MEMBER FIELD: -- in, maybe, the
8 amount of bioassay or other factors, but it
9 doesn't look like process.

10 DR. GLOVER: It's unclear. They
11 said that they made a survey and they made
12 changes to the operations, if you read the
13 full text, so it's possible that there may be
14 some changes that occurred. I think most of
15 it -- I believe they perhaps did more
16 respiratory protection, and they, at a later
17 time they do begin speaking about making these
18 guys wear respirators in that bomb reduction
19 room. So --

20 MR. THURBER: And on the subject
21 of bioassays, we did an analysis in our review
22 paper where we compared the bioassays from

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1 1943 and, what was it, '48. Whichever, and we
2 couldn't show that they were statistically
3 different. So as I say, there are arguments
4 on both sides of the question as to the
5 reasonableness of this assumption.

6 CHAIRMAN ANDERSON: Why don't we
7 just look it over, make a decision.

8 DR. NETON: Thanks for helping
9 out.

10 (Laughter.)

11 CHAIRMAN ANDERSON: Which way do
12 you come down?

13 MR. THURBER: -- job description.

14 DR. GLOVER: We did not fully
15 scope that because we relied on late-term data
16 and back-extrapolated. We are now fully
17 scoping all the data and seeing what our best
18 options are to evaluate our path forward,
19 whether that's bioassay, whether that's -- so
20 we have captured new documents since we left
21 this so --

22 DR. NETON: Did you say there was

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1 documents at NARA that you picked up recently
2 or --

3 DR. GLOVER: There was NARA, there
4 was also, there are a number of new reports by
5 the, in the Buffalo Corps, so there's some new
6 -- there's like, just 50 or 60 that we have
7 seen just since -- I had Cheryl do a quick
8 search. There's other documents. There's
9 also some stuff at Hanford's. We want to make
10 sure that nothing in that affects our
11 decisions.

12 MR. THURBER: And we haven't
13 looked at any of that documentation either, or
14 not either, we haven't looked at that
15 documentation.

16 CHAIRMAN ANDERSON: When do you
17 expect this to be done?

18 DR. GLOVER: With the current
19 documents we have in house, I guess, I should
20 have a draft of what they put together by the
21 end of July --

22 CHAIRMAN ANDERSON: Okay.

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1 DR. GLOVER: -- early August. And
2 so we will if anything else comes with the
3 other documentation. So, in August, I think we
4 should have our hands around what data we
5 have.

6 CHAIRMAN ANDERSON: Great. Okay.

7 MR. THURBER: Finding number five
8 is minor. There is an inconsistency in the
9 report regarding whether there is some
10 available data for the stand-by period or not,
11 and there is some data, as we indicate here,
12 that should be, that should be tidied up in
13 the report.

14 MR. KATZ: So is that a
15 clarification that needs to be made in the
16 report, is that what you are saying?

17 MR. THURBER: Yes. It says
18 original stand-by data -- we provided a
19 reference, or we have cited the reference.
20 It's one that we, everybody has, of x, that's
21 the --

22 MR. KATZ: Thank you.

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1 MR. THURBER: Finding number six
2 speaks to basically a generic problem with
3 sampling, air sampling, as to whether it is
4 breathing zone samples, whether the device is
5 attached to a worker's lapel, whether it's a
6 general area sample away from the operation,
7 or whether it's a general area sample that is
8 quite close to the operation.

9 And in a lot of the sampling that
10 was done, we believe that the sampling was --
11 the fixed head samplers that were probably
12 fairly close to the operator but this -- it's
13 important that this point be addressed because
14 it does make a big difference.

15 DR. GLOVER: When we look at the
16 date we will certainly make sure if we are
17 using BZ process, GA --

18 DR. NETON: Were these the HASL,--

19 DR. GLOVER: Well, '43 would have
20 been military, some of those guys, so we did
21 have some HASL measurements, so it would be
22 time-dependent. We will make sure that we --

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1 we will make sure, and I'll -- we'll respond
2 to it, we will make sure we properly --

3 MR. THURBER: Because, you know,
4 some of the '48 measurements, as you say,
5 there is some very high measurements in the
6 green room where the workers were exposed to
7 the uranium -- where they are putting the bomb
8 together, the uranium tetrafluoride being
9 mixed with the magnesium, and that was
10 terribly high -- there were terribly high
11 exposures in that area.

12 It appears that a lot of those
13 samples were taken four-and-a-half feet off
14 the ground and presumably at a fixed-head
15 sampler and it is important to establish
16 whether that measurement is the kind of
17 exposure the worker actually got or not. I
18 think that's what kind of underlies that
19 finding.

20 CHAIRMAN ANDERSON: Yes. Okay.

21 MR. THURBER: Finding seven, you
22 know, relates to job titles and whether job

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1 titles really relate to job descriptions or
2 whether things were highly interchangeable,
3 and it is important to provide guidance that
4 if you, for example, if you don't know the job
5 descriptions, you assumed worst case or
6 whatever.

7 But it is a point that is not
8 adequately -- we didn't feel it was adequately
9 addressed within the Petition Evaluation
10 Report.

11 CHAIRMAN ANDERSON: Are you using
12 job titles though? I thought you were just
13 assigning everyone basically the same --

14 DR. GLOVER: I didn't think we
15 were --

16 CHAIRMAN ANDERSON: I didn't think
17 --

18 DR. GLOVER: -- we weren't trying
19 to break down this in my review. We were
20 using a pretty maximizing addition to -- I
21 won't say a maximizing addition -- we were
22 using -- because we couldn't put people in

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1 places, we took that exposure which represents
2 the 95th percentile or whatever, this is the
3 condition which would be bounding, and that's
4 what people were evaluated against.

5 DR. NETON: If you look at what
6 Sam said earlier, 90 claimants, if 44 of them
7 were over 50 percent PC. Clearly we haven't
8 been doing much in the way of triaging these
9 people by job title.

10 CHAIRMAN ANDERSON: But that -- if
11 it doesn't say that, that's a clarification
12 you can just --

13 MR. THURBER: In Appendix C, you
14 do provide job categories, so the answer is
15 that --

16 DR. GLOVER: Appendix C has some
17 information.

18 DR. NETON: We probably aren't
19 using the -- or --

20 MR. THURBER: And they may not be,
21 but it's a question that needs to be
22 addressed.

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1 DR. NETON: That's a good point.

2 MR. THURBER: Yes, what the dose
3 reconstructor does is different than what the
4 review talks about in some cases.

5 DR. GLOVER: We will verify
6 against what --

7 MR. THURBER: Okay. In doing our
8 review of the Electro Met exposures and -- we
9 found that the inhalation intakes were quite a
10 bit higher than those in the generic document,
11 TBD-6001, which then raises the question about
12 TBD-6001 as to whether those numbers are
13 appropriately conservative and claimant
14 favorable or not.

15 DR. MAURO: So this is more a
16 comment on TBD-6001 --

17 MR. THURBER: Yes.

18 DR. MAURO: -- than it is on
19 Electro Met.

20 MR. THURBER: Yes, it is.

21 CHAIRMAN ANDERSON: Yes, does 6001
22 represent all of the facilities when you have

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1 Electro Met --

2 DR. MAURO: It almost begs the
3 question, okay, if you are going to use TBD-
4 6001 and -- for some dose reconstructions at
5 another facility, I guess there has to be some
6 assurance that the conditions at this other
7 facility are not such that, yes, that you have
8 bounded it with 6001.

9 Clearly there are circumstances
10 when even TBD-6001, which is designed to be
11 bounding and trying to capture most AWE
12 facilities, may not capture most -- some AWE
13 facilities, and there's an example.

14 Obviously from this, if for some
15 reason, Electro Met did not have the data, and
16 you were going to assign a reconstructor --
17 you understand -- you would have missed the
18 dose. You would have underestimated the dose
19 for this person. So it goes toward TBD-6001.

20 MR. KATZ: So can we really re-
21 label this because this is really a finding
22 for the TBD-6001?

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1 MR. THURBER: And we say that in
2 the bottom line --

3 MR. KATZ: I just mean for future
4 tracking, we should really shift this over to
5 be a comment on 2001 TBD rather than Electro
6 Met comment, that's all.

7 DR. MAURO: Matrix.

8 MR. KATZ: So then David can knock
9 it off with his White Paper or whatever.

10 DR. GLOVER: How about we don't --
11 just don't re-number that because we can still
12 use the same finding numbers, and we don't --
13 but they just move somewhere else.

14 MR. KATZ: Sure.

15 DR. GLOVER: Not Sam's problem.

16 (Laughter.)

17 MR. THURBER: We will, that's the
18 initial response, this is moved to --

19 DR. MAURO: You transferred it. It
20 sounds like --

21 DR. GLOVER: Transferred it,
22 that's nice.

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1 MR. THURBER: Okay. Okay.
2 Finding ten. One of the problems that people
3 who were doing this bomb reduction experience
4 was it's almost uncontrolled explosion of the
5 bomb and a lot of contamination.

6 And so this was clearly an
7 important issue which was examined in the
8 Petition Evaluation Report. NIOSH concluded
9 that they had no evidence that these had
10 occurred at Electro Met. We looked at the
11 same information, we said yes, that's what it
12 says.

13 But we were troubled by the fact
14 that these had occurred everywhere else that
15 this process was practiced, and it was a
16 fairly common occurrence. And so we felt that
17 it needed further examination.

18 It wasn't clear to us what magic
19 Electro Met had that they were avoiding this.

20 Now when we prepared our review we said we
21 are going to try and do some more interviews
22 of people who worked there to see what we

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1 could find. At the time we did the report, we
2 had talked to one worker who said he had no
3 knowledge that blow-outs occurred, supportive
4 of what the Petition Evaluation Report says.

5 Since that time we have talked to,
6 I believe, four more people, and three of them
7 said blow-outs did not occur. One guy said
8 well, sometimes we got a minor release but,
9 you know, nothing kaboom.

10 One of my concerns with the
11 additional people that we have talked to was
12 they were primarily chemists who would only go
13 out into the production area sometimes. It
14 wasn't clear that they were totally
15 knowledgeable about this subject, not that it
16 was a big place, because it wasn't, and you
17 would think that if there was an explosion
18 that everybody would know about it.

19 But we are trying to find some
20 additional people who were actually working in
21 production to see if we can put this to bed.

22 DR. GLOVER: Do we have your

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1 interviews by the way, the additional
2 interviews that you have conducted, the ones
3 that you are discussing now?

4 MR. THURBER: I don't know. I
5 will have to talk to Kathy about that. You
6 should have them, yes.

7 DR. GLOVER: Because it's not
8 automatic that we get them. Let us make sure
9 that we --

10 MR. THURBER: I will take care of
11 it.

12 DR. MAURO: It is part our
13 procedure that you get everything we get, and
14 I think it first goes through a DOE clearance
15 and then it goes to you. If you haven't
16 received it yet, you will.

17 MR. THURBER: But I will be sure
18 that that happens.

19 DR. GLOVER: Because in certain
20 time frames that is true and maybe more
21 recent, because I like -- anyway, I appreciate
22 it.

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1 MR. THURBER: Yes. We will take
2 care of it.

3 DR. GLOVER: That would be good.
4 Because I want to make sure we are not talking
5 to the same people.

6 DR. MAURO: This is pretty recent,
7 right?

8 DR. GLOVER: Because we may want
9 to follow up on some stuff, so we will make
10 sure we continue to talk to people and make
11 sure we are both aware of what we are doing
12 so, aggravate the same people, since they are
13 very old. They are knowledgeable about this
14 process.

15 MR. THURBER: Some of these
16 interviews are really quite interesting, the
17 people's attitudes about the situation. They
18 are refreshing. Sorry.

19 MR. KATZ: So SC&A is still -- are
20 you still hunting down some --

21 MR. THURBER: We are trying to get
22 somebody that was in the production area --

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1 MR. KATZ: Right.

2 MR. THURBER: -- rather than in
3 the lab. Because most of the people were
4 chemists, you know, and I think kind of one
5 chemist says why don't you talk to this other
6 chemist, but we do have some other names we
7 are trying to locate.

8 DR. GLOVER: So is this still an -
9 - should we consider this an SC&A issue still
10 at this time, rather than passing it on to me
11 because we are still in, it sounds like you
12 are still --

13 MR. KATZ: It sounds like they are
14 still trying to confirm that, so yes, it
15 sounds like it's still on your plate.

16 DR. MAURO: Yes, I mean, Kathy is
17 trying to schedule interviews with selected
18 people, yes.

19 MR. THURBER: I am quite happy to
20 leave this on our plate.

21 DR. GLOVER: I mean, I would, I
22 would love to be, you know, when an interview

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1 happens, just so we could, you know, because
2 that way I can hear what they --

3 DR. MAURO: Well, I mean, we --

4 DR. GLOVER: -- say.

5 DR. MAURO: -- when we do that, I
6 mean, protocols require us to inform you that,
7 you know, we are making certain -- we have
8 identified certain people, we are scheduling
9 certain interviews, and we are required by our
10 procedures to inform you of that, that this
11 process is moving forward.

