The Work Group convened in the Frankfurt Room of the Cincinnati Airport Marriott, 2395 Progress Drive, Hebron, Kentucky at 9:00 a.m., Henry Anderson, Chairman, presiding.

PRESENT:

HENRY ANDERSON, Chairman
R. WILLIAM FIELD, Member*
ALSO PRESENT:

TED KATZ, Designated Federal Official
DAVE ALLEN, DCAS
BOB BARTON, SC&A
HANS BEHLING, SC&A*
ZAIDA BURGOS, NIOSH*
KAY DREY*
CLARISSA EATON*
MARY GIRARDO*
SAM GLOVER, DCAS
JENNY LIN, HHS*
JOHN MAURO, SC&A*
JIM NETON, DCAS
L. MICHAEL RAFKY, HHS*
JOHN STIVER, SC&A*
BILL THURBER, SC&A*

*Participating via telephone
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and Administrative Matters
(9:03 a.m.)

MR. KATZ: Good morning, everyone in the room and on the line.

This is the Advisory Board on Radiation and Worker Health. This is the TBD-6001 Work Group, and we are just getting started with roll call. Since this is a Work Group that is site-specific, please speak to conflict of interest. We are going to be talking at least briefly about three different sites today, focusing on ElectroMet and Hooker, but we will also just get a status discussion on United Nuclear.

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

CHAIRMAN ANDERSON: Henry Anderson. I don't have any conflicts.

MR. KATZ: Thank you.

And on the line, Board Members?

MEMBER FIELD: Yes, Bill Field.

No conflict.
MR. KATZ: Welcome, Bill.

CHAIRMAN ANDERSON: Anyone else?

MR. KATZ: Any other Board Member on the line?

CHAIRMAN ANDERSON: Is Mark?

MR. KATZ: Yes, that's who we were expecting, Mark.

CHAIRMAN ANDERSON: Did he tell you --

MR. KATZ: Zaida, are you on the line?

MS. BURGOS: Yes, I am. He said he will try to call in.

MR. KATZ: Okay. Okay. Yes, he has conflicts quite bit with CSB.

Thank you.

MS. BURGOS: Okay.

MR. KATZ: Okay. So, let's go on, then, with NIOSH ORAU team in the room.

DR. NETON: Jim Neton, NIOSH. No conflicts.

DR. GLOVER: Sam Glover, NIOSH.
No conflicts.

MR. ALLEN: Dave Allen, NIOSH. No conflicts.

MR. KATZ: And NIOSH ORAU team on the line?

Are you expecting anyone?

MR. ALLEN: No.

MR. KATZ: Okay. SC&A team in the room?

MR. BARTON: Bob Barton, SC&A. No conflict.

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

DR. MAURO: John Mauro, SC&A. No conflict.

MR. KATZ: Welcome, John.

MR. STIVER: John Stiver, SC&A. No conflict.

DR. BEHLING: Hans Behling, SC&A. No conflict.

MR. KATZ: And is Bill Thurber going to be on, too?

DR. MAURO: I am expecting him. I
I am sure he will be joining us shortly.

MR. KATZ: Okay. Great.

MR. THURBER: I had the mute on.

MR. KATZ: There you are.

MR. THURBER: Bill Thurber. No conflicts.

MR. KATZ: Welcome. Thanks, Bill.

MR. THURBER: Okay.

MR. KATZ: All right, good. And federal officials? There are none in the room other than me. I'm Ted Katz, the Designated Federal Official for the Board.

On the line?

MS. LIN: Jenny Lin, HHS.

MR. RAFKY: Michael Rafky, HHS.

No conflict.

MR. KATZ: Welcome, Jenny, Michael.

Any members of the public on the line? There are none in the room.

MS. GIRARDO: Mary Girardo in Niagara Falls, New York.
MR. KATZ: Oh, welcome, Mary.

Okay. That takes care of roll call.

Let me remind folks on the phone to mute your phone except when you are speaking to the group. You use *6 to mute it and *6 to come off of mute, if you don't have a mute button.

And I can hear someone's breathing. So, someone hasn't muted.

(Laughter.)

And there's an agenda for the meeting which Andy will go over, but it is online, too. It is on the NIOSH website under the Board.

Thank you.

CHAIRMAN ANDERSON: The three already mentioned, the three we are going to discuss, we are going to begin with going back over, at the last meeting we spent quite a bit of time going over the issues matrix with Hooker Electrochemical, and there were some
unresolved issues. So, we are going to start
with Hooker Electrochemical and then go to
Electro Metallurgical and then United Nuclear,
just for a quick update.

So, I guess I would turn it over
to -- are you going to --

MR. BARTON: Sure, I can kind of
introduce things.

I guess since the last meeting the
Board tasked SC&A with reviewing the
Evaluation Report. Since then, we have
released findings for that report.

Essentially, I think maybe the
best way to go about this is we just kind of
go one by one through these findings. And I
will ask Bill Thurber, since he is on the
line, and this is kind of his baby, that he
can kind of describe what his findings were
and what his thoughts were on that.

And then we can probably turn it
right over to NIOSH and they can present their
new information. Since then, there has been a
Site Profile and two White Papers that we have seen that kind of address a lot of these topics.

So, Bill, are you on the line?

MR. THURBER: Yes, I am.

I can go through the findings. I would ask the Work Group whether it would be more efficient to move directly to NIOSH's new information. And the reason I suggest that is this: that several of our findings were tied in with TBD-6001, and TBD-6001 has been -- it no longer exists, and I know that NIOSH has addressed a number of our concerns in their new standalone Site Profile of Hooker. So, either way, I can go through the findings or we can move on to the new discussion. Maybe we should start with the findings.

CHAIRMAN ANDERSON: Yes, why don't we just quickly go through that?

MR. THURBER: Yes. Okay. We had one observation and I believe 10 findings, which are all documented in the memo I sent to
you all earlier or at the beginning of last week.

Observation 1 is a point that we have brought up on several occasions, and that is the need to clarify whether photofluorography is used at AWE sites. This has been discussed on numerous occasions, but it is just a loose end that needs to be tidied up.

And the first finding dealt with the question of how many barrels a month were dumped by the Hooker people. The context here is that Hooker received the slag from ElectroMet in wooden whiskey barrels. They dumped this material through a screen onto a conveyor belt and conveyed it into a digester tank where the slag, the uranium-bearing slag, was slurried with hydrochloric acid.

The information in the documentation that we looked at was unclear as to how many days a month the slag-dumping operation, which is probably the dustiest
operation and that which results in the highest internal exposure, would have occurred. And because the information was not very clear to us, we felt that this question needed to be examined in greater depth.

The second finding that we had, it was when we read the original documents, it was not clear that NIOSH had included in their inhalation dose not only inhalation exposure during the slag-dumping operations, but also whether they had included inhalation dose for other operations that were involved, that were part of the whole slag-processing operation. The third finding involved the question as to whether some of the inhalation exposures were unrealistically high. This, again, harks back to a frequent discussion that we have had as to what is plausible and what is implausibly high. And obviously, this is a gray area that is subject to considerable technical judgment. But when we reviewed the document, we felt some of the basis for the
estimates was unrealistic.

The second observation here dealt with the fact that it wasn't clear to us how some of the external exposure calculations could be traced clearly back to TBD-6001. Of course, that issue will go away with the new freestanding Site Profile.

Finding 4, again, well, no, I'm sorry. Finding 4, there were some errors in the calculations in Table AA3 of Appendix A. And NIOSH had recognized those. I think that David Allen and I had discussed those in the past. This is merely to document that those numbers needed to be corrected.

Finding 5, we felt that the approach of trying to get bounding values from Table 7.3 of TBD-6001 was not technically very robust. We suggested that it would be better to try to derive these external exposure values from Microshield or MCNP rather than using some workplace analogs that were perhaps a stretch in the context of Hooker.
External exposure values,

Observation No. 3, this was merely to indicate that the terminology was rather loosely used between TBD-6001 and Appendix AA regarding millirad, millirem, et cetera, et cetera, mR, and that they should be consistent.

Finding 6, again, we felt that one could come up with a better estimate of shallow-dose estimates, dose to the skin, by using Microshield or MCNP rather than some of the workplace numbers that came out of TBD-6001. Again, we felt that using these kinds of calculations would be technically more robust than using some of the analogues from TBD-6001.

Finding 7, there was an inhalation intake of 1 picocurie per calendar day quoted. It was a number that we had difficulty tracing and suggested that it would be quite helpful if the basis for that number was more transparent.

Finding 8, again, a recurring
theme in all of these discussions, that is, the basis for using a resuspension factor of 1 times 10 to the minus 6 should be fully justified in the context of the operations at Hooker. And we have discussed on numerous occasions that the resuspension factor is site-specific. You just can't always use 1 times 10 to the minus 6. We felt that the use of that factor at Hooker needed to be more stringently justified.

Finding 9 had to do with the approach taken to calculating the inhalation exposures in the residual period. We felt that the approach did not adequately reflect some of the criticisms that we had made in the past on OTIB-0070.

Particularly, again, this in part ties in with the resuspension factor and that the resuspension factor and the decay rate need to be consistent with one another. And if you use 1 percent per day, that is not consistent with the resuspension factor of 10
to the minus 6.

And finally, the calculation for the external exposure and residual period needed to be corrected because it reflected the same error that was involved in one of the earlier findings, in Finding 4, I believe.

So, that briefly summarizes the comments that we had made and the findings that we had uncovered. I don't see it here, but I guess in subsequent conversations we cited some information that suggested that some of the slag might have remained at the site after the beginning of the residual period, and that was an item that needed further investigation.

MR. BARTON: Yes, Bill, that finding came out of the Evaluation Report listed as Finding F.

MR. THURBER: Right. Yes.

Thanks, Bob.

So, I think that pretty much summarizes it.
MR. ALLEN: Okay. Do we want to go over these? Do we want to go over the DR review?

CHAIRMAN ANDERSON: Let's go over these first because I think we can maybe either agree to disagree or --

MR. ALLEN: Okay.

CHAIRMAN ANDERSON: -- finish them up.

MR. ALLEN: Observation 1 is about clarifying the X-rays.

CHAIRMAN ANDERSON: We talked about that last time.

MR. ALLEN: We talked about it last time. I did put a sentence in the new TBD that says PA chest X-ray.

CHAIRMAN ANDERSON: Okay. Yes.

MR. ALLEN: But whether that is clear enough or not, I don't know.

CHAIRMAN ANDERSON: Yes, yes.

MR. ALLEN: But the root documents will be revised here eventually.
DR. MAURO: This is John Mauro.

Regarding this question of fluoroscopic examinations at AWE facilities, I know that this has come up a number of times. And I think I understand the policy that would apply across the board to all AWE facilities. It wouldn't hurt really for me for a reminder, it is my understanding now that the language in OTIB-6 that talks about when you use or assume fluoroscopic, and I believe it is something like if it is before 1960 or 1970 -- I forgot the exact date -- it is automatically assumed that was used.

I think the intent -- and this is where I am looking for some clarification -- was that was really meant for DOE facilities. For AWE facilities, it was clarified and corrected for us, for SC&A, that that doesn't necessarily apply to AWEs. In AWEs, you would only use fluoroscopic if there is evidence, either in the contract itself between the Atomic Energy Commission and the AWE that,
yes, you shall do this or there was evidence that it was there. So, you don't automatically default to fluoroscopic, as you do with DOE. It has to be an affirmative statement that would drive you toward using fluoroscopic when it comes to AWEs. Is that understanding correct?

MR. ALLEN: Yes, that is correct. I mean I would say that any information we have, then we go away from defaults and use that information, whether that is saying they did have PFGs or did not have them or did have a particular type of chest X-ray or something. So, the defaults only apply when we have no information on the particulars, say.

DR. MAURO: Well, no, but when it comes to an AWE, though, unlike DOE where you default to fluoroscopic examination, AWEs you don't. You default to X-ray, unless there is affirmative statement that, in fact, fluoroscopic was used.

So, there is a fundamental
difference, which may very well be justified.  

Don't get me wrong. I am not being critical.  

I am trying to find like the one-size-fits-all answer. So, when we don't see  
fluoroscopic assumptions at an AWE facility,  
there is good reason. There was no provision  
for it in the contract, and there was no  
evidence of its use at the facility.  

Because if that is the case, then  
in one fell sweep we do away with a whole  
bunch of comments related to this matter at  
AWE facilities. And I just wanted to get, I  
guess, a statement made, perhaps on the  
record, if that is, in fact, the case, or if  
it is not, there's still more to the story,  
that is okay, too. But that is where I am  
right now. In fact, I have been discussing  
this matter with our people, that that should  
be our new position when we do AWE reviews.  

DR. NETON: John, this is Jim.  

I think you have got it right. I  
mean this goes back a while now, but the
concept, I believe, is that photofluorography was used more in mass screening operations. It was an efficient way to push through a large number of people without -- well, it was just more expeditious.

And many of these AWEs, you know, smaller mom and pop type operations, there would have been just no real reason to have that type of procedure in place.

DR. MAURO: Yes, that was my understanding, and that's fine because it was just an open item that just kept recurring.

MR. THURBER: I would add one other comment that was clarified to me, and I think to some of the rest of us at SC&A in a recent conversation. And that is that you only consider X-rays if they are done onsite. If the workers were sent offsite to a hospital or a clinic or a physician's office, those exposures are not included.

DR. NETON: Correct. That is the language, the interpretation of the statute.
MR. BARTON: If I could ask a question -- this is Bob Barton. Have we found to date an AWE site that actually did have this type of X-ray onsite that they used for their workers?

MR. ALLEN: I don't remember any photofluorography, but we did find one that used fluorography, which is even worse. That was Linde early on, up through mid-`44, I think, or something like that.

MR. BARTON: Okay. So, there are some sites where --

MR. ALLEN: There's other sites where we have information where they went to a local hospital for their X-rays, et cetera.

CHAIRMAN ANDERSON: But if it is offsite, I mean we discussed it wouldn't be covered, but I thought the assumption was --

MR. ALLEN: Yes, the default assumption is they had X-rays --

CHAIRMAN ANDERSON: The default is that it was.
MR. ALLEN: -- onsite annually, standard PA chest X-rays.

DR. NETON: Linde was a DOE facility at one point in that operation.

MR. ALLEN: That's true, but we had information about their X-rays, and defaults don't apply after that.

DR. NETON: Right. Once you have got some information about what they did, we would use that to the extent we could.

MR. BARTON: So, if you had information that they definitely weren't getting X-rays onsite, then we wouldn't include it.

MR. ALLEN: Right.

MR. BARTON: But if you had no information, then you would just default.

Okay.

MR. ALLEN: Yes.

MR. BARTON: I get it. Thank you.

MR. ALLEN: Okay. I think that is it for that topic, right?
Finding 1 was essentially a disagreement. I wouldn't say a disagreement, but two interpretations of the 10 tons per month on one report, whether that was the input or the output. And I think we agree it is not that clear or we did agree.

In the Technical Basis Document, we went into more detail on that to try to describe that it could be either one. And we looked at, since this was very early on, this is still during World War II, we could look at how much uranium metal was produced by the whole Manhattan Engineering District and how much magnesium fluoride would be produced by that.

And it turns out to where Mallinckrodt made most of the uranium metal. ElectroMet made the rest. I didn't have handy as far as how much each one did. But even assuming they were equal, they would not have produced enough magnesium fluoride for that to be the output, is basically what it came down
to in the evaluation they did in the Technical Basis Document.

And I don't think Bill has weighed in on the TBD, or if he has had a chance to look at it close enough or not. Did you want to weigh-in on that, Bill?

MR. THURBER: I don't care to weigh-in.

(Laughter.)

But I did look at the new Site Profile, the new TBD. And I did look at the additional information that you provided in there, which you have just described, basically, the relative quantities of slag that might have been produced at Mallinckrodt as compared to ElectroMet and, therefore, available to be processed at Hooker.

And there's no question that this is ambiguous. A couple of things that bother me, they don't bother me deeply, but the couple of things that bother are these:

One, it has never been clear to me
why Hooker would have built a facility with as much capacity as they built knowing that they only had a certain amount of hydrochloric acid to use, which was a byproduct from some other chemistry that they were practicing. And they had enough capacity to process, I forget what I estimated, but 10 or 15 times the amount that they apparently actually processed. That puzzled me a little bit.

The other thing that bothers me a little bit is that the documentation said, well, the uranium content was increased from one pound to five to ten pounds. The inference is that it was one pound to five to ten pounds per 500 pounds because 500 pounds was the content of a slag barrel. Now I don't know whether in local usage that it could have been one pound per 100 pounds, which is common parlance at the operation. So, that is a little fuzzy.

But, on balance, I think that new documentation favors the approach taken by
NIOSH.

MR. ALLEN: Okay. I don't know how you want to run this. Do you want to try to close out findings or just go through them all?

CHAIRMAN ANDERSON: Well, if we could close it, I mean, is there --

MR. ALLEN: I am not sure what SC&A's --

CHAIRMAN ANDERSON: If we can close it all, I would like to. I mean I don't know what more --

MR. ALLEN: SC&A has only had about 30 days or so since they have gotten that TBD. I don't know if they have reached -- I don't know if Bill is talking like an official --

MR. THURBER: We haven't even been formally tasked to review it, I don't think.

MR. ALLEN: Okay.

MR. THURBER: Have we, John?

DR. MAURO: No. We were just
asked to read it to the extent that it would be helpful for the purpose of this meeting, but not to actually perform a formal review of the revised TBD and write a report.

So, really, this is not unlike other circumstances where we will read it, and very often just giving it a read to see if, in fact, it deals with the issue appropriately, that does go a long way.

Bill, from what you read, do you think that the business of one day per month, isn't this the 5 percent number?

MR. THURBER: Yes. Yes.

DR. MAURO: And I remember that you had a concern with the 5 percent number, not only because of quantity, but also because of the physical work, unloading the trains and loading it and unloading it, and dumping it.

I remember the original review. So, it went more not only to perhaps the quantity of slag that was shipped, but, also, the actual operation and how much time a
worker might really spend in --

MR. THURBER: Well, but they were
tied, they were actually linked, John.

DR. MAURO: Right. Right.

MR. THURBER: If they were really
processing only 10 tons a month, then the
NIOSH assumption of one day per month or 5
percent of the time was solid. If they were
processing more, then it was an
underestimation.

Obviously, another choice is to
opt for the more conservative number.

DR. MAURO: From what you have
read, what I just heard is that in the new TBD
the sense that quantities were appropriate and
that, everything taken into consideration,
exposure to airborne dust from the handling of
5 percent of the time or I guess one day per
month seems to be reasonable.

But I know originally you did have
a concern that --

MR. THURBER: Yes. Well, indeed,
because there was a lot of ambiguity in the original documents, and there still is. Now what NIOSH has done is they have looked a little further afield to estimate how much slag might have been available within the weapons complex in total --

DR. MAURO: I see.

MR. THURBER: -- and what fraction of that on the upside might have been produced at ElectroMet. That number that could have been produced at ElectroMet does not jibe with the high-side production that could have occurred at Hooker.

DR. MAURO: Okay.

MR. THURBER: That is, of course, their position.

DR. MAURO: Okay. So, good. The new information, you say the weight of evidence, of course, not absolute, seems to be driving it toward the one day per month as being a pretty reasonable number.

MR. THURBER: Yes.
DR. MAURO: Well, you know, I know Bob and John, Bob Barton and John Stiver have looked at this a bit in getting ready for this meeting. Is there anything about that that you feel that might still be problematic, or should we let this one go?

MR. BARTON: Well, I do have -- this is Bob Barton -- I do have one question. I am looking at the TBD right now, Section 3.2, which kind of deals with this issue. You cite a War Department memo that indicates 152 tons of slag essentially during the operating period, July 1944 to January 1946. But the memo you cite is dated March of 1945.

So, I mean, does that include projections for how much they were planning to process at the site? Because, how would they know? Or maybe that date is just --

MR. ALLEN: I think that date is an error, honestly. I think I have that somewhere on my drive here.

CHAIRMAN ANDERSON: So, it would
have been in the middle of the period.

MR. ALLEN: It was a medical clearance. It was a memo for medical clearance that they did in the War Department. The contract is over; we want to clear this out type of thing.

So, it was definitely after the process, and it was the P-45 process which the hydrochloric acid was a byproduct of that, that they used for the digestion. The mag fluoride digestion was a supplement to that contract or amendment or some term.

But let me dig up that memo. I am not sure --

DR. NETON: While Dave is looking for that, I just have a process question. We are going through these findings on the TBD, but, also, do we not have an Evaluation Report hanging in the balance as well?

MR. ALLEN: Yes.

DR. NETON: Right. So, it seems to me that the SEC Evaluation Report would be
a higher priority to close out than these individual findings, and some of these findings that we are talking about here right now are, I think we might agree they are not really -- they are Site Profile issues, but they are not necessarily going to relate to our ability to bound doses during the SEC period. So, I don't know. Maybe --

CHAIRMAN ANDERSON: See, I thought this would. I thought that the assumption that it is only one day a month during the SEC period versus if it might have been that the maximum could have been five days a month would make a difference, wouldn't it?