12 DR. GLOVER: We had a change of
13 people, so since now it's my site, we may have
14 an -- so we just want to make sure that --

15 DR. MAURO: Okay.

16 DR. GLOVER: But that would be
17 great.

18 MR. THURBER: I will take care of
19 it.

20 MEMBER FIELD: If we do some more
21 interviews and everyone says no, what's the
22 difference? Probably never know.

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1 DR. MAURO: In the end, we are in
2 a situation where we are building a weight of
3 evidence that in the end, again, becomes a
4 judgment by the Work Group and then the Board,
5 whether or not the weight of evidence is such
6 that no, we can discount these explosions,
7 these blow-outs.

8 MR. ALLEN: I was going to say the
9 blow-outs happen when you build up a pressure
10 in a sealed container, and based on the
11 airborne you are seeing at Electro Met, I am
12 not so sure it was that sealed.

13 (Laughter.)

14 CHAIRMAN ANDERSON: How much
15 higher would it be if you had a blow-out? It
16 was leaking all the time.

17 DR. NETON: It's a got 1,000 MAC
18 air going all the time and in a blow-out --
19 it's an acute event. It happens; it generates
20 some high airborne for --

21 DR. MAURO: For a short time.

22 DR. NETON: -- short period of

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1 time.

2 MR. THURBER: But those, a lot of
3 those measurements were made by HASL, and, you
4 know, I would -- you would think they would
5 have commented when they were making the
6 measurements if this was an extraordinary
7 occurrence rather than what they are just,
8 what the sampler is sitting there sucking in.

9 I don't know.

10 DR. MAURO: I mean, once the, you
11 know, you have -- the way I always had it in
12 my head was, you know, you have this bomb.
13 That, when you reach that temperature, the
14 conversion happens very abruptly, an extremely
15 exothermic reaction. You know, and either the
16 thing goes or it doesn't, and, you know, so,
17 where you were saying that maybe it was
18 leaking all along, I -- once that switch
19 turns, that an exothermic reaction, either you
20 have an explosion and the thing falls apart
21 and you've got a real serious problem, I mean,
22 walls comes down, or you don't.

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1 MEMBER FIELD: You would think a
2 worker would remember that.

3 MR. THURBER: That's exactly the
4 point, exactly the point, you know. Are we
5 done with this finding? Okay.

6 Finding eleven, I think we have
7 already talked about, and Ted advised that
8 that is a definitional issue that is outside
9 the scope of the technical review.

10 MR. KATZ: Right, it's not covered
11 exposure --

12 DR. MAURO: Yes, I guess we should
13 withdraw that since --

14 MR. THURBER: Yes, we will
15 withdraw it on that basis, not covered
16 exposure.

17 DR. GLOVER: By the time that this
18 facility was -- I mean, it's not our call.

19 MR. ALLEN: Well, now when you are
20 looking into, this is the residual one, it's -
21 -

22 DR. GLOVER: Right, I mean, but it

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1 closes in `53 though. It closed, you know, we
2 could say, here's the information we have
3 about `53 to `57. It's Department of Labor's
4 call, though, if there's any covered activity
5 there.

6 MR. ALLEN: You are digging into
7 some of that --

8 DR. GLOVER: Yes.

9 MR. ALLEN: -- and you are going
10 to find whatever you find and --

11 DR. GLOVER: Right.

12 DR. NETON: -- contract, it's not
13 covered.

14 DR. GLOVER: That's true.

15 MR. THURBER: Okay. Finding
16 twelve. As Sam indicated, the bioassay data
17 was not used, but they obviously looked at it,
18 and they said that the calculated excretion of
19 uranium was less than what you would calculate
20 from the air samples so the air samples were
21 bounding. And we did some calculations which
22 we provided that suggested that might not be

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1 the case, and so there's something that needs
2 to be sorted out between NIOSH's calculations
3 and ours.

4 DR. NETON: You used the same
5 urinalysis data to conclude that it --

6 MR. THURBER: Yes, we took the
7 same data, you know, there's the --

8 DR. NETON: Assuming what, acute
9 exposure scenario, something of that nature?

10 MR. THURBER: Yes. Yes.

11 DR. NETON: We will look at it.

12 MR. THURBER: Yes.

13 MR. KATZ: Sounds like you may
14 need to share your actual calculations.

15 MR. THURBER: Yes, and I --

16 MR. KATZ: Yes.

17 DR. GLOVER: I mean it's here in
18 the report, so --

19 MR. THURBER: I think that the
20 detail is pretty much in the report, but if
21 it's not, we can expand upon it, no question.

22 CHAIRMAN ANDERSON: How different

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1 was it?

2 DR. NETON: It would be hard to
3 imagine, given the high airborne intakes that
4 we are finding that the urine data would show
5 that it could have been higher than what we
6 are finding. I just, it seems --

7 MR. THURBER: Well, let me see
8 here.

9 DR. NETON: -- hard for me to
10 fathom how that could happen. But, you know,
11 it all depends on your assumptions, and I
12 guess we'll just have to take a look. I
13 haven't looked at those assumptions so I can't
14 speak to that.

15 MR. KATZ: So if you run through
16 those and you have any problem identifying all
17 the assumptions you need, you can just write -
18 - contact SC&A and get details to be able to
19 confirm or refute the -- okay, so that's a
20 DCAS follow-up.

21 DR. GLOVER: I think some of those
22 are related to different exposure categories

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1 like supervisors, if I'm reading your text
2 here correctly. So, yes, we will be happy to
3 -- we will make sure that we --

4 DR. NETON: That ties in with the
5 previous finding which is what are we really
6 using for exposure scenarios.

7 MR. THURBER: Right. We
8 understand that it wasn't used, but,
9 commenting on your comment.

10 DR. NETON: That makes some sense.

11 DR. GLOVER: I think that's right.
12 Okay.

13 MR. THURBER: Finding thirteen.
14 This in a sense relates to -- let me back up a
15 second here. We were specifically tasked by
16 the Board to review the Petition Evaluation
17 Report for Electro Met. We were not tasked by
18 the Board to review Appendix C, which is the
19 Electro Met appendix to TBD-6001. But
20 obviously, in the course of reviewing the
21 Petition Evaluation Report we had to look at
22 some parts of Appendix C to -- because they

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1 tie together to a limited extent.

2 And so this comment may relate
3 more to Appendix C than to the Petition
4 Evaluation Report, but we said that it's
5 important to provide specific guidance in the
6 Appendix C as to what to do if you don't know
7 what the operator's description is. We talked
8 about this this morning. There was excellent
9 language in TBD-6000 providing that kind of
10 guidance. We are suggesting that that kind of
11 guidance would also be appropriate in Appendix
12 C.

13 CHAIRMAN ANDERSON: Okay.

14 MR. THURBER: The question of what you
15 assume for the exposure from medical X-rays,
16 we raised this before, and the document on
17 medical X-rays suggests that you ought to use
18 photofluorography, but the language in the
19 document is a little hazy as to whether that
20 guidance applies only to DOE sites or it
21 applies to AWE sites as well.

22 And we think that point needs to

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1 be clarified as to the intent, and if the
2 intent is that it should be applied to
3 everything, then the X-ray dose rates should
4 be revised to assume that the technique was
5 photofluorography rather than more
6 conventional X-rays.

7 DR. MAURO: This is a DOE site.

8 DR. GLOVER: This is DOE.

9 DR. MAURO: This is a DOE site.

10 MR. THURBER: Well, okay, then --

11 DR. MAURO: Even more so.

12 MR. THURBER: Then the comment is
13 that it should be photofluorography.

14 DR. MAURO: Unless you have
15 evidence that the X-rays are -- the size, the
16 small ones versus the big ones.

17 DR. GLOVER: Five by sevens.

18 DR. NETON: I am not sure we have
19 any evidence of that --

20 CHAIRMAN ANDERSON: One way --

21 DR. NETON: -- one way or the
22 other.

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1 MR. THURBER: There is some
2 language, I think, from one of the doctors
3 talking about X-rays, but whether he is
4 speaking generically or -- I don't know.

5 DR. NETON: My -- it's been a
6 while since I've gone through this, but it
7 seems the photofluorography was used when
8 there was mass screens because it was cheap.
9 You could take a picture, put the guy up
10 there, take a picture, and move on.

11 And that's why we thought when we
12 meant DOE sites I really think we meant to
13 imply there the larger sites, where there
14 would be a need for mass screening, where
15 these smaller, mom and pop type AWEs would not
16 benefit from that type of a procedure.

17 So I am not sure where Electro Met
18 falls. We will have to look into that a
19 little closer, but that DOE guidance is a
20 little misleading. What it really means was
21 larger sites.

22 MR. THURBER: Okay.

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1 CHAIRMAN ANDERSON: It would
2 depend on whether they had a program for the
3 general plant. We are on the same -- these
4 guys --

5 DR. GLOVER: The PFGs would be
6 claimant favorable.

7 MR. THURBER: Oh yes, absolutely.
8 And --

9 DR. GLOVER: Oh, we are not doing,
10 okay.

11 MR. THURBER: No, they are not
12 being done, and it is quite a big difference.

13 DR. GLOVER: Oh yes, it's very
14 large.

15 DR. MAURO: Three rem --

16 DR. GLOVER: A couple rem.

17 DR. MAURO: -- versus --

18 DR. NETON: As far as -- we have
19 no idea whether they were even doing annual X-
20 rays as part of the condition of employment,
21 and then you say okay, well not only do we not
22 know they were getting them, we are going to

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1 assign this photofluorography dose, I mean,
2 it's sort of --

3 DR. MAURO: But that's what TBD 6,
4 you know, Ron Kathren's TBD says that you
5 should do for DOE sites.

6 DR. NETON: For DOE. I think the
7 jury is still out on the AWE and the AWE-like
8 DOE sites.

9 DR. MAURO: And you will see that
10 comment on all our reviews on AWEs because
11 really there is nothing right now in your
12 guidance that says explicitly for AWE sites,
13 you know, assume it's just X-rays.

14 DR. NETON: Well, see, we did have
15 good evidence that it did occur at DOE sites.

16 DR. MAURO: Right.

17 DR. NETON: That's the key there.
18 We have no evidence that it occurred at these
19 smaller AWEs.

20 MR. THURBER: I understand that.
21 The language is ambiguous --

22 DR. NETON: You're talking --

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1 we'll address it.

2 MR. THURBER: Item fifteen --
3 finding fifteen. Again, this relates to
4 Appendix C. We took what we thought was the
5 same data set or what was close to the same
6 data set and calculated the log-normal
7 distribution parameters for the beta --
8 electron exposures, and we found good
9 agreement with the values developed by NIOSH
10 in table C5 of Appendix C.

11 We had not such good agreement for
12 the supervisor labor category and the other
13 category. Obviously these are less
14 significant in terms of the total exposure
15 that a person would receive, but we ought to
16 try and reconcile why these differences --

17 DR. NETON: I am not clear, did
18 you do a different type of analysis, like a
19 rank order versus a curve fitting?

20 DR. MAURO: I don't know.

21 DR. NETON: That could be why
22 there would be a difference if it's based on -

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1 - it's either a math error or a different
2 technique. I am just trying to figure out
3 which.

4 DR. GLOVER: We have got to see if
5 these classes even exist in our current
6 methodology. So we'll clean this up. We will
7 look and see what the final number --

8 CHAIRMAN ANDERSON: It's kind of a
9 --

10 DR. NETON: It would be
11 interesting to know why there's a big
12 difference like that because --

13 DR. MAURO: Did Harry do the work-
14 up on that?

15 MR. THURBER: Yes, Harry did it.

16 DR. MAURO: It's probably -- it
17 may be a good idea to make sure that we did it
18 the same way you did it. That might be the
19 reason for the difference.

20 DR. NETON: I've got to -- well, I
21 would think it might be.

22 DR. MAURO: And then --

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1 CHAIRMAN ANDERSON: Should agree
2 at the fifth, at least. But the 95th, I mean
3 --

4 DR. NETON: Again, I think if it's
5 a rank order fit versus a linear fit for the
6 data and then picking off the curve that could
7 make a difference. We have seen that before.

8 DR. MAURO: But usually it's the
9 95th where we really deviate, when you do a
10 rank order versus --

11 DR. NETON: Not the fifth --

12 DR. MAURO: I know.

13 MR. THURBER: Yes, and I --

14 DR. NETON: I don't know how
15 sparse this data is though.

16 MR. THURBER: I don't remember. I
17 -- Harry typically uses the calculational
18 method rather than the rank order graphical
19 method, and that may be the cause. As we have
20 pointed out in some other areas, you can get
21 some fairly significant differences actually,
22 depending on what the tails look like and

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1 things.

2 DR. NETON: How you treat non-
3 detects.

4 DR. GLOVER: We are also making
5 sure that we have as much data as we have
6 available. I don't know if we had the same
7 data set to work with so --

8 CHAIRMAN ANDERSON: And this is
9 table C in the --

10 DR. GLOVER: Well, they compared
11 the values that were generated, they didn't
12 say whether they used the same data. They went
13 and independently looked through the data.

14 MR. THURBER: Yes.

15 DR. GLOVER: So the numbers may,
16 you know, they may have pulled additional data
17 together since we put Appendix C together.
18 Appendix C was not updated when we did the ER
19 so that's several years old. So it could be a
20 number of, you know, a number of years out of
21 date.

22 MR. THURBER: Okay. Finding

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1 sixteen again ties in with Appendix C and we
2 note that table C5 and Appendix C, which deals
3 with external exposure, has a category of
4 "other skin" which is the skin other than the
5 hands and arms.

6 But there is no information on
7 hands and arms and we think the data should be
8 added to specifically address the hands and
9 arms.

10 DR. NETON: So this is the top crop
11 issue with the surface contamination? Did
12 Electro Met actually re-melt already cast
13 ingots or derbies or did they --

14 MR. THURBER: Yes. They did vacuum
15 induction melting of the bomb reduction
16 derbies.

17 DR. NETON: That's only important
18 issue if you have aged product, correct?

19 MR. HINNEFELD: Did they recast or
20 did they just do bomb reduction?

21 MR. THURBER: No, they recast.

22 MR. HINNEFELD: They did recast?

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1 MR. THURBER: Yes.

2 DR. NETON: Otherwise a freshly
3 separated metal won't have this product.

4 MR. THURBER: Well, it depends on
5 how long since, well, whether there was any
6 time line. They also handled scrap. They
7 recast scrap.

8 They did some scrap recasting
9 where they did receive scrap from outside
10 sources.

11 DR. NETON: And then it's a matter
12 of what percentage of that versus the total.
13 We will look into that.

14 MR. THURBER: We have really kind
15 of discussed this question earlier. The
16 question is if, how appropriate is the back-
17 extrapolation approach to the period prior to
18 1948, when the bulk of the data is available.
19 We have touched on that already -- did that
20 again.

21 CHAIRMAN ANDERSON: Okay. Any,
22 Bill? Mark are you there? So as far as the

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1 whole Electro Metallurgical, you are still
2 reviewing some of the data, right?

3 DR. GLOVER: I will be at Hanford,
4 Sandia, probably Simonds Saw and Steel. I have
5 three weeks of travel so in that time SC&A or
6 ORAU will be completing putting the data
7 together, hopefully end of this month,
8 beginning of next. We will see what additional
9 data captures flow out from Hanford.

10 So I would, hopefully in August we
11 will have our hands around the data and then
12 we can make some decisions about the best way
13 to, you know, approach this.

14 CHAIRMAN ANDERSON: Okay. And we
15 have some action items in terms of
16 communicating some of the calculations we made
17 --

18 DR. MAURO: Yes.

19 CHAIRMAN ANDERSON: And sharing
20 them with you, so --

21 DR. MAURO: Yes.

22 MR. THURBER: And I think that to

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1 the extent that what we have done is not
2 transparent, we will do whatever we can to
3 help you, provide you with whatever you need.
4 If what's there is sufficient great, if it's
5 not --

6 CHAIRMAN ANDERSON: Are we going to
7 do a query to DOL?

8 DR. GLOVER: That's certainly part
9 of the -- we will have to -- I will, me and my
10 boss, we will work --

11 DR. NETON: Are we going to fill in
12 the matrix though, in the interim? Or are you
13 guys, I mean what's the --

14 DR. GLOVER: We can certainly,
15 because we both agreed, John and I, or
16 whatever, we will list that through our thing
17 and we will make sure who owns what action
18 items and that will be on this. It will show
19 who is doing what.

20 DR. NETON: I think it is important
21 to get this matrix filled out.

22 (Simultaneous speaking.)

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1 DR. MAURO: Sometimes it is helpful
2 to get the transcript, but right now I know
3 that we have relatively little to do.

4 MR. KATZ: You really have only
5 responsive things.

6 DR. MAURO: Right.

7 MR. KATZ: If they need your help
8 clarifying how you calculated certain things
9 then they are going to come to you for that?

10 DR. NETON: Well, with the
11 exception of the additional interview --

12 MR. KATZ: With the exception of
13 the interviews --

14 (Simultaneous speaking.)

15 MR. THURBER: We will provide that
16 information. I have that and --

17 DR. GLOVER: It may be as we talk
18 about the areas up there, I'm likely to go to
19 Simonds Saw and Steel again and if we, at the
20 same time Steve Buskay of the Army Corps says,
21 if it would be useful, I could actually get on
22 site if I wanted to see what, you know, where

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1 this place was and how it fits into the big
2 operation --

3 DR. MAURO: They are close to each
4 other?

5 DR. GLOVER: They are on Niagara
6 Falls.

7 MR. THURBER: Yes, everything up
8 there, cheap power, that's why everything --

9 DR. GLOVER: And if that is, if
10 that turns out to be the case I will make sure
11 you guys understand when we are going to do
12 that.

13 MR. THURBER: One of the things I
14 look for, and I couldn't find it, just for my
15 own perspective on this, how big is Electro
16 Met is compared to how big was the area plant?
17 I couldn't find any information on how big the
18 total work force was at Electro Met.

19 DR. GLOVER: It may be worthwhile,
20 if we got on site and talked to the folks
21 there.

22 CHAIRMAN ANDERSON: That's why I

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1 was asking about how many --

2 DR. GLOVER: to see if they could
3 actually, you know, the guys at Union Carbide
4 have a better feel for it, so --

5 DR. MAURO: And in the plot plan,
6 is there, how, just like, the area was --

7 MR. THURBER: The plot plan was
8 only, shows the corner of the facility. It
9 doesn't show the furnace area or anything like
10 that.

11 DR. MAURO: Oh, this is the one
12 dealing with the residual period, in other
13 words, we were not aware that the residual
14 period is not within the scope of the dose
15 reconstruction for DOE sites and that was one
16 of our comments. I forget what number it is.

17 MR. THURBER: Yes

18 DR. MAURO: But we withdraw that.

19 DR. NETON: I would mark it closed.

20 DR. MAURO: Closed, yes. Closed is
21 the right answer and we will put the reason.

22 MR. KATZ: It was another one where

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1 their work was outside of the covered facility
2 possibly, but that depends on what they find
3 out from DOL.

4 MR. THURBER: And there was another
5 one that is really assigned to TBD-6001.

6 DR. MAURO: Transferred to --

7 MR. THURBER: And that too.

8 DR. NETON: Well, my only concern
9 was just closing them and then if they show up
10 in these roll-offs of numbers --

11 CHAIRMAN ANDERSON: Yes.

12 DR. NETON: And it inflates some of
13 the magnitude of the issues that are -- I mean
14 it's trivial in a way, I mean, very few --

15 DR. GLOVER: Usually when they're
16 withdrawn though, it's with concurrence by the
17 Board.

18 DR. NETON: Oh yes. Oh yes.

19 DR. GLOVER: So I don't know if you
20 guys have to do anything formal, but you guys
21 have to --

22 (Simultaneous speaking.)

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1 DR. GLOVER: -- the Working Group
2 should, yes.

3 CHAIRMAN ANDERSON: Should we take
4 a break?

5 (Whereupon, the above-entitled
6 matter went off the record at 2:44 p.m. and
7 resumed at 3:01 p.m.)

8 MR. KATZ: Okay, this is the TBD-
9 6001 Work Group and we are just reconvening
10 after a short break. Let me check on the line
11 just to make sure we have Hans because I think
12 we need him for United Nuclear.

13 DR. BEHLING: Yes, you have me.

14 MR. KATZ: Oh great. Thank you
15 Hans. Happy to have you.

16 DR. BEHLING: Actually I was on the
17 line when you asked before the break and I
18 couldn't hit my mute button, I kept pushing
19 the wrong button.

20 MR. KATZ: I was faster to hit this
21 mute button than you were to hit yours, I
22 guess.

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1 CHAIRMAN ANDERSON: Take it away.

2 DR. BEHLING: Okay. I was talking
3 to John during the break and he said we will
4 be working with the matrix so I will simply
5 follow that but I hope that for any particular
6 finding or discussion that may ensue you can
7 ask questions that may divert from the limited
8 discussion that we see on the matrix.

9 Let me just briefly go over the
10 chronology of events here because they are
11 somewhat unusual here. The first Appendix D,
12 Revision 0 was issued by NIOSH on March 14,
13 2008 and we in turn were asked to look at that
14 Appendix D and our audit in our initial report
15 regarding our review of Appendix D was issued
16 somewhat about a year-and-a-half later, in
17 September 2009.

18 Unfortunately we never received
19 any actual response from NIOSH regarding our
20 review of Appendix D and it wasn't I guess
21 until early this spring that NIOSH elected to
22 revise Appendix D with Revision 1 and at that

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1 point I believe Ted had asked SC&A to forego
2 any discussion of our initial review of
3 Appendix D, Revision 0 and focus on Revision 1
4 and basically roll up this audit into a final
5 review.

6 And so what we ended up doing was
7 we issued a supplemental report on June 11,
8 2010, just a couple of weeks ago, a few weeks
9 ago, that reiterates our initial findings and
10 then looks at the Revision 1 of Appendix D to
11 see to what extent our finding still stands.

12 And I think our matrix pretty much
13 reflects that evolution of events, that is we
14 identified the initial findings and then in
15 our response -- now, again, it's anyone
16 question as to whether or not NIOSH had
17 actually looked at our original audit of
18 Appendix D, Rev 0, in rewriting it, or whether
19 these things independently came about.

20 But regardless I think they can
21 comment on the issue if they choose. But we
22 will simply identify each of the six findings.

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1 In addition to the six findings we did have
2 one single observation which was a generic one
3 and I think we will understand what the issues
4 are when we go through the findings.

5 So let me go through the findings.
6 In our review of Rev 0, we had identified that
7 our review of the medical dose was somewhat
8 too brief. I think, in fact, let me just
9 quickly read what it says so that we can get
10 an understanding of the issue.

11 In the TBD, the guidance was that
12 there are no diagnostic medical X-rays to
13 which workers may have been exposed and there
14 was no information regarding this. And so in
15 essence, the recommendation was to look at the
16 guidance in OTIB-0006 as a way of establishing
17 medical exposure doses.

18 And my feeling was that that is
19 somewhat overly brief because OTIB-0006 really
20 provides various options and I think we need
21 to be a little more definitive, not so much in
22 a sense where this will potentially add a

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1 significant dose to anyone.

2 But the fact is we need a certain
3 amount of consistency. I think we've been
4 adamant of consistency. So that when you have
5 a half dozen dose reconstructors doing a dose
6 reconstruction for UNC, you will hopefully not
7 have one who will take liberty in using
8 exposures that perhaps are within the
9 framework of OTIB-0006 in a conservative way
10 and another one using obviously the least
11 conservative approach.

12 And so this is our first finding,
13 is to assume that we need a little bit
14 additional guidance with regard to how to
15 assign medical dose because of the fact that
16 right now all they do is refer you to OTIB-
17 0006.

18 And I think this is something that
19 reasonably easily be corrected because we all
20 do need to give is either we will agree to
21 assign only one PA X-ray per year or perhaps
22 in a more liberal way, we can talk about

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1 photofluorography perhaps, in the early years,
2 or in addition to photofluorography, lumbar
3 spine radiographs, all of which perhaps
4 augment the assigned dose from medical X-rays.

5 So when I looked at one I looked
6 at the issue of the medical dose and there was
7 no additional changes, so apparently, from
8 what I gather, that issue was not addressed in
9 Rev 1, either because ORAU or NIOSH never
10 really looked at the initial finding or
11 decided that the guidance in OTIB-0006 was
12 adequate.

13 Would it be appropriate to ask
14 NIOSH to respond at this point, or --

15 MR. KATZ: Yes, Hans the way we
16 have been doing it is going finding by finding
17 so, thank you.

18 DR. BEHLING: You want me to just
19 continue?

20 MR. KATZ: No, no, no, in other
21 words so yes, in other words NIOSH will
22 respond to finding one and then you will

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1 present finding two and so on.

2 DR. BEHLING: Okay, so it's NIOSH's
3 response that we are waiting for.

4 MR. KATZ: Yes.

5 MR. ALLEN: And we agree with you
6 that the Appendix could benefit from a more
7 clear discussion and as far as what the exact
8 procedures are and stuff, I think we could
9 have brought that up with Electro Met, too.