DR. NETON: Well, it would make a difference, but whether we adopt one number or the other, we could agree at some point on one of those numbers. It is a matter of which is the one we are going to use, not can we put an upper limit on it at all.

MR. KATZ: But if we can put some of these to bed, I mean because they are
relatively simple and there's not more digging
to do, we might as well, right?

DR. NETON: Yes, that is fine,
but, then, we are going to have to go back
again when we do the ER analysis. Yes, I
don't know.

MR. KATZ: I mean we are doing the
ER right now. This is part of that.

DR. NETON: No, this is the Site
Profile.

These have to be taken in the
context of the ER, which I think would be the
best thing, the most important thing to close
out first.

But we can go through this. Maybe
we should just all keep in mind --

CHAIRMAN ANDERSON: Yes, I guess I
was just looking at this one particularly as
an uncertainty, you know, that the ability to
dose reconstruct, if we really don't know how
much was processed and how frequently, yes,
you can take the amount of acid that was
generated there and say they couldn't have processed more than that, and how much would it take to do that, to do an upper bound. But all of that, again, it is back to the old you can bound anything. The question is, how much do we really know about this?

DR. NETON: Okay. That's fine.

CHAIRMAN ANDERSON: But I don't want to go on forever on this, but --

DR. NETON: We can go through it. I just want to make sure --

CHAIRMAN ANDERSON: Yes. But this one I thought was probably more important than the others, some of the others. Now maybe I am wrong on those, too.

MR. ALLEN: I think some of the issues from the Evaluation Report review are also here in the Appendix review. So, I think if we get through this and, then, go to the ER review --

DR. NETON: Okay. That's fine. I just wanted to make sure I wasn't off base
with my thinking on the ER being --

CHAIRMAN ANDERSON: Yes. No, I would agree with you on that.

DR. NETON: Okay.

DR. MAURO: This is John.

One more, to throw a little more into the pot. As we go through these, my sense is if we are able to resolve the issues here, as we are looking at them, will that resolve them? Whether they are ER or they are Site Profile issues, they are resolved.

If it turns out, though, that there is still a little ambiguity, like we are talking about right now, it wouldn't hurt to say whether there is agreement by the Work Group. Whether we are dealing with an SEC or a Site Profile issue, it helps to sort of get the process clearing the slate a little bit. So, it means that, okay, we have cleared it as an SEC issue, but it may still remain as an ER issue.

I would agree that this business
of number of days per month, the ambiguity
that is there, what I am hearing is that, yes,
there may be a little -- what I am hearing is
that it is more or less resolved, except for
that one question that Bob Barton just brought
up. And that would resolve it both as an SEC
and a Site Profile issue.

MR. BARTON: The other thing I
would add to that, John -- this is Bob again
-- is there is a pretty compelling argument
made in the Site Profile that is sort of some
scoping calculations that, for lack of a
better word, is sort of the material balance
between these sites. And if we have that
quoted number from this War Department memo of
152 tons of slag process, and it also says
that a lot of it also went over to Lake
Ontario Ordnance Works, I mean I don't know,
is that information available at Lake Ontario
as to how much they processed? Because that
would kind of round out that sort of material
balance argument, saying they processed this
much, so it is not even possible that that
much could have been sent to Hooker.

   MR. ALLEN: I think in, like 1949,
we know how much slag they had at Lake
Ontario. I just don't know if I have the
number --

   MR. BARTON: It really closes the
thing out?

   MR. ALLEN: I don't have that
number right now handy.

   MR. BARTON: Obviously.

   MR. ALLEN: Actually, the War
Department memo you are talking about I do
have handy. It is right here. And that is a
typo in the TBD. It is March 8th, 1946.

   CHAIRMAN ANDERSON: Well, that's
good.

   MR. ALLEN: That makes a lot more
sense.

   CHAIRMAN ANDERSON: Yes.

   MR. BARTON: Well, especially
under the determination, you know.
CHAIRMAN ANDERSON: Yes, yes.

Well, that ought to be a pretty --

MR. ALLEN: I was thinking it was an error in the memo, but it is not. It is an error in the TBD. Yes, it's not the only one.

(Laughter.)

DR. NETON: Yes, there is one more we know of.

CHAIRMAN ANDERSON: Yes.

MR. ALLEN: Two more.

CHAIRMAN ANDERSON: Two more?

Okay.

MR. KATZ: So, just a last question, for all of these, I mean in this case, the question with Lake Ontario, is that something that needs to be buttoned up? Or is this put to bed in terms of materials balance?

DR. MAURO: This is John, just to help out a little bit.

It sounds like the discussion really was between Bob Barton and Bill. Bill, your sense is you are ready to put this one to
bed.

Bob, in light of what you just heard, are you ready to put this to bed?

MR. BARTON: I'm pretty comfortable with that. I was just making the suggestion that it would really kind of knock this thing out of the park, to the point where, obviously, you couldn't have more than that 10 tons coming in. I mean everything else, I mean the new information provided in the TBD and all that looks kosher to me.

DR. MAURO: Also, to take an SC&A stand here, I think we put this to bed. We recommend to the Work Group that we close this issue as an SEC and as a Site Profile issue.

CHAIRMAN ANDERSON: Okay. Bill, do you have any comments?

MR. THURBER: No. That's fine. That's fine.

CHAIRMAN ANDERSON: Bill? The other Bill, yes.

MEMBER FIELD: No, it's fine with
me as well.

CHAIRMAN ANDERSON: Okay. So, for the record --

MR. KATZ: It's closed.

CHAIRMAN ANDERSON: -- closed, this one is. And one day a month seems to be a reasonable process figure.

Okay. Good. Are you happy?

(Laughter.)

Okay. I didn't want to chew on it all morning, though. Yes, I agree with you on that.

MR. ALLEN: Well, the next one might be a little faster. That was, if I get this right --

MR. KATZ: The next one is about inhalation for operations other than --

MR. ALLEN: Finding 2 was the time for dumping the material, whether that could be done in one day or not. And I think that was, honestly, related to, if there was 10 times the throughput, no, it couldn't be done
in a day.

MR. THURBER: No, no. No, finding 2 was related to --

MR. ALLEN: I'm wrong on this?

MR. THURBER: -- our concern that in your --

MR. ALLEN: I'm sorry. You're right.

MR. THURBER: -- inhalation calculation you only looked at the inhalation exposures during the slag dumping and not what the workers did the other 29 days, what exposure they received the other 29 days in the month. That was what finding 2 was about.

And as I recall, David, you and I discussed this, and you pointed out to me that, while it was not apparent in Appendix AA or not easily discernible in Appendix AA that you had, indeed, included in the calculation exposures during the rest of the month, that they were, indeed, very small, and so they almost showed up as a rounding error.
MR. ALLEN: Yes, you are right. That is the finding. I was messed up there. Well, it is kind of a moot point now with the TBD. Now it is a different method in there now. Hopefully, I have it described well enough.

I think you pointed out one item in there where I didn't mention that we are using 95th. But, other than that, hopefully, the description in there is adequate to come up with where the number came from, and it is accounting for 100 percent of the time.

Anything you want to add on that one, Bill?

MR. THURBER: No. No, I think that, again, based on my quick review of the new TBD, that it is adequately covered. It would help the reader if a sentence or so was added to indicate that while in the document, the TBD document, you suggest several options, you actually took the more conservative option and used the 95th percentile. That point was
not crystal-clear in the TBD. But my understanding of what you did is conservative, is appropriately bounding.

MR. ALLEN: Yes, and John Mauro and Bill did find another error in the existing TBD that we are going to make a quick revision to correct. So, in doing that, I will specify the 95th, which, apparently, I left out of that. And now I have got a date on a memo to correct, too.

Is that it for finding 2?

MR. THURBER: Yes, I'm satisfied.

MR. KATZ: Okay, closed.

CHAIRMAN ANDERSON: Three.

MR. ALLEN: Okay. Finding 3 was a discussion on whether the airborne was unrealistically high. And it is kind of a moot point now that the current TBD is not using the old TBD-6001 values.

And at the last Work Group meeting, I think the answer was for SC&A to review the Evaluation Report, which I am not
sure that helps.

CHAIRMAN ANDERSON: I mean this really is an issue for the ER, which we will probably --

MR. ALLEN: Yes, and I did include a surrogate data justification in the documentation I sent to the Work Group. Again, I don't know what has been reviewed and what hasn't, how much time is needed.

I don't know if we want to close this one, hold it over for the ER talk, or what. I guess we hold onto this one?

CHAIRMAN ANDERSON: Yes.

MR. BARTON: Well, is it really even a finding anymore since --

CHAIRMAN ANDERSON: Yes, I mean I think it is generically part of the ER discussion, but not specifically.

MR. BARTON: I think if that came up as a problem in the ER review up here in the --

CHAIRMAN ANDERSON: Yes.
MR. BARTON: -- in the Review report --

CHAIRMAN ANDERSON: Yes, yes.

MR. BARTON: To be honest, I am looking through it. I don't quite see anything where we say the method is unrealistically high. But I don't know if that is something we really attack under a Site Profile review --

CHAIRMAN ANDERSON: Yes.


MR. KATZ: So, this can be closed here?

DR. MAURO: This is John. This is for my edification. So, in Finding 3, the concern had to do with using surrogate data in TBD-6001 as perhaps being unrealistically high. Is that where we are?

MR. THURBER: That is what the finding was.

DR. MAURO: Right, but TBD-6001
now is defunct.

MR. THURBER: Right.

DR. MAURO: So, they are using now actual data for Hooker?

MR. THURBER: No, they are using surrogate data from other places that were handling slag.

DR. MAURO: Okay, got it.

MR. THURBER: Mallinckrodt and Fernald.

DR. MAURO: All right. And, Bill, I remember you were looking at this originally. Was it your sense that the slag approach for Mallinckrodt now, as opposed to the default values that were originally in TBD-6000 falls within the realm of scientifically-sound and sufficiently-accurate?

MR. THURBER: Yes.

DR. MAURO: Oh, okay. So, this is not something we have to look at further?

MR. KATZ: Something you do not
have to look at further?

DR. MAURO: Yes, that's what I mean. Is this something we do not or is there still some action --

CHAIRMAN ANDERSON: This was more generic than what is currently proposed for the use of surrogate data. So, I think we can close this.

DR. MAURO: Okay.

MR. KATZ: Bill Field, is that good with you, closing it here?

MEMBER FIELD: Yes, I think that is fine.

MR. ALLEN: Okay, moving on, Observation 2 was a math error in the external dose. It was kind of a small error that is not there anymore. I mean it is not relevant to the new TBD.

CHAIRMAN ANDERSON: Yes, that's closed.

MR. ALLEN: Yes, if you can close observations. I'm not sure.
CHAIRMAN ANDERSON: Yes. So, it has been addressed.

MR. ALLEN: It has been addressed.

Yes, that particular error was 350 days in a calendar year instead of 365.

CHAIRMAN ANDERSON: Yes. Yes.

MR. ALLEN: I don't know who put that one in there.

(Laughter.)

CHAIRMAN ANDERSON: Those gremlins creep in.

MR. ALLEN: That is one of those that --

CHAIRMAN ANDERSON: Well, we found them. That's the good.

MR. ALLEN: There's no arguing with that kind. It is real obvious. You just fix them.

CHAIRMAN ANDERSON: Even in 1946 we had 365 days. Okay.

(Laughter.)

MR. ALLEN: Finding 4 was another
error in the external calculation, and that one was TBD-6001. Again, it is no longer relevant. External doses are calculated very differently now.

CHAIRMAN ANDERSON: Yes. Okay. That's closed.

MR. ALLEN: Finding 5 was, again, values pulled from 6001 were not realistic. The Appendix review recommended using MCNP, and that is what was done in the TBD. The new TBD was an MCNP run.

CHAIRMAN ANDERSON: Okay.

DR. NETON: There was an error in that calculation?

MR. ALLEN: Yes, there was a factor of a hundred error that crept into there. It was external dose from contamination. And it might not have been the most obvious on Finding 5, but, then, the same factor crept into Finding 10, which ended up being the primary external dose during the residual period.
CHAIRMAN ANDERSON: Okay.

DR. MAURO: Is this the matter that I think was cleared up over the last couple of weeks?

MR. THURBER: Yes.

DR. MAURO: Very good. Yes. So, Bill, you had a chance to look at that, and you're okay now?

MR. THURBER: Yes, I'm okay with that.

DR. MAURO: Okay. Great.

MR. THURBER: I mean I am okay with the corrected number. I mean I haven't seen the corrected number, but I understand where it is going to be, and I'm okay with it.

MR. ALLEN: Okay, we move on to Observation --

MR. KATZ: Closed. I'm sorry.

Closed, right?

CHAIRMAN ANDERSON: Well, it's closed, yes.

MR. KATZ: Okay.
MR. ALLEN: Observation 3, again, is there were some millirem doses used in TBD-6001, and they were cited as milliroentgen, I think. I don't remember the details, but there was interchanging of mR and millirem, and trying to pay a little more attention to that.

Finding 6 --

CHAIRMAN ANDERSON: So, that --

MR. ALLEN: I'm sorry.

CHAIRMAN ANDERSON: That's fixed.

MR. ALLEN: Finding 6 was beta dose extrapolated from uranium. They thought it was not, and probably rightfully so, felt it wasn't -- I don't know how you would say it -- a valid approach to that. I believe the review recommended MCNP calculation, and that is what was done in the new TBD. There is a whole new external dose calculation in the new TBD.

DR. MAURO: So, the new TBD has
the correct value, or is that something that is a commitment?

MR. ALLEN: The new TBD has an MCNP run that used a -- I'm sorry -- it used MCNP to come up with new values. So, this particular finding, the issue is gone really.

DR. MAURO: Okay.

MR. ALLEN: Whether a new issue creeps up is a different story.

DR. MAURO: Right, right.

MR. ALLEN: But, as I mentioned, there was another error in the TBD that I need to correct here. That's what John and Bill pointed out to me, and that was in the beta as well as gamma dose rates from the barrels. It was another spreadsheet math error in there, and that is going to be corrected here soon.

Is that what you are talking about?

MR. THURBER: David, this is Bill.

On the beta dose issue, it wasn't clear to me where the dose to the skin other
than the hands and arms came from in the new TBD.

MR. ALLEN: It came from MCNP-run contact dose rates. Is that -- ?

MR. THURBER: Well, I thought you got the dose to the hands and arms from the MCNP run.

MR. ALLEN: Yes, we calculated a contact dose rate, a 1-foot dose rate, and I think a 1-meter dose rate.

MR. THURBER: Oh, okay. All right. Okay.

And so, what did you use, 1 foot or something, for the rest of the skin?

MR. ALLEN: I believe it was. It should be specified in there. I am looking at the TBD right now.

MR. THURBER: It may be. As I say, I didn't --

MR. ALLEN: That is one of those paragraphs that has all kinds of information in it that is just --
MR. THURBER: Right.

MR. ALLEN: -- you know, you toss through it all.

MR. THURBER: Yes.

MR. ALLEN: And I'm still looking.

DR. MAURO: While you're looking, I have a question by way of process. In some Work Groups, an issue is closed after the TBD or procedure or whatever the work product is that NIOSH is preparing has been revised. In this case, it sounds like that there are commitments being made to everyone's satisfaction that, yes, that correction, when made, will solve this problem. But the actual document has not been issued with that revision.

This is just really a protocol question, Andy, on how you would like to run this. We certainly could close issues out on these verbal commitments. Or would you prefer to wait until you actually see the revision in the product?
MR. ALLEN: I don't know if that is the same thing, John. I mean, that is done, I mean, the findings themselves, there has been a TBD written that addresses those findings. And, then, there are additional minor errors -- there is a typo on a date -- that is not so much part of the finding as an additional piece of information mentioned in this meeting today that was a question.

DR. MAURO: Oh, I misunderstood. I though there was a couple of these typos --

MR. THURBER: Yes, but, John, this is Bill.

I think that the point that is being made is that our finding was, we don't like the way you are doing it; you ought to use MCNP.

DR. MAURO: Right.

MR. THURBER: And NIOSH's response is, we agree; we are using MCNP -- not that we did MCNP right, because there is a subtlety there.
DR. MAURO: Oh, okay.

(Laughter.)

MR. ALLEN: That sounds bad when you say it.

(Laughter.)

CHAIRMAN ANDERSON: So, is the TBD going to be revised or has it been revised?

MR. ALLEN: The TBD has been written to replace the Appendix.

CHAIRMAN ANDERSON: Right.

MR. ALLEN: And I think the TBD, as it stands right now, addresses all the issues, in the process of completely --

CHAIRMAN ANDERSON: But we haven't seen that?

MR. ALLEN: Yes, that is what I sent April 7th.

CHAIRMAN ANDERSON: Okay.

MR. ALLEN: But what John is pointing out is there are an error or two in the new TBD, but I don't think they really go towards the issue.
CHAIRMAN ANDERSON: Okay.

MR. ALLEN: You know, there is a math error here and a typo there.

CHAIRMAN ANDERSON: Yes, okay.

Okay. So, we're okay. I mean, I don't want to change --

DR. MAURO: Andy, if you're okay, we're okay.

CHAIRMAN ANDERSON: Well, I mean, as long as these have been fixed -- I don't have that document here. So, I don't know that it has, but I would rather not completely close it out. I don't know. Maybe we could kind of put it in a holding --

MR. KATZ: It's fine. I think it is fine to close it.

CHAIRMAN ANDERSON: Yes, yes.

MR. KATZ: I mean, these are minor calculational errors that you are going to fix, or whatever. But what John is referring to is, with the Procedures Subcommittee, when there's agreement on an approach, but it
hasn't been sort of sorted out --

CHAIRMAN ANDERSON: Implemented, yes, yes.

MR. KATZ: -- implemented, so that they can actually see the fine details of it --

CHAIRMAN ANDERSON: Yes.

MR. KATZ: -- it is put in abeyance because there is agreement in the approach --

CHAIRMAN ANDERSON: Yes.

MR. KATZ: -- but it is not closed until they actually see the approach.

CHAIRMAN ANDERSON: Yes.

MR. KATZ: Here you already have the approach laid out.

CHAIRMAN ANDERSON: Yes.

MR. KATZ: There is a calculational error.

CHAIRMAN ANDERSON: Yes.

MR. KATZ: It's not really --

CHAIRMAN ANDERSON: Yes. Okay.
MR. KATZ: You know, it doesn't take anything to fix that, as long as there is intent to fix it.

CHAIRMAN ANDERSON: Good. Fine.

MR. KATZ: It doesn't take imagination to know that that number will be fixed.

CHAIRMAN ANDERSON: Well, I just don't want to have --

MR. KATZ: Right.

CHAIRMAN ANDERSON: I mean, we are probably not going to go back to these.

MR. ALLEN: Yes, we don't want to lose track of something.

CHAIRMAN ANDERSON: You lose track of it, and, then, it stays there.

MR. KATZ: So, at a future meeting, you can just tick off, you know, that you have corrected these calculational errors.

CHAIRMAN ANDERSON: Okay. Sounds good.

MR. KATZ: And that will put that
on the record.

CHAIRMAN ANDERSON: Yes.

MR. ALLEN: And backtracking to where we were here, Bill, as far as the beta dose and what we used, it is at the top of page 13 of the TBD.

MR. THURBER: Yes, I --

MR. ALLEN: You found it?

MR. THURBER: I just saw that.

MR. ALLEN: Okay.

MR. THURBER: The other conversation was going on.

(Laughter.)

And I understand it.

MR. ALLEN: Okay. Was that all we had for Finding 6, then?

CHAIRMAN ANDERSON: Yes.

MR. KATZ: So, that's closed.

MR. ALLEN: Okay.

MR. KATZ: Is that correct?

CHAIRMAN ANDERSON: Yes. Yes.

MR. ALLEN: And Finding 7, intake
value could not be reproduced. And we agreed
that we would add detail, which, it is done
very differently now. And I believe the
detail is in the TBD, minus that mention of
the 95th that we already mentioned today.

Do you have anything on that one,
Bill?

MR. THURBER: No.

MR. ALLEN: Okay.

CHAIRMAN ANDERSON: So, that
sounds done.

MR. ALLEN: I believe so.

CHAIRMAN ANDERSON: Yes. Okay.

MR. ALLEN: Finding 8 is one where
we used the resuspension factor of 1 times 10
to the minus 6. The conversation, as I recall
from the last Work Group meeting, was that --
and, John Mauro, feel free to stop me if I say
something wrong, but I believe you were
saying -- we used an NRC document that uses 1
to the minus 6 as an upper bound for the
resuspension factor. SC&A has pointed out
that is a screening level for decommissioning facilities. And they say that it is assuming that the area has been washed down.

The conversation at the last Work Group meeting was this should be transferred to the Procedures Group, who is dealing with this. And the conversation ended up going towards we could possibly justify that for this particular site.