10 So I do apologize for not
11 addressing it in the revision. The revision
12 was undertaken when we wrote the Evaluation
13 Report and we found some new data in looking
14 for that and we decided to revise the Appendix
15 to incorporate the new data and what was in
16 the Evaluation Report and this initial review
17 of the Appendix got lost in the shuffle
18 somewhere.

19 CHAIRMAN ANDERSON: So for United
20 Nuclear we have a Site Profile.

21 MR. ALLEN: Yes, it's an appendix
22 to TBD-6001.

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1 CHAIRMAN ANDERSON: So the Site
2 Profile, as far as documents, the only
3 document we really have is Appendix D?

4 MR. ALLEN: Yes.

5 CHAIRMAN ANDERSON: It does both.
6 There's no SEC petition --?

7 MR. KATZ: No, there is SEC --

8 MR. ALLEN: Yes. There is an
9 Evaluation Report.

10 MR. KATZ: And it is an Evaluation
11 Report of the petition.

12 CHAIRMAN ANDERSON: Okay, I was
13 just, because the matrix --

14 MR. KATZ: We sort of skipped over
15 that because --

16 CHAIRMAN ANDERSON: Yes. Yes.

17 MR. KATZ: They were going to
18 present --

19 CHAIRMAN ANDERSON: Yes.

20 MR. KATZ: -- something on the
21 petition initially before Hans went --

22 CHAIRMAN ANDERSON: Yes, okay.

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1 DR. BEHLING: With regard to that,
2 and I am sure that we will discuss or NIOSH
3 will discuss the SEC petition and the ER that
4 they have generated, just as a summary up
5 front, I see none of the findings that I
6 identified as SEC issues. So --

7 CHAIRMAN ANDERSON: Okay.

8 DR. BEHLING: I might as well make
9 that statement up front. I think all of the
10 findings that I have are solvable with a
11 certain amount of additional information or
12 data or guidance.

13 So are we prepared to then discuss
14 finding two?

15 CHAIRMAN ANDERSON: Yes.

16 DR. BEHLING: Yes. In Rev 1 of
17 Appendix D, the initial assessment for dose
18 reconstructing external exposure was really
19 confined to a couple of summary reports that
20 were generated by the Atomic Energy Commission
21 in 1960 and from that data it was concluded
22 that we could extrapolate for the full

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1 duration of the operational period.

2 And I looked at the data and
3 realized that that was probably not something
4 that you would want to necessarily do, given
5 the fact that there were so many process
6 changes over the period of operational times
7 and therefore the single summary data that
8 were presented in the AEC report, the 1960
9 report, would had a very limited, and
10 questionable approach to satisfying all of the
11 questions that we did have regarding latter
12 years of operation and process changes.

13 And so that was my finding number
14 two and in looking at Revision 1, as it turns
15 out, NIOSH was able to identify a significant
16 amount of additional data from various time
17 frames, some of that data was external
18 exposures defined units of dose as well as
19 beta skin doses for some years. For other
20 years, the data was lumped together so that a
21 shallow dose and deep dose was combined.

22 But based on the fact that for

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1 many years, or for a good number of years,
2 doses were in fact separated, they used a
3 fractionation process by which the data for
4 the years where the photon and beta doses were
5 segregated, they would apply that ratio to
6 those years where the dose was combined.

7 And even though it was somewhat
8 less than the most desirable form of data, I
9 think the data are adequate for filling in the
10 gaps for all the years during the operation.

11 So as far as I am concerned the
12 issue of finding two as being inadequate has
13 been reasonably well resolved by the use of
14 additional data that allows for both deep dose
15 as well as skin dose, in addition to answering
16 certain questions regarding the frequency of
17 badge exchange which occurs early on, on a
18 weekly basis and subsequently on a monthly
19 basis.

20 DR. MAURO: Hans, this is John. On
21 the matrix I noticed that it sounds like you
22 did take a look at the new data to some degree

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1 but on the matrix it indicates that we really
2 haven't take a close look at it.

3 In other words, it sounds to me
4 that, based on your preliminary review of the
5 new data, it looks like that they have got
6 quite a bit of data that fills in the gaps. Do
7 you feel that SC&A needs to do a little bit
8 more investigations into the completeness of
9 that data, whether it covers all the workers
10 necessary, all the time periods -- in other
11 words, I guess what I am looking for is
12 whether an action item here or not, because it
13 does appear that there is an action item.

14 DR. BEHLING: Yes, you're
15 absolutely right John and I wrote that into my
16 supplement to the initial audit but as it
17 turns out, because Ted had requested SC&A to
18 do just a very initial review of the SEC
19 petition and the ER report, as it turns out,
20 it wasn't until I looked at the ER report that
21 I actually identified the Site Research
22 Database that was used to supplement that

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1 data, which were not identified in the
2 Revision 1.

3 So as it turns out, when I did a
4 review of the SEC petition and the Evaluation
5 Report, where the Site Research Database
6 identified numerous documents, I was able to
7 actually look at dosimetry data and conclude
8 that on a fairly substantial review process, I
9 don't say it was exhaustive but I looked at
10 enough to convince myself that their
11 evaluation of the supplemental data in
12 question is a reasonable approach and I think
13 they did a reasonably good assessment of that
14 available data in filling in the gaps.

15 So as I said, it wasn't until I
16 looked at the Evaluation Report that I had a
17 chance to identify those documents that were
18 used to fill in those gaps, and that occurred
19 after I had actually submitted the audit for
20 Revision 1.

21 DR. MAURO: So what I am hearing is
22 we don't have an action item here. You have

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1 reviewed the data to the extent that you are
2 satisfied. Now the only thing I want to bring
3 up, and this goes, really a question to the
4 Work Group, to the Board Members, is when we
5 do an SEC, the work we did here was what I
6 call as Ted requested, let's take a look at it
7 so that we could come to this meeting and
8 inform you of what we did and where we are
9 right now in the process.

10 Our SEC reviews, when we do a
11 formal review, is quite a bit more exhaustive.
12 We will go, I mean, we will go into the data,
13 download it all, load it into spreadsheets, do
14 statistical analysis, look at the time
15 covered, look at the different types of work
16 activities, whether everyone was covered or
17 not, everyone was not covered with the film
18 badge.

19 We will look at, is there a
20 coworker model, is the coworker model robust?
21 We will also include some interviews. I don't
22 know whether or not any interviews have yet

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1 been performed for United Nuclear to do some
2 data capture.

3 So in other words what I am
4 getting at is I don't want to leave the Work
5 Group with the impression that we did what I
6 would call a comprehensive review. We did
7 clearly a review to the extent that Hans is
8 feeling pretty good about it, but I think it
9 would be inappropriate for me to say that we
10 have done the things that we normally do in
11 terms of, for example, for an SEC petition.
12 Right. And that being said it's really up to
13 the Work Group as to whether there's any more
14 formality you would like.

15 Because right now you can see by
16 the report itself, relatively brief, and you
17 know, if you would like something more formal
18 -- and also there's a cycle of reviews within
19 the company, within our group, where two or
20 three independent people will check the work
21 also.

22 So I think you are getting sort of

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1 like a preview of where I think we are right
2 now in our understanding, but I think I would
3 not refer to this as a complete, formal SEC
4 review as we have done in the past for other
5 sites.

6 DR. BEHLING: And I agree with you
7 John, as I said, this was not an exhaustive
8 review. I did review a whole series of Site
9 Research Database references. One of the
10 things that did strike me was that while there
11 was a large number of people with nominal
12 exposures, and they are consistent with the
13 doses that will be assigned for non-monitored
14 coworker model.

15 But there were instances, and I am
16 looking right now at, especially for 1966 for
17 individuals who were exposed. In one case I am
18 looking at nearly six rem for the year, for
19 1966 there was some, a couple of other people
20 here, I highlight them, with 2.5 rem, another
21 one at 6.3 rems and so on.

22 So it looks like a distribution of

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1 doses that is marked with large numbers of
2 people with modest doses, but then there were
3 some people in perhaps selective job
4 categories or locations, like at the red room,
5 whose exposures were fairly high for the year.

6 And that might impact certain
7 assumptions about the use of 95th percentile
8 values, although I would assume obviously in
9 these cases, where people had high exposures,
10 these people were all monitored, obviously,
11 otherwise we wouldn't know about it, and that
12 those high exposures were, in fact, committed
13 to people who were obviously identified as
14 high-risk workers and therefore they were
15 monitored, so we do have this data.

16 DR. MAURO: Is there a coworker
17 model in the Rev 1?

18 DR. BEHLING: Yes.

19 DR. MAURO: There is. And I guess,
20 it sounds like you did take a look at that and
21 you feel that it covered all the time periods
22 and different -- the data that does exist, is,

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1 cuts across the time periods and the job
2 categories and locations to the extent that
3 the coworker model can, you know, be used, to
4 assign exposures, to workers who perhaps were
5 not monitored but should have been?

6 DR. BEHLING: Well, to look at
7 that, the external doses were defined in table
8 D-2 and they were modified considerably
9 between Rev 0 and Rev 1.

10 DR. MAURO: They went up by about a
11 factor of 10 as I recall.

12 DR. BEHLING: Yes, they were
13 substantially raised, yes.

14 DR. MAURO: Although, Hans, what I
15 am trying to do is get a sense here of whether
16 you feel that you, that SC&A, given what you
17 have done so far, whether or not, you know,
18 there is more to be done to make this a formal
19 review.

20 I have to say, as SC&A project
21 manager, I would like to do something where we
22 can say we went through the full procedure. We

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1 have a procedure. SC&A has a procedure to do
2 SEC reviews, and there's a whole bunch of
3 things that we do, which includes interviews
4 and it includes data capture and site visits,
5 all of which really haven't been done. So I --

6 MR. KATZ: Let me just also,
7 though, explain, I mean, the Board has done
8 several things with SECs and in some SECs it's
9 done focused reviews where it has had
10 particular issues that said SC&A go dog these
11 issues down and in other cases it's had SC&A
12 just sort of do, like John is saying, the
13 whole A to Z review of an SEC petition and it
14 really depends on what is in front of the
15 Board and what the Board's concerns are,
16 whether it unloads an entire review of all the
17 issues comprehensively or it has particular
18 concerns that it feels it needs buttoned up.

19 So that is a judgment that this
20 Work Group will make as to how extensively you
21 want to use SC&A to dig into issues, any
22 issues that you may have concerns about.

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1 MR. THURBER: Well, John, do we
2 need to separate the Appendix C issues as
3 compared to the SEC issues? I mean, just, you
4 know, fundamentally we started out here
5 talking about Hans's review -- I'm sorry
6 Appendix D, not Appendix C -- Appendix D
7 issues, and then we have kind of deviated a
8 little bit into the SEC issues and are they
9 two separate things and should we be careful
10 to keep them separate?

11 MR. KATZ: Hans' statement was that
12 he didn't see any SEC issues among the TBD,
13 above all the review that he has done at this
14 point.

15 But certainly if you, as you go
16 through these findings, I think we are still
17 on finding number two --

18 DR. MAURO: Well, maybe, put this
19 issue in the parking lot for now. You have got
20 a sense of what we did. Clearly, on this
21 matter regarding external dosimetry, clearly
22 going from Rev 0 to Rev 1, there was a

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1 substantial improvement in the database, which
2 gave us a good degree of comfort that yes, the
3 problem that we had originally seems to be
4 largely resolved because so much more data
5 came in.

6 Now, I would be the first to say
7 though, that to say that that data now is
8 sufficient to build a robust coworker model
9 that would meet all the criteria for
10 sufficient accuracy as required by Part 83,
11 that's a richer question.

12 And I think that maybe we put that
13 in the parking lot for now. Let's go through
14 the rest of these and then --

15 MR. THURBER: Well, is it
16 appropriate then that we alter our response
17 here to this finding based on what Hans is
18 saying here?

19 DR. MAURO: Not now. I would say
20 let's -- SEC reviews, as Ted pointed out, have
21 evolved in a way that they take a form and a
22 level of detail that is on a case-by-case

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1 basis. In other words, we used to SEC reviews
2 according to a very comprehensive procedure,
3 there was a ton of stuff we did, and it was
4 expensive and time-consuming.

5 And it became clear that a new
6 culture developed -- this must be about two
7 years ago -- where once the issues are
8 discussed by the Work Group, a judgment is
9 made by the Work Group which issues they would
10 like us to look at a little more closely, so
11 what I am saying is right now I can't answer
12 your question.

13 Really, we are going to look to
14 the Work Group to direct us on whether or not
15 there is more they would like us to do or not
16 in light of what we are hearing from --

17 CHAIRMAN ANDERSON: Did the SEC
18 petition come in before or after Rev 1?

19 MR. ALLEN: Before. The Rev 1 was a
20 response to information we found when we were
21 putting together that --

22 CHAIRMAN ANDERSON: Okay, I am

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1 just, I mean the petitioner didn't know you
2 had this data at the time?