So, in the Technical Basis Document, I pointed out that the majority of the airborne would be from the dumping operation that was reported to have been outside on a concrete pad in upstate New York. And in upstate New York you are going to get a lot of weather, rain, snow, et cetera. Well, the outside area there, that is effectively being washed down very quickly. So, for the residual period, that resuspension factor should apply, if that is the criteria, washing it down.
And that justification is in the TBD right now.

CHAIRMAN ANDERSON: So, this is predominantly or exclusively for the residual period?

MR. ALLEN: Yes.

CHAIRMAN ANDERSON: Okay.

DR. MAURO: Was this material sitting like on a pad? Well, I guess we are outdoors now, and I have to admit that, once you move outdoors, the game plan changes and the Anspaugh equation that we have seen in the past, that brings you very quickly to very low resuspension factors from weathering, and others have published.

So, in effect, what you are saying is this one item, this issue No. 8, deals with outdoors and the use of a 10 to the minus 6 resuspension factor outdoors?

MR. ALLEN: Yes. Well, we used the contamination level derived from the airborne level that was primarily outdoors. I
mean, there is some potential indoors for some contamination, but it is going into a vat of acid. It is a liquid system. And, then, the only other operation in there really is filtering and drumming to filter it. And that is still going to be a moist material.

So, we based it on deposition outdoors, which is going to give us a much higher number than basing it on the deposition from any airborne indoors. So, I think in the case of Hooker, you can essentially say the outdoor contamination would be the greatest, and it was certainly weathered.

MR. BARTON: And, Dave, just to make sure I am reading this right, it says you are not considering any removal mechanisms. Does that even include like radioactive decay or being blown off the pad and offsite?

MR. ALLEN: No.

MR. BARTON: So, what falls there is there for the entire -- so, that is another layer of conservatism.
MR. ALLEN: Yes.

DR. MAURO: And that is outdoors, assuming 10 to the minus 6 outdoors, and it stays constant, is a conservative approach. Because arguments could be made outdoors it could start around 10 to the minus 5, 10 to the minus 6, and rapidly decline to 10 to the minus 9 for outdoors.

I am a little confused right now because I haven't looked at all of this material recently. But, in item 8, we are talking solely about outdoor dose reconstruction under item No. 8? Or do we need to parse this between 8, and outdoor and indoor? Maybe that would be a little more productive. Because we do have some pretty strong feelings about how you deal with indoor.

MR. ALLEN: Well, what we are talking about is a residual period.

DR. MAURO: Right. And it sounds like you have broken the residual period, and
you are talking about, well, there is some potential for exposure outdoors during the residual period and there is potential for exposure indoors during the residual period. And what I am hearing is the approach that you are using for outdoor, which is this 10 to the minus 6 number, is certainly reasonable.

But I haven't heard a little bit more -- and anyone jump in and help me out -- what about indoor during the residual period?

MR. ALLEN: Well, what we did for the residual period is assume that that outdoor was deposited for a full year. And, then, we used the 1 to the minus 6 on it. The indoor airborne is quite a bit lower than what the outdoor would be. If you were to calculate a contamination level indoors and apply some higher resuspension factor, I am not sure it is going to be more favorable.

DR. MAURO: I hear what you are saying, but has that been done? In other words, on your indoor side of the house now
you are saying that the potential for surface contamination becquerels per meter squared is a lot lower indoors than it is outdoors, and that becomes a different starting point? But then, once I am at that point, let's say whatever that starting point is, and it could be quite a bit lower than outdoors, then it becomes a matter of, all right, now we have to talk a little bit about what is a reasonable resuspension factor and/or a reasonable rate at which it goes away, this 1 percent per day business. So, that brings us squarely into the open 70 issue, once you move indoors.

MR. ALLEN: Okay. Well, our position is still the 1 to the minus 6 is relevant for indoors, too. So, we went with the higher airborne-causing, which is outdoors.

DR. MAURO: Okay.

MR. ALLEN: If this is not justification enough for the 1 to the minus 6, we can transfer this to the Procedures Group,
but this was our attempt at addressing that
and closing it out altogether.

DR. MAURO: Well, I hear that, basically, you are using a heuristic. You are
saying, listen, outdoors was where the action
was, and the levels of contamination were much
higher on surfaces outdoors. And then you
said, okay, we are going to use the same
assumption for indoors, because that was
intuitively obvious that it was worse for
surface contamination.

Now here you are indoors during
the residual period. You are starting off
with the contamination on surfaces indoors,
that clearly and unambiguously was
conservative because you are assuming it is
the same levels as you had outdoors.

And I guess the argument, you
know, given your argument, that certainly
sounds reasonable and bounding. It is moving
on from there which is not apparent that you
are necessarily going to be bounding for
indoors; namely, the 10 to the minus 6 and the 1 percent per day.

It would be good to see a little quantitative analysis of that to support it, because for me it is a bit of a leap of faith to automatically assume that your outdoor treatment is going to be bounding for your indoor.

MR. THURBER: This is Bill Thurber.

Correct me if I am wrong, David, but, as I understand the data in the TBD, the indoor uranium concentration, if you will, the airborne concentration would have been about 40 dpm per cubic meter, which is the number from Christifano & Harris based on digesting uranium concentrates.

And the number that you used for the outdoor airborne exposure, as I understand it, was about 800 dpm per cubic meter. So, there is a difference of a factor of 40 between the indoor and the outdoor air
concentration.

MR. ALLEN: It is actually much bigger than that. The 40 is the combination of outdoor and indoor, based on the timeframes.

MR. THURBER: But it is also the indoor. I am looking on page 10 of the TBD.

Oh, I'm sorry. But that is not adjusted for -- it would be much smaller than that when it is adjusted for the uranium concentration.

DR. MAURO: Oh, this is the dolomite. So, it is what, 1 percent or something --

MR. THURBER: yes, right.

DR. MAURO: Oh, I got you. Okay.

MR. ALLEN: Yes, the real number is, like you mentioned, 806. The other number is like around 3 dpm per cubic meter --

MR. THURBER: Yes, it is around 3, not 40, because you have got to adjust that downward for the fact that it is only 2
percent uranium in the enriched slag at Hooker, if you will.

MR. ALLEN: Yes. So, it is a factor of 270 difference between indoor and outdoor.

DR. MAURO: Okay. So, is there agreement that the airborne concentration is about a 270-fold difference? Is that what you are saying? I just want to understand conceptually.

MR. THURBER: Yes.

DR. MAURO: You have to help me out a little bit here.

MR. THURBER: Yes.

DR. MAURO: You guys are way out in front of me. So, indoor the airborne dust loading, you know, dpm per cubic meter of alpha indoors is lower?

MR. THURBER: Yes, it is lower by a factor of nearly 300.

DR. MAURO: Three hundred? Okay. Now, given that, then, okay, so you are
starting off with a very low number. And that is the stuff that is going to settle out on surfaces, if the operations is over, right? I mean, because, in other words, now the stuff is on surfaces?

MR. THURBER: Yes.

DR. MAURO: It is the residual period. And that surface level, at least at time zero, is going to be 300 times lower indoors than it is outdoors?

MR. THURBER: That is what these numbers say, yes.

DR. MAURO: Okay. Good. Now the next step -- I will actually try to work the problem I had right now as we are talking. So, now the resuspension factor there, one would argue, is 300 times lower, but it is going to be resuspending easily at a factor of 10 to 100 times higher, if it wasn't cleaned up. In other words, if you just got that now. So, your starting point, so you've sort of -- now it is a push.
MR. THURBER: It's a push.

DR. MAURO: It's a push. So, now really they are equivalent. So, it is going to go down. All right, I'm with you.

Now you go down at 1 percent a day. Everything is squared off. So, in other words, what you are really saying is the indoors is going to be just about the same as the outdoors as a function of time? I mean, I am just doing this in my head as we are working through it.

MR. THURBER: Yes.

DR. MAURO: Because of the difference in the concentration, you have offset the difference in the resuspension factor. Now this clearly is probably not all explained in the report, but what I am hearing is it makes sense.

Oh, you are not following it? I'm sorry.

MR. THURBER: No, I follow you, John.
DR. NETON: This is Jim. I still think -- do we have the 1 percent per day applied to -- we do not? -- the indoors?

MR. ALLEN: No. That is the next finding.

DR. NETON: Okay.

DR. MAURO: Well, you see, that might be okay if effectively you are treating the problem, you're effectively behaving as if you have got a 10 to the minus 4 resuspension factor.

I'm not sure. I'm sorry. That was the idea for the blackboard chart.

But, in other words, right now, your whole approach is seated in the outdoor.

MR. ALLEN: Right.

DR. MAURO: With the argument made that the outdoor is going to be bounding, or at least appropriate, as applied to indoor. I am trying to make it okay with me.

MR. ALLEN: Yes.

DR. MAURO: And I am struggling
with it a little bit.

MR. BARTON: I might be mixing up sites here, but was Hooker one of the ones that was cleaned up after the operational period?

MR. ALLEN: No.

MR. BARTON: No? Okay.

DR. NETON: But, see, John, there still remains to be a discussion on TBD-70 about this $1 \times 10^{-6}$. And we are preparing an approach or maybe a way to deal with this $1 \times 10^{-6}$ issue in TBD-70 or TIB-70.

So, this might not be the place to have this discussion.

DR. MAURO: A good point. A good point. Let's put this on the --

CHAIRMAN ANDERSON: Or should this go to Procedures?

DR. NETON: Well, it is part of the generic complex-wide issue with this $1 \times 10^{-6}$. I mean, Dave was
trying to say, well, you can really put this to bed now. But it sounds to me like there is enough generic issues.

CHAIRMAN ANDERSON: It is a generic issue.

DR. MAURO: Yes. And I was trying to do the same thing on the fly.

DR. NETON: Yes, you don't want to do that.

DR. MAURO: We shouldn't rush this.

DR. NETON: No.

DR. MAURO: We shouldn't rush it.

MR. KATZ: So, just for clarification, though, we are not putting this to bed as a generic issue?

DR. NETON: No, no.

MR. KATZ: That needs to be dealt with in Procedures. But it sounds like in this case you still don't really have a concern because of the overestimating using the external starting point.
MR. ALLEN: We were trying to make the case that the 1 to the minus 6 would apply, even with what SC&A is saying that we don't necessarily agree with. However, it doesn't sound like we are going to reach any agreement.

MR. KATZ: No, I understand that, but --

MR. ALLEN: This was an attempt to put it to bed for Hooker only.

MR. KATZ: Right.

MR. ALLEN: And it doesn't look like it worked.

(Laughter.)

DR. MAURO: You've got it right. That's exactly what I was just trying to do.

DR. NETON: I'm not comfortable saying, okay, well, maybe it is 10 to the minus 4 indoors and --

MR. KATZ: So, I know you are not agreeing to that. All I am trying to understand here is it sounded like, from what
John and Bill were saying, given that you have this two orders of magnitude difference in the starting point, even if -- you are not agreeing to SC&A's approach to maybe being 10 to the minus 4 might be appropriate, but in any even, it is bounded using this approach, because you are starting with two orders of magnitude higher as your base point --

DR. NETON: Yes.

MR. KATZ: -- for the internal.

DR. NETON: Right.

MR. KATZ: In other words, two orders of magnitude greater --

DR. NETON: But, at some point, this 1-percent-per-day clearance is going to come up, and that is a TBD-70 issue as well.

MR. THURBER: This is Bill Thurber.

David, help me with -- the TBD does not assume 1-percent-per-day decline during the residual period, does it?

MR. ALLEN: No, it does not.
DR. NETON: Then, maybe we are okay.

MR. THURBER: It assumes that it remains constant during the residual period, I believe, is that correct?

DR. NETON: You mean the indoor portions?

MR. ALLEN: Yes.

DR. MAURO: So, in effect --

DR. NETON: Then, we're good.

DR. MAURO: Oh, yes. Good. So, even though we don't agree on OTIB-70 in this particular case, the way in which you have treated the problem sounds like it is fine.

DR. NETON: Yes, it is bounding. We agree it is bounding. The 1 times 10 to the minus 6 is outdoor constant, is a bounding value, I think is what we just said. Yes, it would bound the indoor.

MR. ALLEN: Right.

DR. MAURO: And that is because of the difference in the reality that the indoor
starting point is much lower?

DR. NETON: Right.

DR. MAURO: That's it. We don't need to talk about --

DR. NETON: Right.

DR. MAURO: I thought you were using a 1-percent-per-day indoor also, but if you are not, and you are holding it constant, I think that is right. We could put this one to bed.

CHAIRMAN ANDERSON: Yes. I mean, to me, and this is really an ER issue, is, yes, it is bounding, but is it realistic? I mean --

MR. ALLEN: It is a very trivial dose.

CHAIRMAN ANDERSON: Yes. Well, I mean, that is why I am -- but, you know, these begin to kind of compound, potentially. But, I mean, the dose can't be measured, really.

MR. KATZ: I think when the dose is trivial, you don't really have to worry
about the --

CHAIRMAN ANDERSON: Yes, yes.

Okay. So, we are good to go on this, I would say, for Hooker.

DR. NETON: Yes.

DR. MAURO: And we agree.

CHAIRMAN ANDERSON: Okay.

MR. ALLEN: Finding 9 was the 1-percent-per-day completion rate, and we didn't use it in the original one. So, really, I never did quite understand the difference between the two in the review. We don't use it in this current one. We just discussed it, and it sounds like that made it okay. So, I guess that closes 9, too.

CHAIRMAN ANDERSON: Yes.

Okay, 10.

MR. ALLEN: Ten was a math error that we discussed in Finding No. 4. That is done differently now. So, that error goes away.

CHAIRMAN ANDERSON: So, it looks
to me like we have closed everything out with the exception of the broader issue of Procedures Group.

MR. KATZ: Yes, the generic issue is for Procedures.

CHAIRMAN ANDERSON: Yes, right. That isn't going to come up at this Committee again.

MR. KATZ: Right. They have it already. They already have that.

CHAIRMAN ANDERSON: Okay. Great. Fine. So, we are clear.

We basically have closed out the Site Profile issues. So, a fresh, clean Site Profile will now come out.

MR. ALLEN: Yes, it will be a revision to the --

CHAIRMAN ANDERSON: Yes.

MR. ALLEN: Fix a couple of errors, yet again.

CHAIRMAN ANDERSON: Yes. Okay.

So, shall we go on?
MR. KATZ: A 10-minute break?

CHAIRMAN ANDERSON: Do you want to take a break? Okay. Sure, we can take a 10-minute break.

MR. KATZ: So, a 10-minute comfort break for everyone on the line, too.

Thanks.

(Whereupon, the above-entitled matter went off the record at 10:19 a.m. and resumed at 10:30 a.m.)

MR. KATZ: So, we are reconvening after a short break.

This is the TBD-6001 Work Group, and we're off again.

CHAIRMAN ANDERSON: And we're off again. So, now we are on to the SEC review?

MR. KATZ: Yes.

CHAIRMAN ANDERSON: Who wants to --

MR. BARTON: Bill Thurber, are you on the line?

MR. ALLEN: I think we came back a
little early. No, maybe not.

MR. KATZ: Bill Thurber, are you on the line yet?

MR. THURBER: I am muted again.

MR. KATZ: And you're very quiet when you're muted.

(Laughter.)

MR. THURBER: I'm not clear what the question is.

MR. BARTON: Bill, we wanted to start going over your SEC ER review and go through those findings. So, we can discuss them in, I guess, much the same way we just handled the Site Profile.

MR. THURBER: For Hooker?

CHAIRMAN ANDERSON: Hooker, right.

MR. THURBER: But we have had no findings, no SEC findings on Hooker.

MR. ALLEN: You had an SEC -- hang on a second. Let me get the right word for it. A focused review, Hooker Electrochemical Petition Evaluation Report.
MR. THURBER: Oh, I'm sorry.

CHAIRMAN ANDERSON: Because we have a response to it.

MR. BARTON: It was a January document, Bill.

MR. KATZ: Right, right.

MR. THURBER: Let me --

MR. BARTON: Well, I can start summarizing this, and, Bill, you can jump in.

MR. THURBER: I'm sorry. Okay. Excuse me. Yes.

Well, go ahead, Bob.

MR. BARTON: Okay. Sure. All right.

Well, these are not numbered using a number system. We used A, B, C --

MR. THURBER: Right.

MR. BARTON: -- just to kind of try to avoid confusion between these things.

So, Finding A had to do with what percentage of uranium was contained in the slag at Hooker. And I believe this one was
based on a report, and this is where they talk
about how it came in at that certain percent
and, then, it was enriched to, I guess, 1 or 2
percent during the process that was at Hooker,
or at least -- anyway, that is still your
response there. But I think that is
essentially what that finding is.

Do we want to summarize all these
and then turn it over to you guys or should we
go issue by issue?

CHAIRMAN ANDERSON: Let's just go
issue by issue.

MR. THURBER: I'm sorry. I can
pick up on this, Bob. I just had the wrong
document open.

Finding A is basically the same
as, I believe, Finding 1, basically, the same
as Finding 1 with regard to the Appendix AA,
the same basic question.

MR. BARTON: Well, it is a little
bit different, Bill, because Finding 1 was
about the total input, the tonnage, I guess
you would say, and the dumping of barrels based on that. Finding A, it seems to me, is more about the percentage of uranium --

MR. THURBER: Well, but the commonality is that if the slag contains .2 percent U, then that is consistent with processing one day per month, given the available input data from the documentation.

MR. BARTON: I see.

MR. THURBER: They become the same, even though superficially they look different.

MR. ALLEN: So, are we going to say that one is already closed then or do we want to talk?

MR. THURBER: Well, I am satisfied that that is closed.

MR. ALLEN: I'm satisfied it is closed, but that doesn't mean anything.

DR. MAURO: This is John. Me, too.

MR. BARTON: Well, what you actually did is you went all the way up to 2
percent, right, not even the 1 percent that we
know in the findings it's 2 percent at the end
of the process, essentially?

MR. ALLEN: Yes, which makes
sense. And that wasn't done in the original
Appendix. Now it covers the .2 percent as
slag and the 2 percent as concentrate.

MR. BARTON: And the 2 percent is
what is used for the filtration activities?

MR. ALLEN: Yes, it is.

CHAIRMAN ANDERSON: And how did
you get to the 2 percent?

MR. ALLEN: The original document
we were looking at, the description said 500-
pound barrels, and it was concentrated from
one pound to five to ten pounds. One pound in
500 was the .2 percent.

CHAIRMAN ANDERSON: Oh, okay.

MR. ALLEN: And, then, you use the
10 pounds in 500 for about 2 percent.

CHAIRMAN ANDERSON: Okay.

MR. THURBER: So, the chosen
approach is conservative, takes the more conservative number to use for the processed slag.

CHAIRMAN ANDERSON: Okay.

MR. THURBER: Finding B said NIOSH should review its estimate of the monthly slag throughput at Hooker to ensure that all relevant data have been considered.

And this, again, ties in with the discussion we have already had on whether the numbers at Hooker were input or output numbers. I am satisfied that NIOSH has indeed reviewed this and added some additional mass balance information which supports their position. And I am satisfied that this finding is resolved.

CHAIRMAN ANDERSON: Okay. Okay.

Bill Field, do you have any -- this sounds pretty reasonable to me, but --

MEMBER FIELD: No, I think it sounds reasonable, too.

CHAIRMAN ANDERSON: Okay.
MR. THURBER: We will move on to Finding C then.

CHAIRMAN ANDERSON: Yes.

MR. THURBER: Finding C: NIOSH should consider revising Appendix AA to base internal exposures on surrogate slag-handling data rather than surrogate data from the TBD-6001 recovery operations.

And what this finding tended to point out was that we did not agree with the particular operation from among the many in TBD-6000 which NIOSH chose to use as the surrogate for what went on at Hooker. NIOSH picked the scrap recovery operations from TBD-6001.

We felt that, if you are going to use TBD-6001, which was the case at the time, that there were better choices from that document. Because the scrap recovery that was contemplated in TBD-6001 was quite different than processing slag as was actually practiced at Hooker.
So, I believe that with the new TBD that this approach has been changed. As I understand it -- and, David, correct me -- NIOSH has used, instead, actual surrogate slag-handling data from Mallinckrodt and Fernald and selected the 95th percentile of the values that they obtained from those two other sites to use as the basis for the internal exposure.

MR. ALLEN: Yes, that is correct.

MR. THURBER: And, to me, this seems much improved over the original approach. I feel it is a reasonable approach to take. You obviously have to use surrogate data, and this is a much better choice for surrogate data, in my view.

MR. ALLEN: I'm not going to disagree.

(Laughter.)

CHAIRMAN ANDERSON: I don't have any comment. I don't know enough about it. I mean, it seems to be, if SC&A is comfortable
with it, then, technically --

MR. THURBER: It is technically superior to what was done before.

CHAIRMAN ANDERSON: Yes. And why is that?

MR. BARTON: It is more reflective of the actual operations that would have happened and the materials they actually handled at --

CHAIRMAN ANDERSON: At Hooker?

MR. BARTON: Yes.