3 MR. ALLEN: I am not positive we
4 had it when the petition came in.

5 CHAIRMAN ANDERSON: Well, yes --

6 MR. ALLEN: We had it when the --

7 CHAIRMAN ANDERSON: Whatever, I
8 mean, that is just a matter of their, they
9 didn't look at it and say we looked at this
10 data and they got problems with it, it was
11 simply there isn't the data and then you found
12 it.

13 MR. ALLEN: Right.

14 CHAIRMAN ANDERSON: Okay. That's
15 helpful.

16 DR. BEHLING: I would just like to
17 perhaps make one comment. As I have mentioned,
18 there was significant revisions to table D-2
19 that needs to be used for the reconstruction
20 of external doses. In the initial table D-2 it
21 was really for the entire period because it
22 was based on 1960 NRC survey report.

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1 The Revision 1 incorporates new
2 data and allows for assigned doses for every
3 single year during this period and in addition
4 it is segregated based on whether or not the
5 person was an operator, a supervisor or other.

6 The recommended values are in fact
7 geometric mean values and if I have to say one
8 thing, it's that the data is pretty much
9 comprehensive involving those people who were
10 most likely exposed who were in fact part of
11 that database and those data are to be used
12 for dose reconstruction.

13 We have only a small minority of
14 people who may not have been monitored or for
15 whom the data is not available. Perhaps the
16 values in table D-2 are adequate. But if it
17 turns out there was a significant number of
18 people who may have been operators who were in
19 fact not monitored or whose exposures are not
20 available, then perhaps the geometric mean,
21 again, may indicate a recurring issue with
22 SC&A and trying to come to grips with the fact

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1 that a geometric mean may not always be
2 claimant favorable if the person was not
3 monitored but he was in a high exposure group.

4 And as I had mentioned I am
5 looking at 1966 in table D-2 for operators the
6 assigned dose is 382 millirem and as I had
7 mentioned a few minutes ago, there were people
8 whose 1966 exposures were upwards of six rem.

9 Now if among operators who may not
10 have been monitored, the assignment of the
11 default value would truly perhaps not be
12 claimant favorable and so the assumption here
13 is that if we can identify an operator for
14 whom the data is not available, perhaps the
15 geometric mean will not be claimant favorable
16 and we should look at the 95th percentile
17 value.

18 But that is something that only a
19 careful review would indicate, whether or not
20 people in the high dose area, such as
21 operators, are people whose exposures we do
22 not have for dose reconstruction, perhaps the

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1 geometric mean may not be appropriate.

2 So this would be obviously
3 something that John focused on and that is
4 perhaps we need to look at data again a little
5 more carefully that are now available in the
6 Site Research Database to be sure that the
7 doses that we do have access to are on cases
8 of the most likely exposed individuals.

9 MR. KATZ: Finding number three,
10 Hans?

11 DR. BEHLING: Okay, finding number
12 three, potential exposures to neutrons are
13 currently not addressed in Appendix D.

14 And when I looked at, in fact, at
15 the 1960 AEC compliance inspection report,
16 there was a series of references about
17 criticality issues and so forth, and it
18 clearly was an indication that the quantities
19 of UF6 at the facility would have given rise
20 to neutron exposures which were not addressed
21 in Rev 0.

22 So in Rev 1, NIOSH elected to

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1 include the approach and I looked at the model
2 and it does appear that it is claimant
3 favorable in its basic assumptions.

4 So the issue of neutron assignment
5 is something that can be resolved with the use
6 of this model.

7 DR. MAURO: Hans can you describe a
8 little bit about how the neutron doses are
9 assigned?

10 DR. BEHLING: Yes, let's see, it's
11 a model, it's -- let's see which assumptions
12 were used. They used a highly-enriched
13 uranium, 93.1 percent enrichment, and -- I
14 need to look at all these documents here that
15 are in front of me, but it also, I don't have
16 at my fingertips the quantities that were
17 used.

18 But I think in all the, our model
19 appears to be fairly --

20 DR. MAURO: So it is not based on
21 NTA film. It's actually based on --

22 DR. BEHLING: No, no. No, no. It's

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1 a modeled approach.

2 DR. MAURO: Okay. I got it, so
3 basically a source of neutron enrich --
4 neutron, ran appropriate codes, predicting the
5 neutron flux and energy distribution --

6 DR. BEHLING: Yes. They used 93
7 percent enriched uranium. They had the workers
8 there at one foot for 1,000 hours per year and
9 -- what is the quantity -- but it appears that
10 -- a 50 kilogram quantity -- so given that all
11 of the variables that they could have employed
12 in coming up with a model dose, both in
13 quantity, the time, the enrichment factors, it
14 appears to be that the neutron exposures are
15 fairly considerable.

16 CHAIRMAN ANDERSON: Finding four.

17 MR. KATZ: So, no action on that.

18 CHAIRMAN ANDERSON: Well, that just
19 sounds like it is --

20 MR. KATZ: That's one that is --

21 CHAIRMAN ANDERSON: -- good to go.

22 MR. KATZ: Closed.

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1 CHAIRMAN ANDERSON: Closed.

2 DR. BEHLING: Yes. Finding four.
3 Inhalation intakes recommended by NIOSH may
4 not correlate with empirical urinalysis data.
5 Again, when I looked at all of the secondary
6 reports in the Site Research Database, and I
7 looked at it actually on behalf of Rev 1, I
8 focused on a number of people and I looked at
9 people who were exposed to fairly high air
10 concentrations and for whom we also had
11 urinalysis data and subsequently chest count
12 data and sorted through the assigned doses
13 from the coworker model that were initially
14 identified in the Appendix D, table D-1 of
15 Appendix D, are they claimant favorable.

16 And I can't, I found it too much
17 of an effort to go through all the iterations
18 that I went through. But I tracked several
19 people who were probably outliers in this
20 whole distribution. They were the people who
21 were exposed during a very critical time
22 period when it was realized that there were

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1 high air concentrations and there were changes
2 in processing, et cetera.

3 And what I ended up concluding was
4 that at least in behalf of those individuals,
5 the assigned default value from table D-1 was
6 probably not necessarily claimant favorable.
7 In fact in some cases they were off by factors
8 of 15 to even greater values, depending on
9 whether you, which solubility you assume.

10 Now, in the original Rev 0, the
11 table D-1 really made no reference as to who
12 these values should be applied, in other words
13 they were to be used regardless of whether or
14 not that person had bioassay data or not.

15 And so I realized that in case of
16 people who were clearly monitored, and for
17 whom chest count data, urine data and air
18 sampling data was available, that these values
19 should be used.

20 So even though table D-1 between
21 Rev 0 and Rev 1 remains the same, a major
22 change was that in Rev 1, the option was to

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1 obviously default to real data rather than the
2 coworker model, which is really what we are
3 dealing with.

4 There are a substantial number of
5 bioassay data available for individuals who
6 were likely to have been operators and for
7 whom the exposure was maximal and of course,
8 one should choose that data as the highest
9 exposure to the target organ.

10 And that was, that stipulation was
11 incorporated into the Revision 1. So as a
12 minimum, the table, a default table of
13 coworker internal exposures is no longer just
14 a generic value that applies to all people,
15 but it only applies to those people for whom
16 the data either doesn't exist or it is
17 insufficient for dose reconstruction.

18 For anyone who has read the
19 original audit of Rev 1, you will see the
20 effort I went to in trying to needs identify
21 for outlier people, people whose exposures
22 were clearly going to be high based on air

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1 sampling data, urinalysis data and for chest
2 count data, the default values in table D-1
3 would not necessarily be claimant favorable.

4 DR. MAURO: So Hans, with regard to
5 the new paradigm that's been adopted, what I
6 am hearing is there is this internal dosimetry
7 data for individual workers. You feel that the
8 workers that do have data, whether it's chest
9 count or bioassay, that those workers, it's
10 fairly clear that those are the workers that
11 had the highest potential for exposure.

12 DR. BEHLING: Yes.

13 DR. MAURO: Okay, that's important,
14 because what that means is it puts NIOSH in
15 the position to know what the high-end
16 exposures are. So if there is a worker out
17 there that does not have any bioassay data and
18 needs to be assigned some exposure, NIOSH is
19 in a position to assign an exposure that is at
20 the upper end if they feel that's appropriate.

21 You see, usually you run into an
22 SEC issue when you have bioassay data but you

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1 don't really know whether you have captured
2 the high-end individuals or not. And all of a
3 sudden you have a coworker model that you are
4 really not sure -- we have seen that before --
5 whether or not you have got the high-end
6 individuals.

7 But in this -- and Hans has been
8 quite frankly one of the strongest critics of
9 other SECs when he felt that you have got a
10 lot of data but it is not apparent that you
11 caught the high-end people.

12 You are saying in this case
13 however you feel pretty confident that the
14 data that is available, does capture those
15 people with the jobs that would place them at
16 the high end.

17 DR. BEHLING: Yes, I believe they
18 realize that during certain periods of
19 operation, that they had a very, very high
20 airborne level and they did monitor at work
21 locations, particularly the work locations,
22 and assigned specific airborne levels to

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1 individual workers.

2 And then they had the option of
3 also reviewing their urine data and in some
4 cases chest data, and of course some of these
5 individuals were tracked for a period of years
6 because of the very, very high-end exposures
7 that they received.

8 So it's reasonable to conclude
9 that the highest exposed people were in fact
10 identified. Now I have identified, in addition
11 to the original issue, that says please use
12 the real data when available because there
13 were in some instances there was an assigned
14 value from the default table.

15 But one of the things that I also
16 have to say that I didn't really include was
17 the likelihood that the uranium to which some
18 of these people may have been exposed to, may
19 qualify for solubility Super S.

20 And I say this because I looked at
21 some of the Site Research Database documents
22 that actually had hand-written notes and

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1 extrapolated the actual chest burden as a
2 function of time.

3 And there were some people who, in
4 addition to having air monitoring data, in
5 addition to having urine data, were chest
6 counted at Y-12 over a period of time and
7 several people were counted for a couple of
8 years thereafter.

9 And I looked at the individual
10 data and by simply looking at a couple of data
11 points that were separated by six months or
12 so, you come to the conclusion that the
13 effective half-life of uranium in the chest
14 for a couple of these people in one instance
15 exceeded three-hundred-and-twenty-some days.
16 And I believe that would qualify for perhaps a
17 Super S status for uranium.

18 DR. MAURO: Is the ER, the
19 Evaluation Report and the Site Profile Rev 1
20 silent on this matter or is this --

21 DR. BEHLING: Yes, they are. They
22 give options for assigning either solubility

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1 type S or M and again, as always, NIOSH
2 usually says whichever yields the higher dose.

3 So clearly if it's an exposure
4 that involves, or target tissue involving a
5 lung you would obviously go for type S. For
6 others it might be type M. But Super S is not
7 identified as a potential.

8 Now I don't know exactly where the
9 dividing line between S and Super S comes in
10 at, but when you have an effective half-life
11 in the chest based on chest counting data from
12 Y-12 that exceeds 300 days, I believe that
13 would qualify for Super S.

14 I am waiting for comments from
15 NIOSH.

16 DR. NETON: No. No, I don't think
17 300 days would qualify that for Super S. I
18 think the long-term compartment, even in the
19 type Y was 500 days. So I don't know why 300
20 days would qualify that as Super S.

21 I mean we will certainly take a
22 look at what you are pointing to but my first

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1 blush is I don't think so.

2 MR. ALLEN: If the absorption half-
3 life for type S is 7,000 days half-life,
4 that's only the absorption comment if the
5 physical clearance is going to probably guide
6 that down quite a bit.

7 But as I recall type M falls
8 around 140 day half-life?

9 DR. NETON: I mean, we can
10 certainly take a look at what the data set you
11 are pointing to, but off the top of my head it
12 doesn't seem like --

13 DR. MAURO: Is there anything, I
14 guess, the type of operations that took place
15 here, is there anything about those operations
16 that would lead you to, I guess, to get a
17 Super S out of the uranium, for some reason
18 that's got pretty high temperatures. I am not
19 even sure what they were going here, where
20 there might have been -- in other words, you
21 combine process knowledge with data, starts to
22 build a case that no, maybe we don't have it,

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1 or perhaps we do.

2 But right now the report, it
3 sounds like it's silent on this issue.

4 MR. ALLEN: Yes, I mean, as I
5 remember, I might be getting my sites wrong,
6 but I am thinking that the big exposures that
7 they ended up sending people to Y-12 for the
8 whole body count et cetera were from the red
9 room, and if I remember right, the red room
10 was reduction process with green salt, if I
11 remember right, which would be a type M
12 material.

13 DR. BEHLING: All I can say is that
14 in some of the communications between the
15 health physicists at UNC and Y-12, they talked
16 about having common problems of a much longer
17 half-life that they would have expected in a
18 lung of 120 days.