CHAIRMAN ANDERSON: Rather than the other one was the generic?

MR. ALLEN: The other one, we may agree or disagree. I mean, it did involve digestion and acid, et cetera, but the material was certainly a lot different.

MR. KATZ: It was scrap metal.

CHAIRMAN ANDERSON: Yes, it was scrap metal. Yes. Okay.

So, this is what you are using really as surrogate data for the processing of
slag?

MR. ALLEN: For the handling of slag.

CHAIRMAN ANDERSON: Yes. Yes.

Okay.

MR. THURBER: But it is surrogate data related specifically to slag handling --

CHAIRMAN ANDERSON: Yes.

MR. THURBER: -- but at other sites.

CHAIRMAN ANDERSON: Yes.

DR. MAURO: Just to throw a fly in the ointment that -- this is John -- in the past, when we reviewed an ER or Site Profile, I know that one of the questions always that in the end has been posed to SC&A is for us to do a formal review against the five Board surrogate data criteria: timeliness, you know, comparability, exclusivity, those sorts of things.

Bill, was that part of the work that you did here? I just don't remember.
They all sort of blend together. We had a section on that?

CHAIRMAN ANDERSON: You did. I mean, we got a document from David, a White Paper.

So, have you guys reviewed that, SC&A?

MR. KATZ: They received it.

CHAIRMAN ANDERSON: Yes.

MR. BARTON: I don't know if we have been tasked to review that. At the very least, we wanted to look at it --

CHAIRMAN ANDERSON: Yes.

MR. BARTON: -- in preparation for this meeting.

CHAIRMAN ANDERSON: Right.

MR. BARTON: But I don't think any formal review has gone on on that.

DR. MAURO: As a matter of due process, for the record, I know that in the past whenever surrogate data was an important part of a decision, especially an SEC issue,
we usually had a special appendix where we walked through each of the points a little more formally and said, yea or nay, whether we felt it met the criteria.

If we haven't done that yet, I would suggest that we get that as part of the record.

MS. LIN: This is Jenny.

You don't mean to say "due process", do you? You meant due diligence?

DR. MAURO: Let's say due diligence. I'm sorry.

(Laughter.)

MR. KATZ: Dave, did your surrogate data piece address all those elements?

MR. ALLEN: Yes. We were tasked at the last Work Group meeting.

MR. KATZ: Yes, I thought that --

MR. ALLEN: It was our evaluation based upon the Board's criteria and that's what I sent, yes.
CHAIRMAN ANDERSON: That's what I was wondering. Right. So, I mean, do we need to task them to review that rather than to go through --

MR. KATZ: If they haven't read it, if they haven't read what DCAS has produced, they certainly need --

CHAIRMAN ANDERSON: Yes.

MR. KATZ: -- to review that, read that analysis.

CHAIRMAN ANDERSON: Yes.

MR. KATZ: Is that the case, Bill, that you guys haven't read the DCAS document?

MR. THURBER: I have glanced at it. I haven't sat down and gone through it thoroughly.

MR. KATZ: Okay.

MR. THURBER: Again, it is something that we hadn't been tasked to do. I looked at it in preparation for this meeting. It was not a thoroughgoing review.

MR. KATZ: Okay.
CHAIRMAN ANDERSON: They probably need to do that.

MR. KATZ: I mean, we can run through it. I mean, Dave can run through --

CHAIRMAN ANDERSON: Yes.

MR. KATZ: -- the material that is there, so that you can have a sort of oral and resolve any questions you might have upfront.

But, certainly, you would need sort of a final word on it.

So, you don't need to repeat what, but affirm that --

CHAIRMAN ANDERSON: Yes, I don't think they need to start from scratch, but they ought to look at it and offer us an opinion as to do they agree with NIOSH's summary --

MR. KATZ: Right.

CHAIRMAN ANDERSON: -- rather than developing a new summary, and then we have to try to --

MR. KATZ: No, no, no, no. Right.
MR. THURBER: But, in answer to your question, John, we did not do our own independent analysis at the time of the surrogate data criteria against the ER.

DR. MAURO: And I can say right now I know that the surrogate data folks would very much want to make sure that we did look at each of those five issues. And maybe all that will be necessary is to go over those five issues right here with David and listen to the arguments made or -- and that is really up to the Work Group -- whether you would like something in writing from us.

MR. KATZ: And so, John, I think Dave will go through them, through the analysis, and you can respond. But, at the end of that, if you determine that you need time to think and analyze, that is fine.

CHAIRMAN ANDERSON: Okay.

MR. KATZ: And we will await that.

CHAIRMAN ANDERSON: I mean, that really is the key for this SEC review.
MR. KATZ: Exactly.

CHAIRMAN ANDERSON: Because there isn't anything.

MR. KATZ: You know, if you hear it all and you say, oh, that's all pat, then that's fine, too.

DR. MAURO: Okay.

MR. KATZ: But you certainly have the opportunity to spend time analyzing it after this meeting.

CHAIRMAN ANDERSON: And as the Chair, I would want you to be comfortable --

MR. KATZ: Right.

CHAIRMAN ANDERSON: -- that you have had enough time to really think about it.

DR. MAURO: Good. Okay. I'm glad I brought it up.

CHAIRMAN ANDERSON: Should we go through the other findings?

MR. THURBER: Finding D? Do you want to keep going?

CHAIRMAN ANDERSON: Yes. Why
MR. THURBER: All right. Finding
D, NIOSH should clarify whether 1.6 millirep
per hour for gamma and 11.5 millirep per hour
for beta, or values contained in Tables AA.3
and AA.4 of Appendix AA, should be used for a
bounding calculation.

I think that this is probably
irrelevant now, given the fact that in the new
TBD those numbers that I just quoted, 1.6
millirep per hour for gamma and 11.5 millirep
per hour for beta, are no longer used. But I
think it would be appropriate for NIOSH to
comment on this.

MR. ALLEN: Well, the Evaluation
Report, there was data from various sources
put in there just to say there is some data
and the doses can be bounded, not necessarily
that that is what would be used. That is kind
of the purpose of an Evaluation Report, to say
that it can be done, not necessarily how it
would be done.
The TBD then puts together how we are going to do it. And like you said, it does not use those numbers.

So, I guess that is our clarification.

MR. THURBER: Philosophically, and, you know, we have commented on this in the past, when NIOSH says that they can do a bounding calculation, and they say here are four different ways we might be able to do a bounding calculation, we might only agree that one of those is bounding. And therefore, we have suggested from time to time that it is appropriate to be prescriptive in saying how you are going to bound it, so that we can then look at the proposed approach and say, yes, we agree that that is bounding or, no, we don't agree that that is bounding. But I am personally not comfortable when it is left open-ended.

MR. ALLEN: Well, I think I have a different interpretation of what an ER is
supposed to do. But, again, I don't know if that is relevant in this discussion. By issuing the TBD, we have clarified that those are not going to be used.

MR. THURBER: In this particular case, that is correct. But, as I say, I wanted to make the philosophical point that, if the position is taken that a bounding calculation can be done, it should be -- the procedure should be described.

DR. MAURO: This is John. Maybe I could help a little on the nuance here.

This harkens back to what Mark Griffon refers to as a proof of principle. And it emerged that, yes, I fully understand once you have the data and you say, listen, we have plenty of data and we're in a position where we could place a plausible upper bound, and from looking at the data, very often it is self-evident that, yes, it is true. It certainly looks like that.

But there is also the concern that
sometimes the methodologies, in going from the data to actually how we are going to use the data and implement it, and the perfect example was the high-fired plutonium, is sort of like where it all started, where a request was made for proof of principle. Let's see how exactly you are going to do it.

And the reason for that was it wasn't straightforward. It wasn't intuitive that, oh, of course, when you have the data, you are going to take the 95th percentile; it's done. There was more to the story, and until you actually went through some cases and demonstrated them, and went through a process.

So, the way I see this proof-of-principle concept is there are times when you have data and information which on the surface certainly appears to be you have sufficient data to do what needs to be done. It certainly is helpful to us to see exactly what you are going to do, rather than for us to imagine that, yes, it looks like they
certainly can do it, but it will be nice to see it.

So, I mean, the proof-of-principle idea is still before us on how far we go in order to make the case, yes, you can do it. I guess a judgment call by each Work Group on whether you would like to see an example where you walk through how the work is going to be done.

MR. ALLEN: Okay. I am not sure where we are on that now.

DR. MAURO: Yes, all I am doing is some perspective on judgments that need to be made, whether you really need to lay it out because it is not self-evident that you can do it, and how you are going to do it, in cases where, no, I think we can close the issue because it is self-evident that, yes, you can do it, and we know how you are going to do it.

MR. THURBER: In this particular case, it has become irrelevant because the approach has been changed. But I wanted to
make the point that proof of principle is often appropriate because several people, as John suggested, could take the same data and come up with several different alternative ways to arrive at what the course is.

But, in this case, I think that, because of what has changed with the TBD, that this is not relevant any longer.

CHAIRMAN ANDERSON: It seems to me that in going through the Board's criteria for use of surrogate data, that is where this would come into play, where you would need to describe in that exactly how you are going to do it, and why that bounding is appropriate.

Is that a place to --

MR. KATZ: Well, it is not even specific to surrogate data, this proof of principle.

CHAIRMAN ANDERSON: Okay.

MR. KATZ: But this is fine. We have here a different, we have a TBD that is specific and lays it out --
CHAIRMAN ANDERSON: Yes.

MR. KATZ: -- and there is no ambiguity about --

CHAIRMAN ANDERSON: Yes.

MR. KATZ: -- the feasibility of the approach.

CHAIRMAN ANDERSON: Yes.

MR. ALLEN: I think we are all talking the same thing.

MR. KATZ: Yes, this is put to bed in this case.

CHAIRMAN ANDERSON: Yes. Well, that's what I thought.

MR. KATZ: There is a broader conversation going on --

CHAIRMAN ANDERSON: Yes, yes.

Okay.

MR. KATZ: -- but it is put to bed here.

CHAIRMAN ANDERSON: Right.

MR. THURBER: Are we ready to move on, then? Consider it put to bed for this
specific situation?

CHAIRMAN ANDERSON: Yes. Yes.

MR. THURBER: Okay. Finding E, the PER should recognize that slag was present during the residual period, at least through 1958, and ensure that this information is incorporated into a bounding external exposure calculation for the residual period.

The basis for this was some additional documentation that we found in the archives after we had prepared our review of Appendix AA, which suggested that there was slag still on the Hooker property after the operating period had been concluded. So, that was the basis for this.

Now I know that David has looked into this and prepared a response. So, I will turn it over to him.

MR. ALLEN: Okay. I did prepare that, that was the other document I sent. And it was Finding F under there.

And, basically, this has been a
little bit of a point of confusion for several
people, as well as DOL and a few others.

Hooker Electrochemical was the
primary operator for Lake Ontario Ordnance
Works from -- I don't know if I have got the
dates handy here.

MR. BARTON: '53 to '58.

MR. ALLEN: '53 to '58. The Hooker
site proper did this mag fluoride digestion in
'44, '45, and '46. But these are two very
separate sites --

CHAIRMAN ANDERSON: Physically.

MR. ALLEN: -- physically.

CHAIRMAN ANDERSON: Yes. Okay.

That's what I thought.

MR. ALLEN: So, the problem was
the AEC often referred to Lake Ontario Works
as the Hooker site because that was the only
Hooker site that they cared about in the
fifties.

CHAIRMAN ANDERSON: Because Hooker
owned it -- or managed it.
MR. ALLEN: And they were done with processing that Hooker data at their site by then. So, it got a little bit of confusion. It is usually ambiguous.

But I went through the documents that they had listed. It lists a number of chemical compounds of uranium, not just mag fluoride.

There are other Lake Ontario Ordnance Works documentation that lists those same contaminants or those same piles, I guess you would say, or waste products at that site.

And the one letter referenced also indicated that the material was shipped to Y-12.

CHAIRMAN ANDERSON: Yes.

MR. ALLEN: And I got another document saying that the magnesium fluoride at Lake Ontario Ordnance Works was shipped to Y-12 in the late fifties. It all seems to link up that the references in question are talking about Lake Ontario Ordnance Group.
There is no smoking gun in any of this, but it all seems to point to Lake Ontario Ordnance Works as the site where this material was.

MR. BARTON: I am just looking at your last quote here. Would you say that really that first sentence is kind of what does it because it talks about the site starting back up briefly in the '48-to-1949 period? Could that be covered under the operational period?

Because in just reading some of these quotes, it really kind of seems like it could go either way. I mean, you have some --

MR. ALLEN: Some of them could.

There's no smoking gun. Like I said, you have got to put all the documents together.

Which quote are you --

MR. BARTON: It is the last one you have there. It says, "The MED constructed uranium reduction in casting plant operated by ElectroMet in Niagara Falls, resumed operations for a brief period in 1948 to
MR. ALLEN: Okay. Yes, that's ElectroMet.

MR. KATZ: It's all mixed up.

(Laughter.)

MR. ALLEN: It is all interrelated because that is where the mag fluoride came from, that Hooker dealt with. But, in this case, in '48-'49, it was sent to Lake Ontario Ordnance Works, is my take on this whole thing.

MR. BARTON: But it doesn't really indicate, though, does it?

MR. ALLEN: Well, it does say casting operations "were piled on the ground adjacent to the fire reservoir in the water treatment plant," which is where other documents say it was located at Lake Ontario Ordnance Works.

MR. THURBER: Can you specifically identify the -- what was it? -- those two sites you just mentioned at Lake Ontario?
MR. ALLEN: The fire reservoir and
the water treatment plant? Yes.

MR. THURBER: Yes. You can
specifically identify those facilities at Lake
Ontario?

MR. ALLEN: I believe so. I
didn't put it in here. And, honestly, I would
have to refresh my memory, but I believe, yes,
I have seen those before and seen them
mentioned in other documents.

And, in fact, I take it back.

This quote is from a Lake Ontario, I think, a
Lake Ontario document, isn't it?

MR. THURBER: Well, that was the
unknown 1971 document? I don't happen to have
that open, Dave, but I've got it.

MR. BARTON: It does indicate and
reference that it was from Lake Ontario.

MR. THURBER: Oh, okay.

MR. ALLEN: Yes. Yes, this is a
Lake Ontario document.

MR. THURBER: All right. Okay.
MR. BARTON: I guess the question, then, is, I mean, those two sites were fairly similar. Is there any chance both of them had slag --

MR. ALLEN: Well, I think it comes down to there is no indication there was anything at Hooker after 1946.

MR. BARTON: Just sort of the ambiguous wording of the first couple of quotes in that?

MR. ALLEN: Yes. The only indication is this one memo, and the information I put here seems to be pointing that they are actually talking about Lake Ontario Ordnance Works.

CHAIRMAN ANDERSON: Is that treated as a separate site then?

MR. ALLEN: Yes, that's definitely a -- it is one of our sites --

CHAIRMAN ANDERSON: You will have a separate Site Profile?

MR. ALLEN: Yes. Oh, yes. Oh,
yes, it is one of our sites.

CHAIRMAN ANDERSON: Okay. Yes.

MR. ALLEN: For a lot more than mag fluorides.

(Laughter.)

CHAIRMAN ANDERSON: Yes. Well, I mean, it sounds like a waste storage facility.

MR. ALLEN: Yes. That's exactly what it is, yes.

CHAIRMAN ANDERSON: So, as far as the work on Hooker, what you are saying is those references, that implied that --

MR. ALLEN: Yes. Everything we know about Hooker was that the mag fluoride came in. The oversized stuff was redrummed and shipped out. The concentrate was shipped out. There is no reason to believe there was anything left over.

CHAIRMAN ANDERSON: Yes. Okay. All you have is residual?

MR. ALLEN: Yes.

CHAIRMAN ANDERSON: But now no
residual due to piles remaining?

MR. ALLEN: Right.

CHAIRMAN ANDERSON: Okay.

MR. BARTON: Well, I think Bill Thurber brings up a really good point in that, if we could actually identify this fire reservoir in the water treatment plant as being an area of the Lake Ontario site, I mean --

MR. ALLEN: Well, again, that is the 1971 document, which is an inventory of Lake Ontario Ordnance Works.

And my point was just that the letter you referenced saying there might be something left over to Hooker had an inventory of stuff that is similar to the inventory in that letter.

MR. THURBER: Oh, the Superior letter did have an inventory attached to it, David?

MR. ALLEN: Yes, there was one in there. It lists K-65 material, L-30, L-50,
R-10, R-10 iron cake, et cetera.

MR. THURBER: Okay.

MR. KATZ: Are you good, Andy?

CHAIRMAN ANDERSON: Yes, I am good with that.

MR. BARTON: It doesn't explicitly say it, at least I can't see it, but does that 1957 Superior letter in its inventory list obviously list the slag? Because it says the 1971 document definitely lists slag in its inventory, but it doesn't quite say --

MR. ALLEN: I think that is one of the L's, but let me call it up. It has been a little while since I have looked at it. Hopefully, I have got it here.

And I don't think I have it handy.

DR. NETON: Have you got an SRDB number?

MR. ALLEN: Yes, I have that.

DR. NETON: I can find it. I'm online here.

MR. ALLEN: I have got 6341.
DR. NETON: That is an early one.

MR. ALLEN: I thought I put that on my drive here, but, apparently, I didn't.

Well, do we want to --

MR. KATZ: Do you want carry on while Jim searches the SRDB?

MR. ALLEN: Do you want to just come back to this issue or what do you want to do here?

DR. NETON: I will have it here in two seconds.

MR. KATZ: Oh, okay.

DR. NETON: Just give me a couple of seconds.

All right, it's more than two seconds.

MR. KATZ: I was going to say, nothing's that fast with the SRDB.

(Laughter.)

CHAIRMAN ANDERSON: No, unless he has got a faster connection than I do.

Removal of waste at Haist...
property? Is that the one you are talking about?

MR. ALLEN: That might be it.

CHAIRMAN ANDERSON: Low-grade residue stored at Niagara Falls, New York. Yes, that's it.

MR. ALLEN: Low-grade uranium residues stored in Niagara Falls site, New York.

CHAIRMAN ANDERSON: Yes. Yes, that's it. Okay. I've got it right here, Dave, if you want to look at it.

MR. ALLEN: There should be a list on one of those pages. It is really odd. How many pages is this thing?

Oh, there you went by it. Okay, we have got it here, and it has got one list of -- I think your question was whether or not the C2 slag was there?

CHAIRMAN ANDERSON: Yes.

MR. ALLEN: Go down. There is
another.

DR. NETON: Eighteen thousand kilograms of C slag.

MR. ALLEN: Yes, it's the top of page 2.

DR. NETON: I mean, clearly, this is not, I mean when they start talking about the African ore, I mean that is the K-65 material that went to Fernald from Lake Ontario Ordnance Works.

MR. KATZ: Okay.

CHAIRMAN ANDERSON: Okay. Yes.

MR. KATZ: Closed.

CHAIRMAN ANDERSON: We've got it.

MR. KATZ: Was that Finding E or F?

MR. ALLEN: That was --

MR. KATZ: You said it was F, David? You said it as F, David, but I thought --

MR. ALLEN: I think that was F.

MR. BARTON: I think we might have
MR. KATZ: Oh, okay. All right.

MR. THURBER: Okay. We are on the resuspension factor then.

DR. NETON: What finding?

MR. ALLEN: I think you might have skipped Finding E, Bill.

MR. THURBER: Which is? Tell me what.

MR. ALLEN: I just got my notices. SLAPS data, bounding.

MR. BARTON: This was the St. Louis Airport measurements.

MR. THURBER: Oh, yes. Yes.

MR. ALLEN: It is very related to, well, the answer is very related to Finding D.

MR. THURBER: Yes.

MR. ALLEN: It is pretty much the same story. We didn't use that data. We used an MCNP run. But I think it goes about the same way as Finding D.

MR. THURBER: Right. Right, I
agree.

The next one is, depending on employment history, use of a resuspension factor of 1E-6 per meter for the residual period may not be bounding when calculating inhalation doses. If NIOSH believes that this resuspension factor is appropriate, they should provide justification describing, for example, cleanup practices conducted after the cessation of operations.

Again, we discussed this at some length in the context of the TBD, and NIOSH described the fact that the primary dust, the inhalation, the primary source of inhalation exposure was outdoors and that, given that, the 1E-6 number looked to be reasonable.

I don't know whether NIOSH wants to comment further on that.

MR. ALLEN: I think we closed this one. It was part of the TBD review. It is pretty much the same issue as, was it 8 and 9?

CHAIRMAN ANDERSON: Yes, or 4 and
10.

MR. ALLEN: It was 8 and 9 on the TBD review.

CHAIRMAN ANDERSON: Yes.

MR. KATZ: Yes, it closed.

MR. ALLEN: Next?

MR. THURBER: Everyone is satisfied on that?

CHAIRMAN ANDERSON: Yes.

MR. THURBER: Okay. The final point was Observation A. NIOSH should explain why they accepted the petitioner's assumptions regarding the duration of the operating period since we are not aware of any evidence to support the extended operating period.