19 DR. NETON: Well yes, that was the
20 old ICRP-2 model, I mean that only allowed for
21 a soluble inside 120 days, it was sort of like
22 a default value. I --

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1 MR. ALLEN: That was Class W wasn't
2 it?

3 DR. NETON: Yes, W. I think, you
4 know, UO2 would be the most insoluble form of
5 uranium, which is type S right now. I am not
6 aware of anything out there right now that
7 would qualify for Super S, although I never
8 say never.

9 We will certainly be happy to take
10 a look at the --

11 DR. BEHLING: I was looking at some
12 of the ICRP documents and when they talk about
13 it, they are very diffuse, and certainly when
14 you look at the older documents that are still
15 classified saying there's daily, weekly,
16 yearly, what does clearance mean? Certainly in
17 this case, and I counted it for one particular
18 individual and the effective half-life in the
19 lung was 327 days.

20 Well, that's only one half-life.
21 Okay, so it's less than one year, but what
22 does clearance mean? Is it just one half-life

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1 removed or multiple half-lives where you
2 reduce it down to some nominal level?

3 DR. NETON: Well, it depends on
4 where you are in the clearance curve. I mean,
5 there's all kinds of compartments with the
6 ICRP 66 lung model as you know and there is no
7 such thing as one half-life in the lung,
8 there's a --

9 DR. BEHLING: No, I realize that,
10 but Jim, I took, they were, I have data here
11 for a bunch of individuals who were exposed
12 and they were assessed in August of 63,
13 September of 63 and March of 64 and I ignored
14 the first one and I looked at September 30,
15 which is about six weeks thereafter the
16 initial exposure, minimum, and then they were
17 reassessed on March 16, 1964.

18 So we have at least about 100,
19 well actually 177 days during this exposure
20 where you have the initial clearance from the
21 lung, obviously, and using those two data
22 points, I set the effective half-life in the

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1 lung and for one individual was 262 days, for
2 another 327 days.

3 And I thought of not pushing the
4 issue of Super S, but I am raising the
5 question, where does the separation between S
6 and Super S come in? I mean --

7 DR. NETON: It's a lot longer than
8 300 days. We can look at it. Again, I, you
9 know, I would like to look at the case but my
10 first thought, it doesn't seem to be an issue
11 but --

12 DR. MAURO: One more question
13 before we move on to the next item. Hans,
14 everything is uranium here. Any reason to
15 believe there are other radionuclides?

16 DR. BEHLING: I didn't quite hear
17 you John.

18 DR. MAURO: We have been talking
19 uranium. Is there any reason, like I said, I
20 am not familiar with the processes. Is it
21 possible there's other radionuclides, thorium?

22 DR. BEHLING: Yes, in fact, one of

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1 the things that was added in Rev 1 that one
2 was the potential exposure to thorium, which
3 was missing in Rev 0, and there was a single
4 year in the process time period during which
5 thorium was used, and so NIOSH added exposure
6 to thorium. That is another change in Rev 1.

7 And when I initially reviewed Rev
8 0 I was not aware that thorium was even an
9 issue until it was independently raised by
10 NIOSH in their Rev 1.

11 MR. THURBER: Next.

12 CHAIRMAN ANDERSON: Fine.

13 MR. KATZ: Finding number five
14 Hans?

15 DR. BEHLING: Okay, finding number
16 five was doing -- and oh, one other thing that
17 was changed. Initially the operational period
18 was only extended to 1969 and apparently NIOSH
19 reviewed some of the documents and realized
20 that that date had to be extended to 1973. So
21 that's another independent change that
22 occurred from Rev 0 to Rev 1, an additional

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1 four years during which operational exposures
2 would have occurred and before the post-
3 operational exposure would have occurred.

4 So finding five starts with the
5 issue of information regarding the inhalation
6 intakes from residual contamination and NIOSH
7 had stated that their default value is 10.34
8 dpm per day with type S uranium.

9 MR. KATZ: Hans, could you just
10 speak up a little bit more. You are fading a
11 little bit.

12 DR. BEHLING: Okay. In Rev 1, and
13 it remains unchanged, so it appears in Rev 1
14 and 0, the assumed default value, 10.34 dpm
15 per day for uranium is a default value for
16 inhalational internal exposure and that starts
17 in 1974.

18 And I looked at the actual
19 guidance in the document and I can't really
20 understand how that came to be and I am not
21 sure I will necessarily go through the details
22 as to -- but for those who have my report, you

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1 can see what I did and I am hoping that if I
2 am wrong, NIOSH can correct me.

3 But based on my assessment, the
4 use of the maximum dose from table D-2 and the
5 basic assumptions that were to be used for
6 modeling the exposure, my value turns out to
7 be 434 dpm per work day or 297 dpm per
8 calendar day. That's 29 times higher than the
9 value recommended by NIOSH.

10 And I had applied a certain
11 modeling approach to that value that I believe
12 interprets their recommendation but I
13 certainly could not come up with their value
14 and I think I am going to ask NIOSH to tell me
15 what method they used to come up with their
16 10.34 dpm per day and why my number is perhaps
17 not correct.

18 MR. ALLEN: We might have some
19 difference of opinion as far as how you got
20 your number, but as far as what is in the
21 Appendix, I can verify there was a
22 calculational error there. The Appendix is

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1 going to need to be revised to change that
2 value.

3 DR. BEHLING: It is basically a
4 very simple calculation.

5 MR. ALLEN: Yes.

6 DR. BEHLING: You essentially
7 define the air activity, the maximum air
8 activity, and you need to apply a deposition
9 velocity in terms of meters per second and you
10 end up with a ground activity in terms of dpm
11 per meter square and then I simply applied a
12 resuspension factor that is defined by NIOSH
13 and this is how I came up with my number that
14 is, in fact, it's a very low resuspension
15 factor, one to the minus six per meter, which
16 we have questioned as part of OTIB-0077.

17 And so even using that un-
18 conservative number, at least my estimation is
19 that that is an un-conservative number, I come
20 with a value that is 29 times higher and I
21 think NIOSH should look at their value and
22 look at my value and see which number is

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1 correct.

2 MR. ALLEN: Agreed.

3 CHAIRMAN ANDERSON: Yes, agreed.

4 Okay. So there is a task. Yes. Six.

5 DR. BEHLING: Finding six. Again,
6 here this was based on an external
7 contamination residual, external contamination
8 dose rate and I looked at the default values
9 that are identified by NIOSH and I, their
10 default values were 11.6 millirem per year
11 whole body and 186 millirem for skin dose.

12 And again using the limited
13 guidance that was identified in Rev 1 as well
14 as Rev 0 --

15 MR. KATZ: Hans, your voice is
16 fading again.

17 DR. BEHLING: Okay.

18 DR. MAURO: That's good. That's
19 perfect. Okay.

20 DR. BEHLING: Am I coming through
21 now?

22 MR. KATZ: Very clear.

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1 DR. BEHLING: I looked at the
2 default values for external exposure cited by
3 NIOSH in both Rev 0 and Rev 1 and used their
4 recommended approach in terms of how that was
5 defined. And although it was somewhat brief, I
6 used federal guidance report 12, the EPA
7 federal guidance report 12 and used the data
8 that they had recommended to use for external
9 exposure and they actually came up with
10 numbers that were considerably lower than the
11 values.

12 They had for external, as I said,
13 for external they had identified 11 millirem
14 per year, external whole body, and I ended up
15 looking at a derived value of 2.8,
16 approximately five-fold lower, or four-fold
17 lower, and the 186 millirem for skin dose that
18 NIOSH had projected, I ended up with only 10.2
19 millirem, and that was using EPA federal
20 guidance report 12 as my principle dose
21 conversion values for residual contamination.

22 Again, I don't know what

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1 methodology they used in order to be able to
2 track their numbers, but I independently used
3 at least the limited guidance they provided
4 and came up with these values, which are
5 considerably lower than the default values
6 recommended by NIOSH.

7 MR. ALLEN: Yes, we used the
8 conversion factor we actually talked about
9 earlier today in TBD-6001 for external dose
10 from surface contamination and it was derived
11 from a MicroShield run. Didn't realize it was
12 that much higher than federal reg guide 12.

13 But I am not sure, Hans, I don't
14 think you included the thorium-234 and the
15 protactinium?

16 DR. BEHLING: No I did not, since
17 the values originally were identical in Rev 0,
18 where thorium was not identified, I have to
19 conclude that the values, the default values
20 in Rev 0 and Rev 1 did not address thorium.

21 MR. ALLEN: Yes, well, I am talking
22 about the short-lived decay products of U-238.

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1 You can get some reasonable beta and gamma
2 from the protactinium-234m and the thorium-
3 234.

4 I think to use federal reg guide
5 12 they would have to include those two as
6 well.

7 DR. BEHLING: Okay, I have to look
8 to be sure that they weren't really
9 incorporated. You may be correct, which may
10 explain why my numbers were considerably
11 lower. In any case, especially the external,
12 penetrating dose of 11 versus three, we are
13 not talking about the doses, even though there
14 is a significant difference between two
15 values, in absolute terms they are still
16 nominal doses.

17 DR. MAURO: David, how did you
18 derive the build-up of uranium on surfaces for
19 the residual period?

20 MR. ALLEN: It was the same --

21 DR. MAURO: Same thing?

22 MR. ALLEN: Technique that we --

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1 DR. MAURO: Using the airborne
2 activity in the deposition and for a year?

3 MR. ALLEN: In this one, actually
4 we used 2,000 hours. We used a work year.

5 DR. MAURO: One work year. It's
6 above the number that would be 27 days?

7 MR. ALLEN: Yes, it's above that.

8 DR. MAURO: Okay. All right. So I
9 guess the only issue we have, not so much with
10 the external, whatever dose it is, is this
11 resuspension factor. But again that is not
12 necessarily an SEC issue. We do have a problem
13 with the 10 to the minus six per meter number,
14 it's a longstanding issue.

15 MR. ALLEN: That's finding five
16 anyway. That's --

17 DR. MAURO: Right. And, but that's
18 not an SEC issue.

19 MR. KATZ: So is there something
20 remaining on the table on this?

21 DR. BEHLING: Yes, there's only an
22 observation and --

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1 MR. KATZ: I mean for finding
2 number six. Do we have anything, is there
3 anything to do with finding six or is it
4 something that could be closed?

5 DR. BEHLING: Well, I can go back
6 and look at whether or not federal guidance
7 report 12 incorporates some of the short-lived
8 daughter products.

9 And whether or not that accounts
10 for the differences between my calculated
11 value and --

12 MR. ALLEN: Essentially, we are
13 using two different models to model this and
14 coming up within a factor of four and it might
15 be closer by the time we reconcile some of
16 this. I don't know if you want to explore it
17 further or not.

18 DR. MAURO: Yes, federal guidance
19 report 12 only includes the uranium you have
20 got, so if you look at U-238, you get U-238.
21 You have got to include thorium-234, and
22 protactinium-234m so, and I think there is a

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1 one percent photon on that order from the
2 protactinium, which may be the major
3 contributor plus of course there's the
4 Bremsstrahlung issue.

5 But you are not going to get very
6 Bremsstrahlung here, I would imagine. You are
7 talking about just a little residual activity
8 on the surface.

9 MR. ALLEN: You have a high-energy
10 beta but not so much --

11 DR. MAURO: But nothing to knock
12 into, yes.

13 DR. BEHLING: And John, now that
14 Jim Neton mentioned the issue of short-lived
15 daughters, as I have said, I took only U-234
16 and 235 into consideration and you know, I
17 said, I did not address the contribution,
18 especially the beta component and that is very
19 likely the reason why I ended up getting the
20 much lower dose.

21 MR. KATZ: Okay. So do we need a
22 report out on this?

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1 DR. MAURO: Yes, let's fix that.
2 Yes, we should, you know what we can do? In
3 our matrix, you know I guess we will go back,
4 revisit that number and see, if we went back
5 in light of this -- I guess it will be a note
6 here, you know, in the matrix saying that SC&A
7 will revisit the exposure and that will be
8 what we put in and of course, I guess we will
9 put a memo out subsequent to that, yes we did
10 and you are right and whatever the answer is.

11 DR. BEHLING: Yes, I am writing
12 myself a note here. I will do that.

13 CHAIRMAN ANDERSON: And then the
14 observation?

15 DR. BEHLING: The observation that
16 I mentioned was really a generic one and it
17 was --

18 DR. MAURO: Could you get closer to
19 the phone again Hans, you are fading away.

20 DR. BEHLING: Okay, I don't know
21 why, this mic usually works very well, I don't
22 know why it is not working. In my observation

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1 one, I stated that UNC site description is
2 insufficient and I think, based on my comments
3 regarding the individual findings, I was
4 really not able to review some of the numbers
5 and I think that was really a reference to how
6 these numbers were derived for certain
7 instances such as the internal and external
8 exposures that we just mentioned where they
9 simply provide default values without
10 necessarily providing new information which
11 would allow you to track those numbers.

12 So it's just a generic comment.
13 But then again, the TBD-6001 and the
14 appendices are not intended to be equivalent
15 of a Site Profile in terms of the definitive
16 information that is normally incorporated and
17 so I understand why these documents are so
18 much more brief.

19 But I still felt that perhaps we
20 could have benefitted from additional data
21 that would allow us to actually follow the
22 methodology that was used to identify some of

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1 the default values that NIOSH had incorporated
2 in their tables.

3 CHAIRMAN ANDERSON: Okay.

4 MR. ALLEN: Well, it sounds like
5 you are basically saying we could use some
6 more detail on how we did the calculations in
7 the text of the Appendix.

8 DR. BEHLING: Yes, and -- what I
9 had problems with initially, and this is what
10 John picked up on, regarding the external
11 exposures, there were no references to the
12 various documents that were cited in the
13 Evaluation Report to the SEC petition that
14 would have allowed me to look at those numbers
15 up front.

16 And so, sometimes even the
17 bibliography would have perhaps benefitted
18 from some of those particular SRDB references
19 that were cited in the ER and include those
20 into the actual Appendix D.

21 CHAIRMAN ANDERSON: Anything else?

22 MR. KATZ: There was only one

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1 observation.

2 DR. MAURO: Yes, that's it, we're
3 done.

4 CHAIRMAN ANDERSON: Anything on
5 SEC? I mean, since this doesn't pertain too
6 much, do we need to, you do have your report
7 on that?

8 DR. MAURO: Well, this is a little
9 bit unusual. What you have here is review of
10 Rev 1 of the Site Profile with some
11 consideration, limited consideration of is
12 there anything in the ER that sort of raises a
13 red flag.

14 And what we are hearing is, based
15 on, you know, a limited review of the ER,
16 there's nothing there that really jumps out at
17 you that looks like there's something that
18 might be serious, a serious issue that could
19 trigger an SEC concern.

20 It's unusual because we usually
21 don't come to that conclusion that quickly, as
22 you know. And you know, and if you feel as if

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1 there's more to be done in terms of taking a
2 closer look at the external data, downloading
3 it, if you feel that, I mean --

4 DR. BEHLING: As I said, John, the
5 biggest concern that I might have is the
6 assignment of default values to unmonitored
7 people if they turn out to be high-end exposed
8 individuals, operators. As I said, you know, I
9 looked at 1966 and the geometric mean is 380
10 some millirem and yet for 1966 among a select
11 group of people, exposures as high as six rem
12 are part of the record. And if it turns out
13 that they were operators whose either exposure
14 records are not available, who may have been
15 monitored, but they are not available, or they
16 may not have been monitored in spite of the
17 fact that they were operators and high-end
18 exposed individuals, then I would assume that
19 the geometric mean may not necessarily be a
20 very good number for those individuals.

21 DR. NETON: Well, but that in
22 itself is not an SEC --

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1 DR. BEHLING: No, it's not an SEC
2 issue.

3 CHAIRMAN ANDERSON: NIOSH said they
4 can do dose reconstruction. Do we have any
5 indication where you would be concerned that
6 in fact there are some exposures at this
7 facility that aren't covered here, that
8 weren't identified, or you know, this really
9 is, there are some coworker issues maybe, but
10 doesn't seem to be any surrogate data, so this
11 seems to be new data was found in response to
12 the petition and that's, you know, are you
13 comfortable that that in fact does fill
14 sufficient gaps and you know, not -- we don't
15 need to talk about how they go about doing the
16 reconstruction, but can it be done?

17 Sounds like your conclusion so far
18 is that yes, we ought to as a Work Group go
19 back to the Board and say, you know, we have
20 discussed it, hasn't been an in-depth review,
21 but you know, if NIOSH will summarize more of
22 what the new data is as part of a

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1 presentation, we can recommend -- I don't
2 know, Mark, are you still there?

3 MR. KATZ: We don't have Mark.

4 CHAIRMAN ANDERSON: I mean, I would
5 want to query him but my sense is, you know
6 other than -- this one doesn't have as
7 comprehensive an evaluation but it seems to me
8 the go, no-go kind of thing is this is very
9 strong as it goes.

10 DR. MAURO: I mean, certainly the
11 review that we just heard --

12 CHAIRMAN ANDERSON: Yes.

13 DR. MAURO: I mean, I am probing
14 away to see if there is anything about it that
15 gets me to gee, you better look at it. I don't
16 see it. In other words, what Hans is saying
17 regarding the -- for example, you always have
18 a problem with neutron exposures, but what was
19 just described to me, you say, okay where
20 could there be a -- bottom line is SECs are
21 triggered because of inadequate bioassay data
22 and inability to reconstruct neutron doses.

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1 All right, so what did we just
2 hear? We just heard regarding neutron
3 exposures that they used a very large, highly-
4 enriched uranium source. I am assuming that
5 the quantity that was used was in fact an
6 upper-end value and was -- I don't know that
7 to be certain, but Hans feels comfortable with
8 that, and then went ahead without any,
9 assuming no attenuation, went ahead and
10 calculated what the neutron flux and energy
11 distribution would be and derived the doses.

12 Without any attenuation, and
13 putting a person close for an extended period
14 of time, certainly places an upper bound. Now
15 I am not going to say now that I, myself, or
16 there are other people who reviewed it, say
17 yes I agree.

18 Because normally what would happen
19 is that conclusion that you heard, regarding
20 neutron, that would have to make the rounds.
21 In other words, there would be other folks
22 that would independently review it as part of

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1 our required quality assurance process.

2 I have no doubt, working with
3 Hans, that this is in fact the case, you know.
4 But we are in strange territory. We are
5 talking an SEC issue and I just, I am a little
6 concerned that, given the importance of a
7 decision like this, where you would deny an
8 SEC, the, and not have gone through another,
9 other eyes, doing, checking the numbers,
10 convincing themselves that, you know --

11 I would like to be able to stand
12 in front of the full Board and say Hans did
13 the initial work, these were the issues we
14 looked at that we thought were important and
15 the big ones I can tell you right now is the
16 neutron exposure, probably you would want to
17 make sure that the --

18 It sounds like what he is saying
19 is that the film badge data did in fact
20 capture the high-end people and the bioassay
21 chest count data did in fact capture the high-
22 end people, and be able to say once you have

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1 that, you are in a position to assign high-end
2 doses as necessary.

3 And that means all the major
4 potential SEC issues don't -- there aren't
5 any. It just becomes a Site Profile, how you
6 implement that.

7 So, but I have to say right now, I
8 would, you know, it would be unusual for SC&A
9 to show up at a full Board meeting without
10 having gone through a little bit more due
11 process and -- Hans this is not, it doesn't
12 bear on you, I am not questioning you.

13 But there is a process we are
14 required to follow and especially when it
15 comes to an SEC, I would not want to give
16 anyone the impression that we, you know, we
17 cavalierly came, you know, we did not follow
18 our procedures.

19 I would like to, I think we have
20 to have these analyses, have the independent
21 checking process go forward.

22 DR. BEHLING: And, John, I didn't

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1 want to come across having the last word,
2 clearly, as I said, and I prefaced my comments
3 by stating that it was Ted's recommendation
4 that we only familiarize ourselves with the
5 site, with the SEC petition and the Evaluation
6 Report and so, this was at best, a very, very
7 cursory assessment of the issues that might
8 come into play here for an SEC.

9 And our findings, at least the
10 ones that I have identified, are probably
11 resolvable at least, but not necessarily the
12 final word in defining whether or not the
13 issue is totally resolved.

14 And then you mention, obviously,
15 the neutron exposure and maybe we need a
16 second opinion. Is 50 kilograms a bounding
17 value? Is one foot for 1,000 hours exposure a
18 bounding value?

19 In my estimation, it appears to
20 be, but I think I will defer to a second
21 opinion on that.

22 MEMBER FIELD: John, I guess, my

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1 thought was I guess reflective of what you
2 have expressed a bit ago that you know, this
3 process has been going on for a long time but
4 what you would like is a consistent process
5 throughout.

6 Didn't you say a little while ago
7 that times have changed.

8 DR. MAURO: Well, you know --

9 MEMBER FIELD: And there's a new
10 paradigm about how things should be reviewed.
11 So I guess what, where do we go from here
12 forward if there's a new paradigm? DR.
13 MAURO: I will give you an example.

14 MEMBER FIELD: Okay.

15 DR. MAURO: I will give you an
16 example. On the Mound Site -- that would be a
17 very good way to think about it -- three or
18 four issues emerged as being important:
19 tritides, neutron exposures and radon, okay?

20 Now, we quickly zeroed in on
21 those, so it's not that we did this big
22 report, in fact we didn't. We didn't deliver

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1 one of these 200-page reports where we
2 exhaustively look, we did what Hans did,
3 basically, and said, wait a minute, we think
4 that when all is said and done, if there's
5 going to be a place where there's going to be
6 a problem, it's going to be the tritides, the
7 radon or the neutrons, and that's what to zero
8 on in.

9 Once the Board or the Work Group
10 heard that, they said okay, we have got to go
11 vertical on these. We have got to go do a data
12 capture, we are going to find out everything
13 we can about whether or not you really can
14 reconstruct the doses from those three areas.

15 And a large effort, a very large
16 effort, ended up going into those three days.
17 So even though we constrained ourselves
18 initially, once we constrained ourselves and
19 then we hit it real hard and we are in the
20 middle of that right now, I mean there's going
21 to be a lot --

22 Now I am saying that what we just

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1 did is something even lighter than that here.
2 What we really did here, quite frankly, is
3 come to this meeting prepared to give you
4 folks a sense of where we think we are on, you
5 know --

6 Certainly we have completed our
7 Site Profile review and it turns out we have
8 some issues, as you heard, that need to be
9 looked at, and they all sound like Site
10 Profile issues that can be fixed.

11 But it did not, you know, we did
12 not do some of the things that we always do.
13 Like for example, the tritide issue at Mound.
14 That issue has been hit by three or four
15 people within our group and checked and re-
16 checked, there's been site visits to find out
17 more about it --

18 So, listen, I am ready to stop on
19 this one if you are comfortable with it. But I
20 don't know if that is in the best interests of
21 this process. I think that those -- we now
22 know what the three issues are, that probably

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1 we want to make sure we got this right.

2 And we have to be able to tell the
3 full Board that we identified these three
4 issues that were in our original scoping
5 analysis, presented our story to the Work
6 Group and in my mind, we have got to check
7 those a little more deeply and confirm that
8 either through additional data capture,
9 perhaps through some interviews, that in fact
10 the approach adopted by NIOSH with regard to
11 these three issues is in fact the rock we can
12 stand on and those doses can be reconstructed
13 with sufficient accuracy.

14 MEMBER FIELD: Okay. I guess my
15 thinking is that without doing further review
16 of this, if this comes to the Board for
17 further consideration, say even for an SEC
18 vote, that the Board will say possibly, well
19 you didn't do due diligence.

20 DR. MAURO: And I am afraid of
21 that.

22 MEMBER FIELD: For the initial

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1 review and make a vote based on what was known
2 rather than at that time asking for further
3 review.

4 Well, going back and doing a full
5 review.

6 DR. MAURO: I am not saying a full
7 review. I am saying that right now -- see,
8 what we did was --

9 CHAIRMAN ANDERSON: What can you
10 done between now and Idaho?

11 MR. KATZ: I mean this won't be
12 ready for Idaho anyway. It is not on the
13 agenda for Idaho.

14 CHAIRMAN ANDERSON: Well, we could
15 still put it on the --

16 MR. KATZ: I guess it could go on
17 the agenda for Idaho. I mean, I -- just to
18 throw in my two cents for you to consider, I
19 mean this is different than Mound in that they
20 had concerns about the issues they went deep
21 on with Mound --

22 DR. MAURO: Right.

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1 MR. KATZ: From the get-go.

2 DR. MAURO: Yes, that's true.

3 MR. KATZ: And so here they are
4 saying they don't think they have concerns
5 about the three issues. But I do think that it
6 makes sense for SC&A to do its QA on these
7 three concerns.

8 I don't know whether it
9 necessarily means doing a bunch of
10 interviewing and going out and doing field
11 research, but having a down-the-table review
12 of Hans's work.

13 DR. MAURO: Well, let's go with an
14 example. Let's say we want to convince
15 ourselves that the neutron model that was
16 adopted, is bounding. All right, now, what do
17 you do when you do that?

18 You go in and you see, okay, the
19 source. What was the source? And go into the
20 literature, go into your site query database,
21 and look at the history and see if there is
22 enough information in there that leaves you

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1 with a warm and fuzzy feeling that yes,
2 whatever the number was that was assumed, and
3 the enrichment level, quite frankly, 50
4 kilograms of 96 percent enriched uranium? I
5 can't even imagine you could have that in the
6 same place. That's --

7 MR. ALLEN: We used 100 kilograms
8 for the 20 percent and cut it down to 50
9 because this is just --

10 DR. MAURO: So I mean, we are
11 starting to solve -- see, I would like to be
12 able to say yes, that particular scenario is
13 certainly bounding because you would never
14 have that, quite frankly you are saying that
15 is bounding because you have a criticality
16 situation which is not going to -- you didn't
17 have it.