And I believe that David prepared a response on this which he provided to everyone a week or two ago, whenever.

David?

MR. ALLEN: Yes, it was the same White Paper as that Finding F we were just discussing. And it gets to be a confusing
issue. But the official contract period that we used in the ER was the official operating period that DOE uses right now or is designated.

The period where they actually operated with contaminated mag fluoride was a fraction of that. It started later; it ended earlier.

So, our estimate is based on when they had mag fluoride there, and, then, after that we have a residual contamination estimate.

And DOE's operating period seems to be related to their chemical contracts, which are irrelevant as far as the dose reconstruction. We are going to try to get DOE to change their dates, but, either way, unless some new information comes up, it seems like our dose estimate will work, even if they change those dates. So, we haven't pushed it very hard. But that's why there is some confusion on that.
MR. BARTON: Just as a sort of global question, of course, if an SEC was granted, you could have people being awarded who never even worked there when the radioactive material was there.

MR. ALLEN: Well, there's nothing preventing SECs in the residual period, too. It has actually happened.

CHAIRMAN ANDERSON: Although the residual in this particular case --

MR. ALLEN: Does that answer that one?

CHAIRMAN ANDERSON: Yes, I think so.

So, have you asked them to change it?

MR. ALLEN: I have not.

CHAIRMAN ANDERSON: Or are we waiting?

MR. ALLEN: I haven't, but, in all honesty, I suppose we should send a letter.

CHAIRMAN ANDERSON: Well, I mean,
other than the review of the surrogate, I think we have pretty well closed out the issues here. So, I would think we would be near a recommendation. And if what we are reviewing is a period that is longer because that is what the --

DR. NETON: Well, no, it really doesn't have any practical bearing on what we are doing --

MR. ALLEN: Right.

DR. NETON: -- because as Dave indicated in their letter, prior to the date where we know material is there, we are just assigning zero dose.

MR. ALLEN: Right.

CHAIRMAN ANDERSON: Oh, okay. I got you.

DR. NETON: And we are finding zero.

CHAIRMAN ANDERSON: Yes.

DR. NETON: Regarding the SEC issue, I mean, if someone wanted to grant an
SEC, you could craft the dates to where you thought the exposures were anyway.

CHAIRMAN ANDERSON: Yes.

DR. NETON: So, you wouldn't have to grant it the entire period.

MR. KATZ: You couldn't grant it when there is no exposure. So, you couldn't even add a Class for when there was no radioactive material there. But there would be no Probability of Causation.

DR. NETON: So, I think, you know, like Dave said, really, on a practical basis, it doesn't really make any difference for us right now.

CHAIRMAN ANDERSON: It doesn't matter? Okay. But we need to be sure that, then -- I don't know, didn't we have public on the phone, but that petitioners understand. So, we will have to cover it at the meeting.

MR. ALLEN: And we have tried to discuss that in the TBD, and probably poorly.

CHAIRMAN ANDERSON: Yes. Got you.
Okay. So, do we have any other issues? (No response.)

So, what we have left is a discussion of the surrogate data evaluation? Do we want to do that? Yes, let's start with that.

MR. ALLEN: Okay. I tried to prepare -- I guess this is me?

CHAIRMAN ANDERSON: Yes. Yes, well, it's your name. Your name is the only one on the document.

(Laughter.)

MR. ALLEN: I tried to prepare an evaluation based on the Board's surrogate data criteria. I sent it off April 7th, I think it was.

MR. KATZ: Right.

MR. ALLEN: I don't know a lot to say about this because I don't necessarily understand the criteria the best. But the first criteria says hierarchy of data. I
believe that is talking about use some personal data first and, then, coworker, then area monitors, a hierarchy. Since we have no data, no radiological monitoring data, from Hooker, it is kind of a moot point. I am not sure what else that was looking at.

What I did do is look at the hierarchy of data we had at other sites where we used surrogate. We had Mallinckrodt, we had Fernald, and we had ElectroMet.

There is some bioassay data for those sites, but those sites dealt with a lot of different types of uranium, almost all of which, or probably all of which had a much higher concentration of uranium.

It is very unlikely that the uranium content in the urine of those workers was associated with mag fluoride. So, we didn’t really consider that a reasonable surrogate.

Which, then, takes me down to the area monitoring for mag fluoride handling,
which is what we used. That was --

CHAIRMAN ANDERSON: So, have we
done any truly similar site in ore processing?
I mean the ones you described are a bit more
complex than most were.

MR. ALLEN: I am not sure what you
are asking. I'm sorry.

MR. BARTON: That might be covered
under the third one, where you discuss the
same processes and the similarities between
them.

CHAIRMAN ANDERSON: Okay. Okay.
Fine. Go ahead.

MR. BARTON: And that kind of goes
with what you were saying. You know, if these
guys are working with different materials that
are going to give them different doses, you
want to use their bioassay data over area
monitoring, but you really can't because they
are not similar. It is not relevant.

DR. MAURO: Is that explained in
your criteria 1 hierarchy data, that you did
look into using bioassay, but you had to reject it, for the reasons you explained? So, you had to go to a lower tier, namely, air-sampling data, but uniquely associated with the mag fluoride operations? I mean that would be the way in which the story is told.

MR. ALLEN: Yes, and that is what that is in there. Just a couple of sentences is all it took.

DR. NETON: Yes, I mean I could read one of the sentences. "The individual monitoring data at those sites would be driven by exposure to high concentrations of uranium compounds, not necessarily representative of work with mag fluoride." And he is talking about the bioassay data.

DR. MAURO: And that is it. There is a rationale to it. That was the intent of, by the way, the hierarchy, was to say, when you are going to go to surrogate data, if you could use surrogate data at the highest level of the hierarchy, great, but if you can't and
you have to resort to a lower tier, you give
the rationale. And you did exactly what
should be done.

MR. ALLEN: Okay. The next
criteria is exclusivity constraint. And I am
trying to refresh my memory on what this is.

DR. MAURO: Yes, I can help out a
little with context.

The exclusivity means that, when
that was prepared and surrogate data was being
entertained, the idea was that sometimes you
would supplement site-specific data with data
from other sites. But sometimes you did not
have the luxury to do that. It was sort of a
thought processing.

And so, if you have to resort to
exclusively using other site data, well, then
we are going to hold you to a little bit
higher standard. And that was the thinking
behind the term "exclusivity".

So, it is within that context
where perhaps you go the extra yard in terms
of making sure that your other data, you know, takes into consideration, listen, all your eggs are in one basket now. You don't have the luxury to draw upon on any site-specific data to help prop up your situation.

MR. ALLEN: Okay.

MR. KATZ: That is a nice summary, John. Thanks.

MR. ALLEN: Yes, and that is essentially what this says, is that we have no data. It is kind of a moot point. There is no data at Hooker.

Moving on to No. 3, site or process similarities, the majority of the airborne at Hooker for the estimate is based on handling of mag fluoride.

CHAIRMAN ANDERSON: It's exclusively, isn't it?

MR. ALLEN: Yes. Yes, you're right.

CHAIRMAN ANDERSON: Yes, I mean --

MR. ALLEN: Well, I was going to
say the handling is the majority.

CHAIRMAN ANDERSON: Yes.

MR. ALLEN: The dumping of the drums, digestion, et cetera --

CHAIRMAN ANDERSON: Okay. I see.

Okay. Yes.

MR. ALLEN: I don't think there is anybody else that digested mag fluoride, or at least I didn't find it. But, as far as handling dumping of drums, there is nothing real site-specific or anything. There's no special equipment other than conveyors.

We had area data from other places where they were shoveling, dumping, et cetera, for mag fluoride. So, that process seemed to be fairly similar, is essentially what I am trying to say here.

As far as the filter operations, that is also a fairly standard thing. Doing that with mag fluoride concentrate is not so standard.

We used a Christifano and Harris
analysis of ore digestion and used the filter operations out of that, which is filter it after concentrating uranium products. We settled on one that is a fairly well-known concentration of processed uranium. So, there is not a lot of radium, thorium, et cetera, other stuff in there. And, then, we adjusted that concentration. Either way, it is a wet or at least damp process. The airborne is fairly low compared to the drum dumping. So, we think that is satisfactory for surrogate data for that operation.

Temporal considerations is No. 4.

MR. KATZ: Before we go on --

MR. ALLEN: Sorry.

MR. KATZ: Oh, I guess this is all under process similarities? I'm sorry.

I was just going to say, I mean, if SC&A had any thoughts about that? Or questions?

MR. BARTON: Not from my end.

MR. ALLEN: Okay. Moving on to
the temporal considerations, the data we used came from Mallinckrodt, ElectroMet, and Fernald. It was all collected between 1947 and 1959. The operation at Hooker was 1944 through 1946.

Looking at the 1947-through-1959 surrogate data, the highest samples of the set were collected in 1958 at Fernald. The next highest were 1947 and 1949 at ElectroMet. And everything else fell in between.

This, again, is handling of the mag fluoride. It is not really specific to a site. So, it is not really specific to a timeframe, either.

And looking at the data, the highest is towards the end of that timeframe. The next highest is towards the beginning. It doesn't seem to have any temporal dependence on it.

And it is relatively contemporary with the 1945-46 timeframe. So, we think it is satisfactory as far as that goes.
CHAIRMAN ANDERSON: So they, geographically, weatherwise, and the dumping and --

MR. ALLEN: Well, ElectroMet is located in Niagara Falls.

CHAIRMAN ANDERSON: Yes. I mean I think they are --

MR. ALLEN: So, that is very close.

CHAIRMAN ANDERSON: -- sort of in the same. Fernald --

MR. ALLEN: Fernald is this area here.

CHAIRMAN ANDERSON: Yes.

MR. ALLEN: It gets plenty wet.

(Laughter.)

CHAIRMAN ANDERSON: Yes. Well, so the operation --

DR. MAURO: You bring up a good point, indoor/outdoor. When these surrogate data criteria developed and the temporal issue came up, it was more toward the idea that, if
you have a process that you are doing in the 1950s that you have no data for, and it is indoors, and, then, you have another process that is very similar, where you are doing the same kind of thing, but it is in the 1980s, well, you have got yourself a temporal problem. A temporal problem comes in because of substantial improvements that were made from the fifties to the eighties, especially in these types of activities, and engineered ventilation controls/practices, health physics practice, et cetera, et cetera. So, that is where this business of the time period comes in.

But now you have brought up an interesting perspective; namely, in this particular case, I think we are dealing with outdoors. And we really never discussed that. That is, you are outdoors now creating aerosols. There is reason to believe that you are doing the same kind of thing, and I like the point. You say, well, they were doing the
same kind of thing and they were doing it outdoors, and they were doing it at the same time. You know, an argument could be made, well, that's pretty good.

You know, you are geographically the same. You are in the same time period, and you are doing the same kinds of things. So, this is a consideration that we really never engaged before. But a good point about, you know, now that we are outdoors, you would like to be in the same general time period and the weather is more or less alike. But I don't know. It is just a new twist.

MR. ALLEN: Well, I mean some of that data was actually, at least a little bit of it was outdoors, and some of it was indoors, as far as the surrogate data goes.

And my impression of what it comes down to is the concentration of uranium in the mag fluoride was so low, nobody put any controls on it.

DR. MAURO: Yes. Yes.
MR. ALLEN: And I think that is probably more than anything else what makes it contemporary with the Hooker data.

DR. MAURO: Yes. Okay.

CHAIRMAN ANDERSON: So, the sample, the surrogate data from Fernald and ElectroMet, do we know, I mean, what time of the year they were doing that? I mean the description at this facility was that dumping could be really dusty, and that the wet processing indoors was, you know, we have agreed that that would have been quite different.

It is kind of, how representative are these samples of what would have gone on and, when they did the sampling, were they under high-exposure circumstances? You know, was the dust visible at the Fernald, ElectroMet sampling? Do we know?

MR. ALLEN: I don't think I have anything that will tell me yes or no on that.

CHAIRMAN ANDERSON: Okay.
MR. ALLEN: Well, we do know some of it was indoors; some of it was outdoors.

CHAIRMAN ANDERSON: So, some of the dumping was actually --

MR. ALLEN: Yes. At least some of it was outdoors. Most, I think, of the surrogate data was indoors. I am not positive about that.

But the Hooker operation went --

CHAIRMAN ANDERSON: Was always outdoors?

MR. ALLEN: About 18 -- the dumping was always outdoors, but it was 15 or 18 months or so.

CHAIRMAN ANDERSON: Yes.

MR. ALLEN: Eighteen is what we have estimated for the whole duration. So, that is the whole gamut of the type of weather you would --

CHAIRMAN ANDERSON: Yes. Yes.

Well, it was more the representativeness of the surrogate data, that you are saying, you
know, the highest samples were in 1958. Do we know the conditions when they did the sampling?

So, you have come up with your 95 percent.

MR. ALLEN: I wouldn't say the -- I mean, we know the operation. The operation is like shoveling mag fluoride into a drum or dumping from a drum type of description on the air samples. Some of them say respirator worn or no respirator worn.

CHAIRMAN ANDERSON: Yes.

MR. ALLEN: Not all of them.

What else do we know about it?

MR. THURBER: David, isn't it true -- this is Bill Thurber -- isn't it true that most of the samples were breathing zone samples? They weren't general area samples?

MR. ALLEN: I am thinking you are right, Bill, but I can't say that for sure right now. I don't recall.

CHAIRMAN ANDERSON: I guess, just
as we move this forward, to defend the overall Committee, in the past, on surrogate data it has been raised, well, are these samples comparable to the -- you know, the good news here is the process is similar. The question would be, are the conditions under which the surrogate sampling was done, do they really bound the samples or the processes at Hooker?

We have the description at Hooker that it could be very dusty, which we don't know if that was the description at the sites that we are using. Because if there is a lot of visible dust, that could be quite different than when somebody is sampling and you are going to shovel a whole lot different.

MR. ALLEN: I guess the best I can tell you is, for the type of concentrations we saw in these air samples --

CHAIRMAN ANDERSON: I mean the concentrations were so low to start with --

MR. ALLEN: Well, I mean the concentration got up there some in these air
samples. And if it was with a low-concentration material, then, yes, it was a very dusty operation.

CHAIRMAN ANDERSON: Okay.

DR. MAURO: Is there a milligrams of dust per liter of air-type numbers that go along with all of this? The reason I ask is that there is an awful lot of knowledge out there of what is a dusty environment and what milligrams per cubic meter, not per liter. Is that part of your, I guess, suite of information that is available to you either at the site or at the surrogate site?

MR. ALLEN: I haven't seen that, no.

DR. MAURO: Okay.

MR. ALLEN: I have seen the activity airborne measurements.

DR. NETON: But it can be calculated if you know the concentration of --

DR. MAURO: Yes. Right. Yes, I was just thinking that, also. Once you get
your gross alpha --

CHAIRMAN ANDERSON: If you assume
that they were within compliance of the --

(Simultaneous speaking.)

DR. MAURO: Right.

CHAIRMAN ANDERSON: Yes, I would
suspect not.

DR. MAURO: No, no. Jim was
starting to say something. If you have a
default outdoor gross alpha per cubic meter as
your default dust loading, and knowing the
activity concentration, in theory, you could
back out what that would be in milligrams per
cubic meter.

They have so much data out there
on dusty work environments of all sorts like
this. You know, if you are talking about dust
loadings that, in theory, you are assuming are
on the order of many milligrams per cubic
meter outdoors, well, that is very dusty, and
especially if you are assuming it is chronic.

You know, you are dealing with, you know,
there is no doubt that that places an upper bound, especially outdoors. Indoors, you know, that would be, as a rule of thumb, your up there in 1 to 5 milligrams per cubic meter protracted outdoors. That is a very high protracted dust loading.

You can get short periods of time where it is much higher than that, but over an extended period of time that would be a bounding number. That would be one way in which I would sort of get my sense for whether or not we are in the right place.

MR. ALLEN: Well, the number we ended up using from the surrogate data, the 95th percentile, was 800 dpm per cubic meter. And if you assumed .2 percent uranium, it is a choking environment, no doubt.

DR. MAURO: Yes, I suspected as much.

MR. ALLEN: I don't have the number calculated, and I don't have it handy, but it is big.
DR. MAURO: Yes.

CHAIRMAN ANDERSON: I mean that kind of, then, the downside to that is the plausibility becomes --

MR. ALLEN: Right.

DR. MAURO: That is always a problem. It is that window, you are trying to find out --

CHAIRMAN ANDERSON: Well, I mean the dose is relatively low regardless, but the attempt to bound the maximum gets you into implausibly high --

DR. MAURO: Yes.

MR. ALLEN: That is the next --

CHAIRMAN ANDERSON: Yes. I think we have beat this pretty good.

MR. ALLEN: And the plausibility, it comes down to these are actual measurements of mag fluoride, and it is in an activity. So, you are looking at, some of these are 700 and 800 dpm per cubic meter measured values.

DR. MAURO: Are those the measured
values that were taken indoors?

MR. THURBER: Not necessarily, no.

DR. MAURO: Oh, not necessarily?

Okay.

MR. THURBER: No. Matter of fact, they are in David's document here. Just a minute.

MR. BARTON: I don't know if there is enough data out there, but it might be instructive to maybe compare the surrogate data that was taken outdoors versus those taken indoors.

MR. ALLEN: Well, that is what I was just trying to look at. And I am on the ER right now looking at page 20, and I am on Fernald data. It has got one, top of the page, 1958, was high and low due to wind change, parentheses, that this was an outdoor operation. And that is 659, 519 and 262 dpm per cubic meter.

DR. MAURO: Anybody do a quick conversion for me, just to get that into
milligrams per cubic meter?

MR. ALLEN: While somebody is doing that, I was just going to point out the next one is the second floor drum dumper. So, I am assuming that is indoors. And that is 793, 829 and 425.

So, they are in the same general range. I mean there is less than a factor of two type of difference between those two activities.

CHAIRMAN ANDERSON: Yes, yes, and they are all personal samples, right?

MR. ALLEN: And those are BZs, yes.

DR. MAURO: Oh, those are BZs?

Okay.

MR. ALLEN: Yes.

CHAIRMAN ANDERSON: Because outdoors, if you are dumping the dilution, it wouldn't impact it where an area would --

DR. NETON: In the sense that they are BZ samples, indoors or outdoors, it is
really low, and, then, it is a generation issue.

CHAIRMAN ANDERSON: Right.

Exactly.

DR. NETON: It is not a room dilution --

DR. MAURO: Yes, yes.

MR. ALLEN: Yes. So, we are talking some big numbers indoors, some big numbers outdoors. Some samples are fairly high; some are fairly low. And I am not sure what the rhyme or reason is between them, other than just the operation that was actually done with these things.

MR. THURBER: It looks, you know, just eyeballing the Fernald data, it looks like the outdoor numbers are lower than the indoor numbers, looking at page 9 of your TBD.

MR. ALLEN: Well, that doesn't say indoor or outdoor. I have got to bounce back to the PER.

MR. THURBER: No. No, it does.
It does.

MR. ALLEN: Most of them don't say indoors. There are four of them that say they are outdoors.

MR. THURBER: Yes. The higher ones are indoors, and the lower ones are outdoors. I didn't do an average or anything.

MR. ALLEN: Yes, I understand.

MR. THURBER: But the four samples labeled outdoors go from 32 to 110, and the other ones go as high as 829 dpm per meter cubed.

DR. NETON: But Dave just read one that was outdoors that was in the 200s.

MR. ALLEN: Yes, that is just what I was going to point out. If you look at the ER, there's a lot of samples, and I did not use all those samples. There were some of those that looked to me like it was cleaning out an empty gondola car, railcar. And I wasn't sure that was really indicative of a large pile rather than just cleaning up the
remains in a railroad car.

There were others that were --

CHAIRMAN ANDERSON: Were those lower or higher?

MR. ALLEN: I don't think higher. Mostly lower.

CHAIRMAN ANDERSON: I mean, because if you got that much and you were sweeping with a broom in a railcar, it would be pretty --

MR. ALLEN: But not all of them were.

CHAIRMAN ANDERSON: Yes.

MR. ALLEN: I think, if you added them all up, you end up dropping the number some.

CHAIRMAN ANDERSON: Yes. Okay.

MR. ALLEN: So, I excluded those. Then, there was chipping and grinding in some of these. I am not convinced that is really representative of dumping.

CHAIRMAN ANDERSON: No.
MR. ALLEN: As it is, I actually put those in there, added it up, and, then, excluded them. You get very close to the same number. Excluding them, actually, I think raised the number just slightly, if I remember, I mean within a few dpm per cubic meter.

MR. BARTON: The grinding operations were actually less dusty.

MR. ALLEN: It might have been. Some of them were high; some of them were low. The one I quoted here a little bit ago outdoors --

CHAIRMAN ANDERSON: Is it a fairly fine particulate?

MR. ALLEN: Well, it's created --

CHAIRMAN ANDERSON: I mean I have never seen a pile. So, this is just for my edification here.