18 And then you say, okay, good. The
19 source is that hotbed. Next. How close are
20 they to it? And for how long? And also, I
21 would say the dosimetry itself. Neutron
22 dosimetry is not straightforward.

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1 You know, make sure that the
2 energy flux, it's basically neutron energy
3 distribution at the receptor location and --

4 DR. NETON: See John, I think those
5 are Site Profile issues that you are
6 describing. Those are refinements. I think --

7 DR. MAURO: Yes.

8 DR. NETON: an SEC review would be
9 is the model appropriate? I mean, can the
10 model appropriately be --

11 DR. MAURO: Can you bound it?

12 DR. NETON: Bound those things, and
13 do you now the source-term is sufficient. You
14 know that, that is my opinion, I mean,
15 otherwise you are doing refinements of a
16 calculation that you already actually agree is
17 okay, you know?

18 DR. MAURO: I mean, yes.

19 CHAIRMAN ANDERSON: I guess I would
20 say let's --

21 DR. MAURO: Maybe you are right.

22 CHAIRMAN ANDERSON: Go forward with

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1 doing -- I guess I just don't want to -- we
2 have got so many things --

3 DR. MAURO: Yes.

4 CHAIRMAN ANDERSON: On the table.
5 We have got Hooker coming up and I don't want
6 to, you know, if there is one that we can move
7 forward on pretty quickly, I would just as
8 soon try to do that, but I do want to be
9 confident that we have done enough and I don't
10 want to, as a first-time Chair --

11 MR. KATZ: I don't think you want
12 to --

13 (Simultaneous speaking.)

14 DR. MAURO: It's just that this is
15 a little bit unusual, that's all. We haven't
16 come, we haven't achieved closure on an SEC
17 issue in two hours in a long time.

18 CHAIRMAN ANDERSON: Well, I mean --

19 MR. ALLEN: The bottom line is you
20 are the one that has to give some kind of
21 report to the Board and what you feel
22 comfortable with and what you want us to do in

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1 order to --

2 CHAIRMAN ANDERSON: Given what they
3 will ask you and you will go through this, I
4 would say we have got to move -- you need to
5 do more.

6 DR. MAURO: And I think that, what
7 I could do is work with Hans, lay out
8 something that would represent okay, we are
9 going to do the following, put that in, send
10 them an email out, I mean there's an action
11 item on us, of exactly what it is we think we
12 need to do --

13 CHAIRMAN ANDERSON: Yes. Okay
14 that's good.

15 DR. MAURO: and a time period. And
16 I can tell you now, from what I heard, you
17 know, it's really a matter of touching the
18 bases that need to be touched so that we can
19 stand up and look everyone in the eye and say,
20 listen we checked these numbers. Here's the --
21 and you know, and more than one person look at
22 it.

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1 We are required to do that, quite
2 frankly, so we have got to go through this QA
3 process. I don't think it's going to be big. I
4 don't think we are talking about months of
5 work. We are talking a month, you know --

6 CHAIRMAN ANDERSON: Let's do that.

7 MR. KATZ: Let's do that.

8 CHAIRMAN ANDERSON: And if you can
9 kind of give what your proposal is.

10 MR. KATZ: He will do that in a
11 memo.

12 CHAIRMAN ANDERSON: And then before
13 Idaho, an update on where we are, I can give
14 people some sense --

15 DR. MAURO: It will be my action
16 item. I will put out a memo, which will be,
17 have a list of five action items that I wrote
18 down, and I will put it out.

19 But in this particular one, I will
20 also give you an indication of when we will be
21 able to deliver a report.

22 CHAIRMAN ANDERSON: Good. Don't we

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1 usually deal with, denial things only at face-
2 to-face, not on the phone?

3 DR. NETON: Pretty much.

4 MR. KATZ: Yes.

5 CHAIRMAN ANDERSON: So we are
6 really looking at --

7 MR. KATZ: So we are really looking
8 at November.

9 CHAIRMAN ANDERSON: Yes.

10 MR. KATZ: Because it is not going
11 to get done in -- I mean we really have only
12 about, I don't know how quickly you will do
13 this, but otherwise, we only have four-and-a-
14 half weeks or whatever before the Board
15 meeting and I don't think that is going to
16 happen.

17 So we are talking about November.
18 We are talking about November here, which is
19 fine.

20 CHAIRMAN ANDERSON: Yes. That's
21 good. Okay.

22 MR. KATZ: I guess if it does end

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1 up going to a denial, of course, no one is
2 hurt by the delay, I mean --

3 CHAIRMAN ANDERSON: Right. Yes.
4 Yes.

5 DR. MAURO: The process, quite
6 frankly, let's say we were to put this on a
7 fast track, the process would be a month of
8 SC&A work and then it would have to go to DOE.
9 That's usually two weeks or so, to get
10 approval.

11 So even if we want, you know, full
12 press, it's six weeks.

13 MR. KATZ: We are looking at
14 November, but just an indication from you
15 that, a time line.

16 DR. MAURO: Yes, what that looks
17 like.

18 MR. KATZ: What you will do and
19 when.

20 CHAIRMAN ANDERSON: Do we have any
21 other issues? Now that I have got 20 minutes
22 to make my flight, I am going to push you

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1 harder but I will -- I will have a nice, quiet
2 dinner tonight.

3 MR. KATZ: Me too.

4 CHAIRMAN ANDERSON: Go at 7 o'clock
5 to the airport, the rest of you who are
6 waiting over, you can go into town, party up
7 and --

8 Anything, so, we have pretty well
9 got three different items.

10 MR. KATZ: Yes, oh, the other thing
11 that you want to, that is on the agenda to
12 discuss, is just the status of DCAS and SC&A
13 work on Hooker Electrochemical, to have a
14 sense of where we are going forward.

15 DR. MAURO: Bill, could you give us
16 the low-down on where you are on Hooker?
17 Because you have been working Hooker, right?

18 MR. THURBER: Yes. You know, we are
19 moving along. It's, we are well along. I think
20 that the conversation we had this morning
21 about how Hooker and TBD-6001 interplay is
22 illustrative of some of the problems we have

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1 had in sorting out things.

2 But our report is reasonably far
3 along.

4 MR. KATZ: So, sort of a time
5 frame? Maybe when you reply on the other
6 things, you can give us a -- because we are
7 going to need to plan another Work Group
8 meeting. The time frames for these kind of
9 relate to when all these deliverables will be
10 coming in.

11 DR. MAURO: Once we have finished
12 the technical analysis of Hooker, which it
13 sounds like is pretty far along, we have to
14 do, we are going to have a section dealing
15 with surrogate data. Hooker makes quite
16 extensive use of surrogate data. It uses TBD-
17 6001.

18 And we are going to have -- and
19 there are -- the Board has a surrogate data
20 criteria document.

21 MR. THURBER: I thought we put that
22 --

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1 DR. MAURO: For Hooker?

2 MR. THURBER: I thought that the
3 issue of including discussions of surrogate
4 data in all of these appendices was kind of in
5 abeyance. Wasn't that the guidance from you
6 Ted?

7 DR. MAURO: I thought that was just
8 the opposite.

9 MR. THURBER: No, because -- you
10 recall that I had originally advised everybody
11 who was working on these appendices that a
12 discussion of surrogate data, and given that
13 the Bethlehem model was appropriate and then I
14 thought that based on a conversation that you
15 all had, that that was not going to be a
16 requirement of these appendices at this time.

17 DR. MAURO: I have to say, just to
18 be --

19 MR. KATZ: I have not had any
20 discussion one way or the other on this
21 subject.

22 DR. MAURO: I have been operating

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1 on the premise that the most important --

2 MR. THURBER: Hans? Are you still
3 there?

4 DR. BEHLING: Yes?

5 MR. THURBER: Can you shed any
6 light on that comment?

7 DR. BEHLING: You know, I was just
8 looking at something else.

9 MR. THURBER: I understand.

10 DR. MAURO: No, we know where you
11 were. Hans, we have a number of SEC petition
12 reviews and Site Profile reviews that deal
13 with a lot of AWE facilities right now and
14 Bill is very much involved in that work.

15 What I had in my direction, which
16 I believe I gave everyone was, one of the
17 chapters of this report has got to be the
18 degree to which the use of surrogate data
19 meets the five criteria -- I think it's five -
20 - laid out in the Board's guidelines, just
21 like we did in Texas City, Bethlehem Steel,
22 Dow and others.

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1 You are saying, now I have got to
2 tell you --

3 MR. THURBER: Well I have got to go
4 back and review my emails. I don't, I can't do
5 it here because they're on my other computer.

6 DR. MAURO: I mean, to me that's
7 the biggest and most important question.
8 That's what turned Bethlehem Steel, that
9 judgment, you know.

10 MR. THURBER: Well, I know that.

11 DR. MAURO: Yes.

12 MR. THURBER: But I thought that we
13 had a change in marching orders, but I will
14 check my emails when I get home.

15 MR. KATZ: Yes remind me when you
16 find what you find because I don't recall
17 giving any guidelines about that question.

18 CHAIRMAN ANDERSON: For our next
19 meeting, we probably need to do that before,
20 what is it, December?

21 MR. KATZ: The next meeting face-
22 to-face is in November.

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1 CHAIRMAN ANDERSON: November. So,
2 we probably, hopefully, will get your review
3 on --

4 MR. KATZ: Hooker.

5 CHAIRMAN ANDERSON: Hooker and
6 United whatever.

7 MR. KATZ: Oh, that, well in
8 advance.

9 CHAIRMAN ANDERSON: But I would
10 think at that meeting is where we would want
11 you to, as a Committee we would make that
12 decision so it needs to be far enough advance
13 of the meeting so that you have got time for
14 your agenda.

15 MR. KATZ: Does DCAS have anything
16 ongoing related to Hooker? Is Hooker, are you
17 --

18 MR. ALLEN: No.

19 MR. KATZ: Okay.

20 DR. MAURO: You gave a presentation
21 and --

22 CHAIRMAN ANDERSON: You've got 6001

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1 issues you're going to, and I don't know, will
2 you have a White Paper in that time frame?

3 MR. ALLEN: Before which time,
4 before November?

5 CHAIRMAN ANDERSON: Yes.

6 MR. ALLEN: I would think so, yes.

7 MR. KATZ: But we'll need a Work
8 Group meeting in advance of the Board meeting.

9 CHAIRMAN ANDERSON: Oh yes, that's
10 what I mean.

11 MR. KATZ: Absolutely.

12 CHAIRMAN ANDERSON: And what I was
13 looking at is when. It would be nice it would
14 seem, if we have your White Paper to look at.

15 MR. KATZ: Right.

16 CHAIRMAN ANDERSON: And we will
17 have your little notes.

18 MR. KATZ: So we will get time
19 lines from, both from Dave and from John for
20 all of this work so we will know, and that's
21 the point of the time line, so we can figure
22 out when to have another Work Group meeting.

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1 Because so far it is -- as soon as possible,
2 of course in advance of November, because you
3 never know what comes up with the review --
4 that's the work that gets done.

5 But new issues get unearthed or
6 whatever.

7 CHAIRMAN ANDERSON: I just want to,
8 we got a window we can start looking at
9 people's schedules.

10 MR. KATZ: I think until we hear
11 back from them, until we hear back from them
12 though, if we pull out our calendars now we
13 have no sense of when we --

14 CHAIRMAN ANDERSON: Yes, no, no,
15 but if we --

16 DR. MAURO: When is the, there's
17 the August, and then what's the next meeting?

18 MR. KATZ: After August there will
19 be another teleconference but the next face-
20 to-face is in November, some time before
21 Thanksgiving, maybe a week before Thanksgiving
22 or so.

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1 DR. MAURO: We will be finished
2 with every --in fact our fiscal year will be
3 over by then almost I mean, end of December.

4 MR. KATZ: Well December.

5 DR. MAURO: The end of December, so
6 we are a month away from the end and in
7 principal, for all of our missions, tasks,
8 should be close to being done by the end of
9 December, so I mean we are going to be done
10 with almost everything unless you give us new
11 work by that time.

12 That's way out, yes, we will have
13 it well before that.

14 CHAIRMAN ANDERSON: Okay. Good. Any
15 other questions, issues?

16 MR. KATZ: For the good of the
17 order.

18 CHAIRMAN ANDERSON: For the good of
19 the order. Adjourned.

20 MR. KATZ: Adjourned. Thank you
21 everybody for a lot of hard work today.

22 (Whereupon, the above-entitled

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1 matter went off the record at 4:24 p.m.)

2

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