MR. ALLEN: When it is created in the reduction process, it tends to be like hard rocks.
CHAIRMAN ANDERSON: Yes.

MR. ALLEN: But it is hard enough to where it can be pulverized and crumbled up pretty easily.

CHAIRMAN ANDERSON: Okay.

MR. ALLEN: Or I don't know about easy, but it gets pulverized, crumbled up to something very fine, fairly fine.

CHAIRMAN ANDERSON: Because this sounds like a lot of dust.

MR. ALLEN: Yes.

CHAIRMAN ANDERSON: So, that is why you would think there would be -- is it all respirable? I mean, you are assuming it is 100 percent respirable.

DR. NETON: Yes, there is no correction for that.

MR. ALLEN: Yes.

CHAIRMAN ANDERSON: Okay.

DR. NETON: No, the ICRP doesn't have a correction for that, either.

CHAIRMAN ANDERSON: Yes. No, no.
MR. ALLEN: But, I mean, just looking at the mix, the grinding, the chipping, even the gondola car, and the dumping and stuff, all seems to be in the same ballpark, and it is just essentially agitating a lot of mag fluoride dust with no controls, indoor or outdoor.

CHAIRMAN ANDERSON: Yes.

MR. ALLEN: I mean it seems to be all semi-consistent. There's some lower numbers, some higher numbers. And that is why we used the 95th in the TBD, to account for all the possibilities there.

And I am not sure where we are at now.

Anyway, my plausibility argument was essentially that these are numbers that we have seen working with this material. Just essentially mechanically agitating it is what it amounts to when you are dumping, shoveling, et cetera.

DR. MAURO: Yes, the arguable
plausibility was the plausible circumstances and the very fact that you have circumstances which are comparable. Obviously, by definition, they are plausible circumstances.

MR. ALLEN: Yes, and that is essentially all I put in the surrogate data justification there.

And that was the last criteria, this one.

CHAIRMAN ANDERSON: Now in your little writeup here you said ElectroMet values were averages?

MR. ALLEN: They were. All I had was --

CHAIRMAN ANDERSON: What we were just talking about really was the Fernald measurements, right?

MR. ALLEN: Yes.

CHAIRMAN ANDERSON: Which were individual samples?

MR. ALLEN: In the TBD, we actually used, the surrogate data we used came
from these ElectroMet samples as well as some from Mallinckrodt and some from Fernald. So, we used all three, put them all together, and came up with the 95th percentile.

CHAIRMAN ANDERSON: Okay.

MR. ALLEN: So, these were used. Or not these solely used, not exclusively used.

CHAIRMAN ANDERSON: Yes.

MR. ALLEN: But these two numbers were averages of some unknown number of samples. So, that is the type of airborne activity you got from this slag handling, barreling, weighing. And it is only a factor of two below this 95th that we ended up using.

CHAIRMAN ANDERSON: So, the range, I mean was pretty tight.

MR. ALLEN: Yes.

CHAIRMAN ANDERSON: So, it must have been near saturation.

MR. ALLEN: They had to be high, yes.
CHAIRMAN ANDERSON: For the cloud of exposure.

And the only other question I would have is, if you have such a high concentration of dust, you overload you filters. I mean, how are they measuring it? How are they collecting the sample? So, I mean, is this really your pump quits because you can't stop the dust --

DR. NETON: These are BZ samples, but in that era, if I remember, they are really high-volume air samples positioned near, as close as possible to the workers breathing them.

CHAIRMAN ANDERSON: But it was breathing zone? Yes.

DR. NETON: Yes.

CHAIRMAN ANDERSON: With a high-vol set?

DR. NETON: Right. Yes.

CHAIRMAN ANDERSON: Okay.

DR. NETON: It would only be like,
what I call a short, like 20-minute sample.

CHAIRMAN ANDERSON: Yes, it would have to be --

DR. NETON: They would hold it as close as possible to the workers' breathing zone while they were working --

CHAIRMAN ANDERSON: Okay.

DR. NETON: -- and take sort of a snapshot as opposed to like we do today, the integrated measurement over the whole shift.

CHAIRMAN ANDERSON: Yes. Yes.

Okay.

MR. ALLEN: And I was thinking I had those, but I don't.

Well, that was all I had on the surrogate data. I am not sure where that --

MR. KATZ: So, I think John and Bill and Bob need to think about just what sort of degree of further analysis they may want to do on these issues of surrogate data.

DR. MAURO: I would suggest that we do write something up, given the importance
of the subject, rather than just say, oh, it sounds good. You know, we could maybe take a look at it. I don't think it would take very much time or very much cost, but I think it would be wise for us to get something in writing on the record, that we looked at David's writeup and explored these matters, as we have done on all the others.

CHAIRMAN ANDERSON: Okay.

MR. KATZ: That sounds good.

CHAIRMAN ANDERSON: I mean, just for me, Dave, you went through how you eliminated or you didn't include some and you did. I think a more robust, written description of how you did that will help when we get --

DR. NETON: A more independent review maybe.

CHAIRMAN ANDERSON: Yes. Or a description, so that that will avoid the kind of questions that I raised when we go over to the full Board. Because this really is the
key to this.

MR. KATZ: Okay. So, we are saying, Dave, you might just add a little bit more text.

CHAIRMAN ANDERSON: Well, I mean we may tell SC&A, but I guess how you used, how you came to the surrogate data, and if somebody goes back to the core documents, they are going to say, well, your writeup here isn't consistent with it because you took out some and you didn't take out.

So, let's just be very -- I think you did it right. I mean I am supportive of what you did, but we need a document for others that are going to look at it, because this is the document we are going to send to the --

MR. ALLEN: You are talking about a review of what I did in the TBD, which is something for SC&A? It is not a go-to for me?

CHAIRMAN ANDERSON: Yes. Yes.

MR. ALLEN: Okay.
MR. BARTON: And just to be clear, you don't want us to reinvent the wheel here?

CHAIRMAN ANDERSON: No, no. No, no.

MR. BARTON: Just a careful eye on this report?

CHAIRMAN ANDERSON: I am expecting you will probably have similar -- you know, you need to make this --

MR. BARTON: Flesh it out in certain places?

CHAIRMAN ANDERSON: Flesh it out in certain places. But I just don't want us to prolong this operation by we have another meeting, and, then, we talk about that, and, then, you have to -- I would like to have whatever you are going to write up, have SC&A comfortable with a revision.

MR. KATZ: So, if SC&A is going to review this, maybe you could write a memo or something to elaborate on whatever, on your process.
Otherwise, we are going to have an SC&A review saying you need to do X, Y, and Z, which you have already addressed in this meeting. And, then, Dave is going to do that. And, then, SC&A is going --

DR. NETON: Well, it is pretty clear in Dave's writeup about what samples he used. I mean they are listed there.

MR. KATZ: So, what is it we want from Dave at this point, the kind of thing to elaborate?

MR. ALLEN: Well, I tell you what. Like I said, it is in the TBD, what I used. I can send my spreadsheet that I analyzed the data on, along with a couple of other --

CHAIRMAN ANDERSON: I mean, it may be in here, but what I was looking at is this review of the surrogate data is really what the Board is going to want to look at. And so, to say, well, go back to the TBD -- I think you can pull out, you may just want to do a copy and replace.
MR. KATZ: Copy and paste.

CHAIRMAN ANDERSON: Copy and paste, yes.

I don't remember what's here, but if you have it there, that's great, then.

MR. ALLEN: I am honestly not sure what's happening. I'm sorry.

DR. NETON: I think maybe reissue your surrogate analysis with a better --

CHAIRMAN ANDERSON: Yes.

DR. NETON: -- description of what samples were used.

MR. ALLEN: Okay. What was excluded and what was --

DR. NETON: I think actually what you used, which is in the TBD. Just cut that table and stick it right in there and say, "Here's what was used."

And, then, when SC&A reviews it, they can look at it and say, "Well, you used these samples, but we noticed that there were these other ones," and we think it is or is
not appropriate how you treated them.

MR. ALLEN: Okay. So, if I am getting this right, you want me to revise the surrogate data evaluation I did to put more detail into the air sample data that was used.

MR. KATZ: Yes.

MR. ALLEN: I will include the table out of the TBD, what was used. I will point out the stuff in the ER that was excluded and why.

CHAIRMAN ANDERSON: Specifically, that would be --

MR. ALLEN: And I will add another column in here for --

CHAIRMAN ANDERSON: -- in No. 5.

MR. ALLEN: -- indoor/outdoor.

CHAIRMAN ANDERSON: Yes.

MR. KATZ: Right.

CHAIRMAN ANDERSON: It is in the plausibility.

MR. KATZ: Right. So, then, there will just be one-stop shopping for SC&A.
MR. ALLEN: And, then, that is what you guys will review.

MR. KATZ: And that is what they will review. That way, we won't have an iterative process here.

CHAIRMAN ANDERSON: Okay?

MR. KATZ: Yes. That sounds good.

Okay.

CHAIRMAN ANDERSON: Any other issues with Hooker?

MR. KATZ: I think that is most all of them.

CHAIRMAN ANDERSON: Yes. That really is about it, yes. Good. We are making great headway here. All right, that's what I want.

And you will do this by?

MR. ALLEN: This I can --

MR. BARTON: Tomorrow.

(Laughter.)

MR. ALLEN: I think I can do this pretty quickly. So, hopefully, this week it
MR. KATZ: That would be great.

CHAIRMAN ANDERSON: We are not going to get it by the 24th.

MR. KATZ: Oh, no, but it is all right because they are going to give an update at this Board meeting anyway.

CHAIRMAN ANDERSON: Yes, yes, yes.

MR. KATZ: It wouldn't be time to report out --

CHAIRMAN ANDERSON: No.

MR. KATZ: -- for an action at this Board meeting --

CHAIRMAN ANDERSON: No.

MR. KATZ: -- because it is not on our agenda for that anyway.

CHAIRMAN ANDERSON: Yes. Okay.

MR. KATZ: So, we would be aiming for August --

CHAIRMAN ANDERSON: Yes.

MR. KATZ: -- to report out.
CHAIRMAN ANDERSON: That's fine.

DR. NETON: But you could say we are close.

CHAIRMAN ANDERSON: Yes, that is really what I want to do.

MR. KATZ: You can give a good update.

CHAIRMAN ANDERSON: Yes. Okay.

Bill, do you have any comments, Bill Field?

MEMBER FIELD: No, I am fine. I think what has been discussed is very reasonable.

CHAIRMAN ANDERSON: Okay. So, do we want to break for lunch?

DR. NETON: Sam just stepped out of the room for a second. He is ElectroMet.

CHAIRMAN ANDERSON: Yes.

MR. KATZ: Should we just go ahead and break now?

Do you have a sense from Sam how much material we have?
MR. ALLEN: I have no idea.

DR. NETON: He has got a lot of new stuff.

MR. KATZ: Oh, okay. There is a lot of --

DR. NETON: I believe he has got new stuff. But I think a lot of these issues go away, but I don't know how fast we will get through them.

MR. KATZ: Okay. Yes, we wouldn't want to break if he just had 20 minutes' worth of material.

DR. NETON: I can't really say. I mean I don't know how long it is going to take to go over the stuff.

CHAIRMAN ANDERSON: Do we take questions?

MR. KATZ: Oh, we can talk about the name of the Work Group.

(Laughter.)

There is no longer a TBD-6001, and this Work Group is entitled TBD 6001 Work
Group. So, we had, I think, resolved on our own, if this works for you, too, Bill, to call this from here forward the Uranium Refining AWE Work Group, so that we are generically describing what we are about and not using a TBD that doesn't exist and might confuse people.

Is that good with you, Bill?

MEMBER FIELD: I like it.

(Laughter.)

CHAIRMAN ANDERSON: Of course, now all of the web storage facility sites are going to have to be renamed where all the documents are stored. Okay. We will do it.

MR. ALLEN: Change the title.

CHAIRMAN ANDERSON: Yes. Okay.

What's the name again?

MR. KATZ: Okay. We are Uranium Refining AWE Work Group.

DR. MAURO: You know what else I find? I just had a thought that came to me. I noticed that whenever we talk TBD-6001, I
immediately have to go online and go look at what are the attachments, you know, United Nuclear, Hooker. Because there are a lot of uranium refining AWE facilities that are not originally part of TBD 6001.

So, all I am doing is alerting everyone that the terminology that is used is certainly fine, but I suspect that there are a lot of other AWE facilities that don't fall within the purview of this Work Group.

MR. KATZ: Well, is there a better descriptor, John?

DR. MAURO: Other than putting the names of the five -- I think there are five sites that fall under, originally were under the TBD 6001 Work Group. There were specific sites.

MR. KATZ: Right.

DR. MAURO: And we have been talking about a couple of them. All I can say is that, the degree to which we could capture that, it would make for a long name. But I
don't know. I am just bringing the thought up.

CHAIRMAN ANDERSON: I don't like the GBP Work Group.

DR. MAURO: Well, see, the GBP I'm okay with because I remember the three.

CHAIRMAN ANDERSON: Yes. Right.

DR. MAURO: And they are the only three that we are working with. There are no other GBPs.

MR. KATZ: That one actually goes by their names formally.

CHAIRMAN ANDERSON: Yes. Right.

DR. MAURO: I don't know. Whatever you folks are comfortable with, we're fine.

MR. KATZ: Okay. Well, let's just run with this and call up those other confusions when they come.

DR. NETON: I did speak with Sam about how much, and he thought maybe an hour and a half or so.
MR. KATZ: Okay. So, then, it seems like it makes sense, if he is busy, we can break now.

The only other thing, United Nuclear, maybe give an update.

MR. ALLEN: That will be, well, I think the agenda was mostly for SC&A to -- let me find it.

MR. KATZ: Yes, it was to sort of recap the status of things because it has been quite a while, and we just don't want to lose track of where we are. That would be a foundation for you to say what is coming.

MR. ALLEN: Yes.

MR. KATZ: What sort of time do we need for that?

MR. ALLEN: Not much.

MR. KATZ: How much time do you need --

MR. ALLEN: Not much on our end.

I don't know --

MR. KATZ: How about SC&A, to just
sort of recap United Nuclear, where we are at this point with the Work Group?

MR. THURBER: Well, I can run through the new points in the matrix, which I gave you an updated version of, in 15 minutes probably, 20 minutes.

MR. KATZ: So, do you want to knock that off before lunch? It is up to you all.

CHAIRMAN ANDERSON: That's fine with me. My flight is at 5:00. So, I just need to get out of here by 3:30-4:00-ish, I guess.

MR. KATZ: Are you fine, Bill Field, with knocking that off now before lunch break?

MEMBER FIELD: Oh, I am fine with anything you want. I have some other meetings this afternoon. But if I have a reason not to go, that would be cool, too.

(Laughter.)

MR. KATZ: Okay.
CHAIRMAN ANDERSON: Okay, let's do it.

MR. KATZ: Go ahead.

MR. THURBER: Okay. If everybody turns to the United Nuclear Appendix D matrix in the memo I sent you all last week, we can go through it.

A number of these things are closed. So that, we can cover those pretty swiftly.

Okay. Finding 1, current guidance for assigning occupational medical doses insufficiently prescribed. At the previous meeting, the issue was closed because it was determined that these measurements were made offsite.

MR. KATZ: Right.

MR. THURBER: Finding 2, current default doses for external whole-body and skin doses are based exclusively on summary statements of 1960 AEC inspection report and may be inappropriate.
And we reviewed the additional data that had been provided since the initial finding and determined that, basically, the issue was closed, but there was a proviso -- well, we determined it wasn't an SEC issue. And let's see, I don't remember what the proviso was.

MR. ALLEN: I think it is in the second-to-the-last column there, Bill. It is basically a better description of --

MR. THURBER: Oh, yes, there is a need for better documentation. That was the proviso that was left on the table when we determined or when the Work Group determined that the issue was closed last time. Okay?

Finding 3 dealt with potential issues related to the neutron exposures that weren't addressed in Appendix D. There was quite a bit of discussion about this last time. NIOSH agreed to attempt to gather additional information on exposure scenarios, so that an additional note of realism might be
added to the neutron exposure scenarios.

Finding 4, well, the initial finding -- I'm sorry -- Finding 4, initial intakes recommended by NIOSH may not correlate with empirical urinalysis. In deference to Jim Neton's concerns last time, we renumbered our subsequent findings as A, B, C, and D rather than having two number 4s, or whatever, which makes good sense.

And the Findings 4-A, 4-B, 4-C, and 4-D were kind of discussed all together rather than individually. The bottom line was that NIOSH needed to or agreed to go back and look at these findings and review their position.

DR. MAURO: Bill, I'm sorry to interrupt.

MR. THURBER: Yes?

DR. MAURO: You went through 3 very quickly. And I'm looking at the matrix right now, and it looks like that is still an open item.
MR. THURBER: It is.

DR. MAURO: Oh, okay. It wasn't apparent from the discussion.

MR. THURBER: Oh, no, no. It said the action item from last time was NIOSH would agree to attempt to gather additional information on exposure scenario details by, among other things, some worker interviews.

DR. MAURO: Okay. Thank you.

MR. THURBER: All right.

With regard to Finding 4-E, which related to the thorium work, the action item was that NIOSH needed to show that the air samples are representative of exposures during the thorium work. And so, that was an outstanding issue on the table.

DR. MAURO: Bill, is this the issue -- this is John again.

MR. THURBER: Yes.

DR. MAURO: Is this the issue we were talking with Rich Leggett about?

MR. THURBER: No. The stuff we
were talking with Rich about primarily was the 4-A, -B, -C, and -D kind of things, and partly related to the role of Type F exposure and partly related to the ability to reconstruct doses in that period in 1960-61 where there was a data gap --

DR. MAURO: Right.

MR. THURBER: -- and where there had been, presumably, for funding reasons or whatever, a reduction of the sampling. And there were also some open issues related to the consistency between air-sampling and urinalysis data. So, there was kind of a collection of issues that were embraced by those four findings, 4-A through 4-D.

DR. MAURO: Yes, I only bring it up because I did have a chance to talk to Rich recently, and I know he is especially concerned about the break where the bioassay was being done for a certain period of time --

MR. THURBER: Right.

DR. MAURO: -- and, then, all of a
sudden, it just stopped and they went to air sampling. And he felt that the air-sampling data especially was problematic.

So, just by way of context, this seems to be one of the hotter items that we are going to need to deal with.

MR. THURBER: Yes, and it was an item of extensive discussion at the prior meeting, no question.

DR. MAURO: Yes.

MR. THURBER: This foray through D findings was probably the main focus of the United Nuclear discussion at the November meeting.

Okay.

MS. EATON: Pardon my intrusion.

MR. THURBER: Okay.

MS. EATON: Are we allowed to ask questions while you guys are in discussion or make comments?

MR. KATZ: I'm sorry, who's speaking?
MS. EATON:  Clarissa Eaton, on behalf of the petitioners.

MR. KATZ:  So, what we are going to do right here is Bill is running through the issues, and Dave will talk about, then, status of deliverables, action items, for follow up here. But we will give you time after that, after we have it all on the table, to make some comments, if you would like.

MS. EATON:  Okay, good, because, like he just said, that is a very important point as to the company made a business decision to stop those bioassays. And, you know, it is a very common procedure we see today, profits over safety.

I mean, you know, this was a conscious decision, and even though there were problems in the sixties and then later found by Oak Ridge that the concentrations were at times 800 percent higher than the maximal allowable concentrations. I think that is a very big issue with us as well.
And that is all I wanted to say.
I'm sorry.

MR. KATZ: Okay. Thank you. No, don't apologize.

MR. THURBER: Okay. Finding 5, this finding dealt with the fact that NIOSH provided insufficient information about the method used to calculate the inhalation intakes from residual contamination.

And it was agreed, or NIOSH said at the November meeting that there was an error in their calculations and that these calculations would be corrected when the Site Profile is issued. And the Work Group felt that the issue was closed with a proviso that the error be corrected and documented in the revised TBD.

DR. BEHLING: Bill, can I make a comment here? This is Hans Behling.

MR. THURBER: Please, Hans, yes.

DR. BEHLING: Yes, that particular issue goes back to one of the earlier comments
that I included in my review of the original Rev. 0 and Rev. 1, which didn't change. And the error really was a twenty-nine-fold error between what was recommended as a value as to what it should have been, based on the protocol they provided. So, it was a substantial error. It was a twenty-nine-fold error.

So, it should be something that has to be looked at and make sure that we do correct it because it was not a small error.

MR. THURBER: And I understand that NIOSH is, indeed, committed to make that correction.

Any other comments on Finding 5 before we go on?

(No response.)

Okay. Finding 6, we raised some questions about estimating external doses from residual contamination. We subsequently reviewed our calculations and said we had made a calculational error and that, therefore, the
issue should be closed.

DR. BEHLING: Yes, Bill, again, this is Hans.

MR. THURBER: Yes?

DR. BEHLING: When I went through the original calculation, I failed to include the short-lived daughters. And as a result, I made a comment that the dose was overestimated, but in review of my calculation and the realization that those short-lived daughters should have been included, I came to the conclusion that NIOSH's original calculation was, in fact, correct. And as you said, we withdrew that particular finding.

MR. THURBER: Okay. And we also had one observation, and that was there was concern that the United Nuclear site description was insufficient. Obviously, it is a complicated operation. And on the basis of the discussions at the previous Work Group meeting, the Work Group decided that the issue was closed, again, with the proviso that NIOSH
would flesh out the site description when the TBD is issued.

MR. KATZ: Thank you, Bill.

MR. THURBER: Okay.

MR. ALLEN: As far as our update on this, it is not much. We did do interviews for Finding No. 3. I just forwarded them to the Work Group, I think, Friday afternoon.

We have not done any type of evaluation or anything of those yet. Those are just the interviews.

There is some useful information in there. I am not sure it is going to narrow down the exposure scenario very much.

As far as Findings 4-A through -D, we do still owe a White Paper. We want to review the analysis that Leggett did in the review. We wanted to go through that and make sure -- it is kind of a complicated issue to where we wanted to get it all written down in a document and handed out ahead of time. And it is essentially just a matter of resources
on getting to that issue.

MR. KATZ: Do we have a rough sense of when?

MR. ALLEN: No. This has been passed off to somebody else to try to enlist some additional resources -- is what we have been trying to do here. And I don't have a good timeframe on that one yet.

Also, we owe on Finding 4 --

MS. EATON: It's hard to hear.

MR. ALLEN: I'm sorry. I will try to speak up.

Also, on Finding 4-E, we owe something that evaluates the representativeness of the thorium air samples to the work. So, essentially, I think we are all on the same page. We owe something on the thorium representativeness, something on 4-A through -D, kind of all lumped together. And I think we owe, it is not specific, but I think we do owe some analysis of those interviews we did for Finding 3 for the
neutron.

And I don't have a good timeframe on when those are going to come. They are getting closer and closer to the top.

And that is essentially our update on that.

MR. BARTON: A question on 4-E. I know we discussed to some extent in the last meeting that you really needed to go in and flesh out whether the samples were breathing zone or general air process samples. Was that the only consideration we really needed to look at or was it also plant location? Like were these taken actually in thorium areas?

MR. ALLEN: I think it was representativeness in general, which would include both.

MR. BARTON: Okay.

MR. ALLEN: That's how we took it.

MR. KATZ: Any other questions?

(No response.)

CHAIRMAN ANDERSON: The public
comment?

MR. KATZ: And do we have -- I'm sorry, ma'am, I forgot your name, but do we have more questions?

MS. EATON: Clarissa Eaton.

MR. KATZ: Ms. Eaton, Ms. Eaton, do you have any other questions or comments?

MS. EATON: Well, yes.

What testing was done for the alpha particles? And how much data is there? And for like the uranium, the thorium, the radon gas, all the alpha emitters, polonium, that are all present at the hematite, radium, how much data is there? Because my concern is about the alpha radiation, that even the NRC considers it to be 20 times more radioactive than beta or gamma.

And, you know, [identifying information redacted] had claimed in his affidavit -- or, no, I'm sorry. Back to in the report about the clothes that were given to the workers, that they were found to be
contaminated before leaving the site, and often they were sent just to wash their hands. You know, the thorium dioxide, which is water insoluble, I mean, what would even washing their hands have done for that?

And so, I have questions about, you know, the data is so sparse. It's here; it's there. You know, we are just having a hard time understanding what data is available and the inhalation exposures. This is a very critical -- that would not have been measured by air samples, you know, as far as the type S material that is being considered.

I mean, like, for example, the thorium dioxide was odorless. You know, how would anyone know if they were exposed unless someone was monitoring them?

I don't know. I have a lot of mixed feelings about the way NIOSH is coming across with their information. I just don't see how it could even be reconstructed. I am having a hard time.
You know, there were a lot of spills. These workers were exposed to some hot stuff.

And again, I go back to the company's decision to stop this testing when in the sixties they knew they had problems, and, then, once later on, it wasn't even the company that brought up the testing again to resume. It was Oak Ridge.

And, then, in addition to that, when their inspections were done by the Atomic Energy Commission, they would cut production back 90 percent. I mean that is like, you know, closing the curtains temporarily, so that a fair estimation couldn't even be given on the inspections.

Do you see what I am saying as far as my concerns?

You know, the hottest areas, like the item room, that lacks data. There was no thorium or radon test performed on the petitioner at any time with the exception of
hiring, you know. I don't know.

CHAIRMAN ANDERSON: We thank you for your comments.

These actually are, a number of the issues you raise are the ones that we are in the process of working through as well. So, you know, we are far from finished on this topic. So, hopefully, we will be able to address a number of your concerns as we move forward here.

MS. EATON: So, as far as NIOSH, are they complying with the things you had asked for them back in the September 2010 report? Has there been a site visit?

You know, the plant is under decommissioning right now. And the contamination has left the site. You know, there's numerous documents, even from the DNR, about the gross elevations that were found by the DNR even. These are all on record.

And, you know, has anybody, even in cahoots with anybody that is over the
decommissioning project? I guess that is my
question.

Do you even know the background
radiation level that they are using as part of
the decommissioning right now? Because they
are having to tear down the site. It is that
hot, and it has been for some time.

And since there is such a big --
you know, there's lawsuits with the State of
Missouri about this decommissioning plan that
is in place that they are working on. And is
anybody talking to anybody? Has there been a
visit from NIOSH? Has anybody even set foot
down there to see what is actually going on in
the decommissioning process?

Because, you know, Westinghouse
recently has been caught, they have been cited
two or three times accidently shipping
pallets. I mean NIOSH really needs to be down
there right now because the workers that are
there now are, in fact, you know, the
housekeeping is not being done, still.
MR. KATZ: Is it a covered facility at this point?

MR. ALLEN: Residual, I'm thinking, but I am not positive.

MS. EATON: You know, I tried to extend the date for the coverage period, but, according to the rules, I cannot do that. I have to give a set date, although my position was, since it is under decommissioning right now, and they keep moving the date as far as the completion, you know, but we should keep that open. But, unfortunately, according to the federal regulations, we have to have a date.

But, you know, right now there's workers being at risk in the decommissioning process that are at risk here because shipments of pallets are getting shipped out to metal recyclers. You know, all that stuff could end up in highchairs, be replacements.

I mean there is a problem going on today still, and I am just not sure that we
really even have a chance.

MR. KATZ: So, Ms. Eaton, thank you. I think we can address some of these issues.

So, Dave, are you saying 1973 is the end of the covered period?

MR. ALLEN: Yes, I think we are getting outside the realm of our authority and we can and can't do in this program. We can only address the exposures associated -- we can address all the exposures from 1958 to 1973, but after 1973 we can only discuss the contamination left over from the AEC operations, which were the scrap recovery.

As far as the --

MS. EATON: I'm sorry, I didn't mean to go off on the decommissioning, but, you know, these are concerns of mine. I apologize.

MR. KATZ: No, it's okay. We understand that people may have many concerns that don't fall within the envelope of this
program, but it doesn't mean they are not real

concerns.

MR. ALLEN: It is just outside of

our ability to do anything.

MR. KATZ: Right.

MS. EATON: So, back to my

questions quickly, have there been any site

visits from anyone, specifically NIOSH?

MR. ALLEN: Well, again, we are
talking about the doses that were incurred
1958 to 1973. And as you said, it is
undergoing D&D. The question is whether there
is much of any information we could gain now
from what the conditions were like in 1973.

MS. EATON: Right.

DR. NETON: We have done

interviews with workers, though, right?

MR. ALLEN: Yes. We have done

interviews with workers specific on this, and

we do offer an interview to every claimant,

and some have some decent information and some

not necessarily.
MR. KATZ: So, point blank, Ms. Eaton, the answer is there have not been site visits because the program doesn't feel like those would be informative for the period that they are covering of operations.

MS. EATON: I see. Okay. I just thought, you know, because of the reason of the missing data, that anything they are finding today in their investigations and their compliances with the NRC, that maybe there may be some assistance to what these workers were actually involved in. Because, I mean, the half-lives of, you know, some of these things are 75,000 years. You know, it hasn't went anywhere.

MR. ALLEN: Well, one of the biggest problems with looking at what is there now is that they had a great deal of commercial operation that is not covered during the residual period, and the commercial operation went on until not too long ago. And it tends to mask what is within our authority
to estimate.

MS. EATON: Can I ask, is there any suspicion to you about why there were so many rotations down there? I mean because[identifying information redacted] had also expressed that, you know, when an area became too hot, that they were relocated to another area. Is that normal procedure to rotate like that?

DR. NETON: That is a fairly common practice in then nuclear industry. When workers start to approach their annual dose limits or quarterly dose limits, they will move people to areas of lower exposure, so they don't go over the limit.

MS. EATON: Okay.

DR. NETON: That is a fairly common practice.

MS. EATON: Okay. Thank you.

I guess at this point --

MS. DREY: Well, could I ask a question?
MS. EATON: Oh, I'm sorry.

MS. DREY: This is Kay Drey.

MR. KATZ: I'm sorry, can you say your name again?

MS. DREY: Kay is the first name, K-A-Y. The last name is Drey, D as in David, R-E-Y.

MR. KATZ: Yes.

MS. DREY: I'm calling from St. Louis.

I wondered if you were going to address Clarissa's questions about alpha emitters. And the question is, what data you have found on this?

DR. NETON: Well, I think a lot of that is covered in the Evaluation Report, as to why we think it is feasible to reconstruct these doses.

MS. DREY: I am having trouble hearing. I'm sorry.

DR. NETON: I think our Evaluation Report that is on our website goes into some
discussion about why we think we can
reconstruct the deltas, particularly for the
alpha-emitting radionuclides. I can't comment
much more beyond that at this point.

But I would encourage you to go
out on our website, and all those reports are
listed out there.

MS. DREY: Okay. Is there a
particular report or something that you were
thinking?

DR. NETON: Well, it is the
Evaluation Report. It would be listed under
the United Nuclear site.

MS. DREY: Okay. Thank you.

CHAIRMAN ANDERSON: Okay. Any
other questions?

MS. DREY: Well, just, also, does
the Evaluation Report cover the fact that they
had materials from Paducah, and so forth, that
were fission materials, like technetium-99?

Do you cover those materials as well?

DR. NETON: I don't recall if
there was a recycled uranium component at United Nuclear or not. I would have to go back and look. I haven't looked at it --

MS. DREY: That is very important, I think, you know, the fact that they did find technetium-99, and that surprised everyone at the time they found it.

MS. EATON: That they also denied initially upon telling everyone about the offsite contamination. They denied that for some time initially, Westinghouse.

MR. KATZ: Dave, are you familiar with this question?

MR. ALLEN: Which one?

MR. KATZ: The one they are talking about right now, the exposure to technetium.

MR. ALLEN: Oh, the exposure to technetium? That is a component of recycled uranium, along with plutonium, neptunium, and several others. I don't recall what the Evaluation Report says about it or whether it
is accounted for in there.

It is normally a 1 or 2 percent --

MS. DREY: I can't hear you. I'm sorry.

MR. ALLEN: It is normally, it comes along with the uranium, and we have uranium urinalysis for a great deal of the timeframe. And it is typically a few percentage point increase in that dose. It is something that does need to be accounted for. It is not a big showstopper. It is a multiplier for the uranium dose.

But, yes, it does need to be accounted for. I just don't recall --

MS. DREY: I am just wondering about not just the uranium and its daughters, but when you have fission products like technetium-99, I wondered if those were assessed at all.

MR. ALLEN: Yes, and I can't remember off the top of my head whether that is included in there. It should be. It comes
along with the uranium. So, it is always a multiplier on the uranium dose.

MS. DREY: What do you mean "always?"

MR. ALLEN: They had no reactors at United Nuclear. They didn't process or intentionally gain any fission products. Where they would have come from is as a contaminant in the uranium. That is where they would have gotten it onsite, and that is where --

MS. DREY: They got it because they were given recycled uranium to process, which they weren't supposed to. It was supposed to have been refined at the fuel cycle.

So, it was a surprise to everybody when it was discovered in the evaporation ponds. I mean it probably wasn't a surprise to everybody, but it was certainly a surprise to the public.

MR. ALLEN: Yes, that's what I
said. It is part of the recycled uranium. It is a contaminant in the uranium. That is where it has to be evaluated.

And I don't know the answer off the top of my head, how it is evaluated, but it does need to be --

MS. DREY: If it was evaluated.

CHAIRMAN ANDERSON: It should be in that report on the website.

MS. DREY: The Evaluation Report?

CHAIRMAN ANDERSON: Yes.

MR. KATZ: Right. And so, in any event, we can check on this, and at the next meeting we can report on that, whether that was addressed.

CHAIRMAN ANDERSON: Yes.

MS. DREY: Thank you.

MR. KATZ: Thank you.

CHAIRMAN ANDERSON: Okay. Thank you very much.

I think we are now going to break for lunch, and we will come back -- what?
MR. KATZ: An hour?

CHAIRMAN ANDERSON: Yes, or 40 minutes.

MR. KATZ: Forty-five minutes?

CHAIRMAN ANDERSON: It will be 45 minutes. About 1:15?

MR. KATZ: Is that good for everyone on the line?

(No response.)

Okay, 1:15.

CHAIRMAN ANDERSON: Yes.

(Whereupon, the above-entitled matter went off the record at 12:21 p.m. and resumed at 1:18 p.m.)
MR. KATZ: Okay. Good afternoon.

This is, I am still going to call it the TBD 6001 Work Group for this one last meeting, so I don't confuse anybody. We are going to be changing our name.

And we are reconvening after lunch to speak about ElectroMet. We have already covered United Nuclear and Hooker.

And we're on.

CHAIRMAN ANDERSON: We're on.

MR. KATZ: Let me just check to see, Bill Field, at least do we have you?

MEMBER FIELD: Yes, I'm here.

MR. KATZ: Great. Thank you.

MR. BARTON: Okay. Well, should we handle this the same way we handled the first two sites?
CHAIRMAN ANDERSON: Yes.

MR. BARTON: And go through the findings?

Well, Bill Thurber, I have been leaning on you pretty heavy all day. So, if you want to take us home, that's fine, or if you're sick of it --

MR. THURBER: Okay. No problem.

No problem.

(Laughter.)

Basically, I will go through, I can go through the matrix. But the way it was pretty much left last was that we did not get into an in-depth discussion of ElectroMet because NIOSH indicated that they had new data which they needed to evaluate before they could really get into a substantive discussion and critique of our findings. But I will go through the findings, and we will go from there.

Finding 1, NIOSH should discuss the issue of access controls explicitly in the
Evaluation Report to justify the basis for
including all workers at ElectroMet, rather
than just those who worked in the area plant.

You will recall that the uranium
work, the reduction of UF4 to uranium metal,
was done in a special plant called the area
plant which was built specifically for that
work by the AEC in 1943. It was located in
the corner of a large site where the Electro
Metallurgical company made a variety of
ferroalloys, primarily for the steel industry.

And the area plant, based on some
of the testimony, was fenced off and guarded
and gated. Our concern was that, was it
possible to identify the cohort of workers who
were exclusively employed at the area plant as
compared to the larger population of
commercial workers on the rest of the
facility. So, that was what was behind this.

And when this was last discussed,
and I believe this dates back to June of last
year, NIOSH indicated that they would try to
get some clarification from the Department of Labor on the exact scope of the population that was to be involved.

The second finding --

DR. GLOVER: Do we want to cover these or do you guys want to just do them all?

MR. KATZ: Yes, we could cover them one at a time.

DR. GLOVER: Just go ahead and --

MR. THURBER: If you want to cover them one by one, that is fine.

MR. KATZ: Sure.

CHAIRMAN ANDERSON: Yes, why don't you?

DR. GLOVER: We have already done at least a segue to it.

MR. THURBER: Yes, no sense repeating it again.

DR. GLOVER: Yes, because I will have to refresh your all's memory by the time we get to some of these.

So, on this one, and this is going
to drive where we are, Part A when we responded to this was we are going to contact the Department of Labor and see how they handled this. And I have provided, in the folder to the Work Group I gave you the Department of Labor's email back to us, which we can't put people in places.

And so, basically, if they are an ElectroMet worker, then we're not going to know that they were -- I mean we have some monitoring data, but we certainly don't have everything that we can call these people not ElectroMet. If they put them inside there, then that is how we are, as we said before.

The other part to this, though, is the source-term base. The model that is going to affect our discussion throughout the rest of this is that we have written a letter to the Department of Energy asking them to clarify the ore and thorium work that occurred at ElectroMet.

And so, without those pieces of
information, before I know, Bill, that I said
that if it was outside of that area, then we
wouldn't cover it. It is unclear where people
are, and I think there is a little bit of a
change in how we may deal with facilities like
this when they can't put people in places, and
they don't distinguish DOE ElectroMet from
ElectroMet proper in the facility description.

Plus, we are not sure exactly where the work
occurred.

So, there are indications of tons
of high-grade ore being sent to ElectroMet and
worked on. We found several new references.

So, we are right now waiting for a
response from the Department of Energy. I
know they are working on it, looking at June
or July, likely to give us a response.

And so, that is going to affect
the source-term, and the source-term is going
to drive our model.

CHAIRMAN ANDERSON: But they did
respond to your letter?
DR. GLOVER: No, the Department of Labor responded to our --

CHAIRMAN ANDERSON: Okay.

DR. GLOVER: -- first request back somewhere in the end of 2010. This is a new letter we wrote last month.

CHAIRMAN ANDERSON: Okay.

DR. GLOVER: And so, regarding specifics on the ore and thorium source-terms that are described.

MR. THURBER: Which obviously relates to the next finding.

Finding 2, research and development work on uranium ores was not mentioned in NIOSH 2009, which is the Evaluation Report. And there was some suggestion that there were ores that may have been worked on, and we felt it was important that NIOSH look a little further to see if that was, indeed, the case and what quantities might be involved.

And I think Sam has really covered
this second point, but go ahead, Sam.

DR. GLOVER: Well, as you said, I think that covers it.

(Laughter.)

MR. THURBER: Okay. I didn't mean to put words in your mouth.

DR. GLOVER: No, sir, that's fine.

MR. THURBER: Finding 3, NIOSH should review the start and end dates for the operational period to ensure that all relevant documentation has been evaluated.

And one of the things behind this finding is that in the Petition Evaluation Report, as I recall, NIOSH said that the work at ElectroMet began in April of 1943, which was based on when the area plant actually started up.

But there was some documentation which we quoted in our review of the ER which indicated that, as early as December of the previous year, that ElectroMet had done some casting of uranium. Now whether it was done
in their research and development lab as compared to the area plant, or what, I don't have any idea. But, on the basis of that, we felt that the start dates needed to be examined to be sure that the period over which AEC work was properly represented.

DR. GLOVER: And NIOSH concurs that those references are completely correct that you mentioned. They did start in late December or November of 1942. And so, we agree, as we develop a source-term-based model after the DOE response, we will certainly include early years, look at whether that is appropriate, yes. So, we agree.

MR. THURBER: Okay. Finding 4, the assumption that uranium metal production, reduction process, and associated industrial production, industrial hygiene conditions were unchanged from 1943 to 1949 may not be correct.

The changes that appear to have been made in 1947 would need to be
investigated before the assumption can be used to implicitly back-extrapolate post-October 1947 data to the 1943-to-1945 period.

What underlies this finding is the fact that, prior to about October 1947, there was not a great deal of monitoring information of any kind available. And after that, there was quite a bit of data.

And so, in the Evaluation Report, NIOSH chose to take the time period, post-October 1947 time period, and use that as a basis for back-extrapolating to the beginning of operations in 1943.

And the argument that NIOSH made was it appears to us that the process was really unchanged over the period from when operations began until the time that there was a reasonable amount of air-monitoring and urinalysis data available.

And the argument that we made was that there was some evidence in the literature that NIOSH was -- I'm sorry, NIOSH, excuse me
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-- ElectroMet was in the process of making some significant change prior to 1947, which suggested to us that things were not really constant, that they were, indeed, making some process improvements, and that aspect needed to be considered if one was to use this back-extrapolation approach.

DR. GLOVER: Hey, Bill, we agree. I mean I agree with what you are saying. We are going to wait until the source-term letter is responded to, so we can have an overall.

At the end of this, I put four or five graphs to give folks a flavor for the data collection. I do agree with you there were health changes made. There are some health improvements.

There are some early bioassay data that we have, though, and we are actually going to explore with DOE/Oak Ridge whether we can -- we have a lot of unknowns, what their work title was. And so, we have a number of bioassay samples that were done in the
earliest years, 1943 and 1944, with an unknown occupation.

So, we are going to explore with DOE down at Oak Ridge, which has ElectroMet's medical records, whether we can get some additional work titles for these guys. So, we are going to check into that, as we look also into this source-term-based model.

You will see some things, though, in the air-sampling data. I tried to give you a flavor for the types of samples that were taken, BZs, what the active peers were. So, if you look at page 9, you will notice that one hassle is when the health and safety laboratory comes in. They have got samples up to almost 500,000 dpm per meter cubed. So, the location and types of samples that were done, there is obviously nothing that indicates those kinds of exposures in the beginning for the air samples that they chose to take. So, back-extrapolating, you know, we are going to have to be careful when we
recognize that.

So, we are reviewing the source-term-based model. We do understand your concerns. We are trying to find out better how that uranium bioassay may or may not be used.

Right now, we have too many unknowns. But we are going to see if we can perhaps make some improvement with that.

But that five or six pages there is just sort of a feel for the types of urine data we have, when we have urinalysis data. On page 13, you see when we have it. I tried to make some feel for the type of occupations that we have.

Many of those on page 14 show the unknowns. Most of those are from that first occupational period. So, we have about 57 unknowns, bioassays associated with unknown worker types. So, that will kind of give us a better flavor for who was being monitored.

And I broke those out into a
series of graphs, basically, to show, as a function of time, when they were collecting bioassay.

So, there are just some initial fields. We have put a lot of that data together, as we had mentioned before. We are going to do all the SRDB documents, see all the external data, the internal data, so we can make sure that we are ready to provide our source-term-based model.

But we do understand the concern, Bill.

MR. THURBER: Okay. Finding No. 5, this is not a particularly substantive issue, but there appeared to be some discrepancy in the text describing whether there were or were not sampling data available measuring internal exposure during the standby period. There was a period of a couple of years, I believe in 1948-1949, where the facility was on standby. There were some discrepancies in the text about that.
DR. GLOVER: And we agree, when we put that forward, we will make sure we address that, yes.

MR. THURBER: Clearly, not a substantive point.

Finding 6, NIOSH should take into account the difference between fixed-head samplers, process samplers, and general area samplers and the actual intake and uncertainties this creates for estimating bounding intakes.

And it wasn't clear that the analysis had taken into account that sometimes they may have done lapel samplers, but actually there also may have been fixed-head samplers, and there could be a considerable difference between what you measure with a fixed-head sampler that is kind of near where the operator's head is nominally and what you get with an actual lapel sampler. We felt that the question of what the samples, the air samples, truly represented needed to be very
carefully considered.

DR. GLOVER: Agreed. So, in our source-term or in our data, we now have all the descriptions of the types of samples and whether they are BZs and GAs and the descriptions.

MR. THURBER: Okay. Finding 7, NIOSH needs to establish the job titles corresponding to jobs actually done for the period of employment. NIOSH job title consolidation scheme would not produce bounding estimates for all workers in the proposed Class in the absence of such an analysis.

We had concern as to whether laborers did operator jobs or, you know, whether people moved around from job to job in the area plant and that sort of thing, and felt that if the source-term was to be developed by worker Class, that one needed to be sure that those things didn't happen or, if they did, they were accounted for.
DR. GLOVER: And we will, as we propose a model, we will make sure that we take that into account. Right now, there is not one on the table to revise, but we certainly will --

MR. THURBER: Yes, right.

DR. GLOVER: -- make sure we think about worker movement.

And I think 8.

MR. THURBER: Okay.

DR. GLOVER: I think 8 goes to kind of the same thing.

MR. THURBER: Yes. What we pointed out is that there are several techniques for calculating what the 95th percentile is. It happened, at least in this particular case, that the graphical method that NIOSH used gave the lowest of three alternatives that we examined.

And so, if one is saying that the approach is bounding for the Evaluation Report, one needs to be careful about the
basis upon which that consideration is built.

DR. GLOVER: Okay.

MR. STIVER: Bill, this is John Stiver.

I want to jump in here and mention something about the change in NIOSH's approach to using the DWE data in model construction.

Now, Sam, I think you indicated that you found a lot of bioassay data. So, the whole issue of when DWEs may apply may be a lot different than what I gathered from looking at the previous report.

But back last, I believe it was in October of 2010, NIOSH released a new paper. I believe it is Revision 3 that Bob Morris put out, a White Paper on the FMPC WDE reports. And this was in response to the review of Revision 2 of the NIOSH methodology that we put out in July of 2009.

And, basically, what happened was that NIOSH decided to go ahead and utilize the methodologies that were put out by Adam Davis
and Dan Strom in the 2008 Health Physics Journal article, where they looked at the uncertainties associated with the DWE datasets. And they actually did use the 1948 ElectroMet set in their analysis.

And what they did was they used Monte Carlo techniques, and they did a couple of different approaches. One was looking at discrete sampling of the individual task air samples, and the other was to fit those samples to a log-normal distribution and sample that.

And from that, they came up with estimates of GSD ranges that should be associated with the DWE set. Basically, they demonstrated that a GSD of five is actually pretty good for this type of data.

And the Morris Rev. 3, Revision 3, basically, abandoned this approach of trying to assign people into categories by job type and, also, looked at the other big issue that we had. You know, when you take a bunch of
DWEs and rank-order them and set a log-normal to it, and then pick off the 95th percentile, and we demonstrated in our review that in every single case we looked at we were missing the actual average with DWE for the highest exposed Class.

And, then, when you also considered that the DWE itself is an uncertain value with a very large uncertainty, I think that was probably the main reason why NIOSH, then, went to this new methodology. And it seems to have more global implications outside of Fernald. In a discussion in Weldon Springs last week, we went through this very same topic.

So, we really feel that it is more of a global issue. It is going to have to be addressed here as well.

That is really all I wanted to say about this right now.

DR. GLOVER: We will certainly look at that. They didn't propose that as
part of the ElectroMet stuff. They did that through Fernald. So, they had no internal review from our side, although maybe through Jim, but not as an ElectroMet -

MR. STIVER: It is more of a global significance I think.

DR. GLOVER: Exactly.

MR. STIVER: It is really an overall methodology for using that type of data.

DR. GLOVER: Yes, and Jim didn't review it because he is conflicted at Fernald. So, this is an ElectroMet model. And we will see where the source-term-based thing leaves us.

MR. STIVER: Okay.

DR. GLOVER: So, I mean, where does that leave us for this? You know, the years that are in the SEC or not, or we will see where this goes.

MR. STIVER: This just has implications for Finding 6 through 8 and,
DR. GLOVER: That was Morris' report, right?

MR. STIVER: Right.

DR. GLOVER: Yes.

MR. THURBER: Are we ready for 9?

CHAIRMAN ANDERSON: Yes.

MR. THURBER: Okay. Nine doesn't really require much. What we pointed out was that the approach taken in Appendix C for ElectroMet was much more claimant-favorable than that in TBD-6001, but that was really a TBD-6001 problem, if you will. And so, it has gone away with the demise of TBD-6001.

DR. GLOVER: Agreed.

MR. THURBER: Finding 10, given the high frequency of blowouts at other facilities using the same equipment, NIOSH should reexamine the possibility that blowouts
occurred at ElectroMet.

We looked at the information that was on the O: drive and any other materials, and could not find any evidence of it, but it was still very difficult to believe that the same process, when practiced elsewhere, there were frequent numbers of blowouts. And we felt that this area, even though we didn't come up with anything, needed to have careful attention paid to it.

And we recently supplied to the Work Group the revised Appendix E to our ElectroMet report, which summarizes the interviews. I have to say that we were remiss in getting that out. It was ready to go, and it fell in the crack until Sam asked me what happened to the interview reports.

My feeling is that the interview reports are very inconclusive about whether blowouts occurred at ElectroMet. But I will leave that to the rest of you to judge after you have read the report or the appendix.
Sam?

DR. GLOVER: I agree, yes, we could find nothing that supports blowouts. I did look through some of the interviews. The only thing I did notice was that they said, either in those interviews or in another document, that they were able to take advantage of the Ames Laboratory processes and make improvements on it as it was implemented at their facility. So, perhaps they were able to make -- but that is all conjecture. But, as of yet, I have seen nothing that really helps us with saying that blowouts occurred.

MR. THURBER: Right.

The next finding, that NIOSH should address the residual period, it was pointed out that this is a DOE site and, therefore, the residual period does not get included. And so, that finding is closed.

DR. GLOVER: Agreed.

MR. THURBER: Finding 12, NIOSH should provide more detailed information in
support of their position in the ER that, considering the intake scenarios established in TBD-6001, Appendix C, the calculated urinary excretion of uranium from these intakes was compared to the actual data and was found to be bounding in each case.

And we did some calculations, and we did not come to the same conclusion. And I believe we supplied the spreadsheet data.

DR. GLOVER: I think you gave me the external, the Riley file, Bill, but I don't think you sent me your --

MR. THURBER: Oh, yes, okay. I know, yes, the one that Karene Riley did, yes.

DR. GLOVER: Right. I would be more than happy if you want to provide that as we develop a model and look at what your all's concerns were.

MR. THURBER: Okay.

DR. GLOVER: So, if you please would send that to me, that would be great.

MR. THURBER: Yes.
DR. GLOVER: We certainly do have some early bioassay data. We will make sure that, whatever model we do propose, that pre-`48 model, we will make sure that we look at those concerns as we review this.

MR. THURBER: Okay. That is on our list.

Finding 13, the approach taken to bound external photon exposure values in Table C-4 of TBD-6001, Appendix C, appears to be reasonable for the operating period beginning June 1948. However, NIOSH must demonstrate that this approach is bounding for the earlier period where there is no film badge data available.

And this is similar to one of our earlier findings about the ability to back-extrapolate from 1947 to 1943 kind of timeframe.

MR. BARTON: There is also the issue of unknown job categories in that finding.
MR. THURBER: Yes, which also ties in with another one of our earlier findings.

Thanks, Bob.

MR. BARTON: Yes.

MR. THURBER: Finding 14, NIOSH should state in the Petition Evaluation Report that estimates of occupational medical exposure should be based -- oh, this is the photofluorography thing that we discussed earlier today.

I think that we, as John Mauro outlined this morning, we have a clear understanding of how this should be treated at AWEs in the absence of specific information to the contrary.

DR. GLOVER: And I agreed we would look at it. We will make a formal -- but there are documents that discuss the medical program at --

MR. THURBER: And in those, as I recall, it did say X-ray, at least some that I looked at.
DR. GLOVER: That is correct.

MR. THURBER: Finding 15, SC&A independently developed a database for annual beta doses and found the 95th percentile value was in excellent agreement with that reported by NIOSH. However, the 50th and 5th percentiles were somewhat higher. And therefore, again, if you are categorizing people by job category, this might result in some understated results.

I think that this is the spreadsheet, actually, that I believe we provided to you, Sam.

DR. GLOVER: Yes, you did, and I appreciate that.

Also, as I said, we went through all the SRDB documents and tried to make sure we had all of the data. So, we actually have additional datasets which you guys have evaluated, Bill.

So, whatever we do choose to go forward with, we will make sure we use the
most comprehensive dataset we do have.

MR. THURBER: Right.

DR. GLOVER: But we will make sure that we include, depending on how we set up the job title or whatever model we choose to use, how that gets implemented, that we include that data, the appropriate analysis.

So, I understand your concern.

MR. THURBER: Okay. The thrust of the next finding I believe is that there wasn't sufficient guidance in Appendix E to address exposure to the hands and arms, and we that that needed to be considered carefully.

DR. GLOVER: I know that Dave Allen, we just came to that some resolution on this at another facility, the enhanced exposure, the Puzier effect. So, I need to make sure where that got left, Bill, for the other facilities. I think we had some agreement on that perhaps.

MR. THURBER: Yes. Well, we kind of talked a little bit about that this
morning.

DR. GLOVER: Yes, ElectroMet clearly had enhanced exposure.

MR. THURBER: Yes.

DR. GLOVER: They discussed it very clearly. So, there is a lot of beta dosimetry or film badge.

MR. THURBER: Right.

DR. GLOVER: So, we do have some things. We need to make sure we take all of that into account.

But we do agree there were some significant opportunities for enhanced exposure.

MR. THURBER: Yes, we felt that, in particular, that it was the skin other than the hands and arms that needed to be addressed.

Okay. Finding 17, again, this ties in really with a point that we have made in a couple of earlier findings. NIOSH needs to provide convincing arguments that the 95th
percentile values based on 1948-1949 data are bounding for the period prior to December 1947. And I think this has been adequately covered in discussion and comments by NIOSH on a couple of our previous findings here.

And that's the end.

MR. KATZ: Thank you, Bill.

CHAIRMAN ANDERSON: The last word, Sam.

DR. GLOVER: Thank you, Bill.

(Laughter.)

MR. THURBER: You're very welcome.

DR. GLOVER: Well, I am thinking from our standpoint we have to see what the Department of Energy is going to come back with, see where our source-term is. And at that point, we can update the rest --

CHAIRMAN ANDERSON: A lot of these are source-term-related.

MR. KATZ: Do you have a rough sense of timeframe?

DR. GLOVER: I would say by July,
is what they were saying.

MR. KATZ: By July is when you will hear from DOE.

DR. GLOVER: Yes.

MR. KATZ: But, then, assuming you have to develop a --

DR. NETON: Well, but it depends on what the source-term ends up being. If it is an ore-type source-term, then we are going to be in a similar situation as we were at a lot of other facilities that are SECs. I am not saying it will become an SEC, but depending on if the source-term is of sufficient magnitude that we have like -- correct me if I am wrong, Sam -- a lot of thorium-230 --

DR. GLOVER: Yes, it is almost in the 100,000 pounds of Mallinckrodt material.

DR. NETON: If you end up with that kind of material, then I am not sure where we are going to end up at the end of the day.
MR. KATZ: Okay. So, July for an update on where we are with this.

DR. GLOVER: Yes.

MR. KATZ: So, if you can just, when you get a response, if you will send that to the Work Group when you receive it --

DR. NETON: Yes.

MR. KATZ: -- so, everybody will know where we are standing on this one.

CHAIRMAN ANDERSON: Yes. And we haven't scheduled it, but I was thinking, if we are going to plan to have Hooker on the agenda in August, we should probably have a final meeting in July.

MR. KATZ: Yes, July or -- yes.

CHAIRMAN ANDERSON: Okay. Yes.

DR. NETON: When is the Board meeting in August, early August or --

MR. KATZ: No, I think it is the third week in --

CHAIRMAN ANDERSON: Well, we could do it earlier, but sometime --
MR. KATZ: I think it is the third week in August.

CHAIRMAN ANDERSON: So, I would just try, if you were going to be done, and if we are going to have a meeting to finalize Hooker, if we could add this to it, it would be helpful. If it isn't, it isn't. You know, that's the way it goes.

DR. NETON: The Board meeting is at the end of August.

CHAIRMAN ANDERSON: Well, then, we could push it off.

DR. NETON: We could push it off until a little bit later in July or --

MR. KATZ: We could, or even --

DR. NETON: -- early August.

MR. KATZ: -- before the Board in August.

CHAIRMAN ANDERSON: Yes.

DR. NETON: Because it seems to me the Hooker resolution is going to be fairly, hopefully, straightforward.
CHAIRMAN ANDERSON: Yes.

MR. KATZ: Yes.

DR. NETON: It wouldn't be too much of an issue to wrap things up in one quick meeting.

CHAIRMAN ANDERSON: Yes.

DR. NETON: And depending on what comes out here, this could be fairly straightforward as well.

MR. KATZ: Right.

CHAIRMAN ANDERSON: Yes.

MR. KATZ: So, we will wait for a notice in July.

I don't know if you want to tentatively book a date or not at this point.

CHAIRMAN ANDERSON: Sure.

MR. KATZ: Do you want to do that, Bill? Are you in a position to book a date?

MEMBER FIELD: Yes.

MR. KATZ: Okay. Let's look at our calendars.

CHAIRMAN ANDERSON: So, early
July, we have already got --

MR. KATZ: Well, we won't have
notice even until --

CHAIRMAN ANDERSON: Yes, I've got
gDP/BNL on the 6th and the 7th.

MR. KATZ: So, I am just thinking
give us sufficient time, if you want to look
at the week of August 8th?

DR. GLOVER: I will be out. You
may want to do it anyway. I can always call
in, but the week of August 8th I will be out.

MR. KATZ: Okay.

CHAIRMAN ANDERSON: Actually, that
is a good week for me.

MEMBER FIELD: Yes, I will be out
as well.

MR. KATZ: Okay. So, that doesn't
work.

CHAIRMAN ANDERSON: It figures.
It is good for me.

MR. KATZ: Yes, and the week
before doesn't work for me. So, what about --
CHAIRMAN ANDERSON: The 22nd is when our meeting is, that week.

MR. KATZ: So, what about the week of July 25th? We will know where we stand at that point with DOE.

CHAIRMAN ANDERSON: That week I am in Halifax.

MR. KATZ: The week of the 25th you're in Halifax?

CHAIRMAN ANDERSON: Yes.

MR. KATZ: That sounds nice.

CHAIRMAN ANDERSON: The 10th International Mercury Conference.

MR. KATZ: And did we already rule out the week of the 15th?

CHAIRMAN ANDERSON: Of?

MR. KATZ: August. How is the week of August 15th?

MEMBER FIELD: Yes, that works for me.

MR. KATZ: It works for me.

CHAIRMAN ANDERSON: Yes, I could
do that, if we wanted to do it. Monday is completely free for me.

MR. KATZ: Is Monday best for you?

CHAIRMAN ANDERSON: Yes.

MEMBER FIELD: I will be getting back from vacation on that Sunday night.

MR. KATZ: So, how about August 16th? Does that still work for you, Andy?

CHAIRMAN ANDERSON: Yes, I could probably do that. I have got a Board meeting I would just love to skip.

(Laughter.)

MR. KATZ: Okay. So, let's everybody pencil in August 16th for the next Work Group meeting.

MEMBER FIELD: And what do we call the Work Group by that time?

MR. KATZ: And this will be the Uranium Refining AWEs Work Group.

DR. NETON: I think we should develop a symbol for it, though.

CHAIRMAN ANDERSON: Well, Jim
Melius said --

MR. KATZ: Yes, he had a funny one.

CHAIRMAN ANDERSON: -- AWE --

MR. KATZ: It sounded like "GROG" or something.

CHAIRMAN ANDERSON: Yes.

MR. KATZ: URAWG.

Okay. So, let's set that, then, August 16th.

CHAIRMAN ANDERSON: All right.

MR. KATZ: Any other business for the good of the order?

CHAIRMAN ANDERSON: I don't.

MR. KATZ: Anyone else?

CHAIRMAN ANDERSON: What do we have for -- on our matrix we had Baker-Perkins?

MR. KATZ: Right. That is a TBD.

It is not an SEC, right?

DR. NETON: There was an SEC.

MR. KATZ: There was?
DR. NETON: Yes, that was the mixing uranium issue.

MR. KATZ: Right.

DR. NETON: Yes, and there was a residual. I forget what was being evaluated. Can anyone from SC&A help me out?

Baker-Perkins was --

MR. THURBER: Yes, that's mixers, that's right.

DR. NETON: Yes, but it is not an SEC --

MR. KATZ: It is not an SEC issue --

DR. NETON: The SEC was denied by the Board.

MR. KATZ: Right. Right.

DR. NETON: But it is a TBD issue, then, I guess, how we are doing the dose.

MR. THURBER: Yes, it is a TBD issue.

MR. KATZ: That's what I thought.

MR. THURBER: I put the matrix in
just for --

CHAIRMAN ANDERSON: Okay. Because I seem to remember we closed it out.

MR. KATZ: So, if we have work ready, certainly, we can address it during the Work Group meeting as well.

CHAIRMAN ANDERSON: Yes.

MR. KATZ: But the SEC stuff should take priority, if we are choosing.

DR. MAURO: This is John. The Baker-Perkins Site Profile review has been filed, but I don't believe it has been put on anyone's agenda.

Is Baker-Perkins underneath, one of the sites underneath TBD-6001?

MR. THURBER: No. No, it is Appendix P.

DR. MAURO: It is Appendix P, but --

MR. THURBER: Yes. No, period, that's all.

DR. MAURO: That's it? Oh, okay.
Let me know if it had a hold by way of a Work
Group.

MR. KATZ: This Work Group.

DR. MAURO: Oh, it does? Oh,
okay.

MR. KATZ: Yes.

DR. MAURO: That's good. Okay.

Thank you.

MR. KATZ: Yes.

CHAIRMAN ANDERSON: Okay. So, I
mean I just saw that, and I don't think we
talked about it the last time.

MR. KATZ: Okay.

CHAIRMAN ANDERSON: So, what else
are we assigned?

MR. KATZ: I don't think we need
to review -- everybody's clear on their action
items, right?

MR. BARTON: Yes, I think so. I
am pretty sure.

CHAIRMAN ANDERSON: So, do we have
anything else?
MR. KATZ: Do we have any other sites assigned to this Work Group?
I don't believe so.

DR. NETON: I think he is volunteering.

(Laughter.)

CHAIRMAN ANDERSON: No, I'm not volunteering. I am looking to close the Committee down before we change the name.

(Laughter.)

DR. MAURO: This is John. This is, again, a Site Profile review that we are in the home stretch of delivering. It is called the DuPont Deepwater Works.

MR. KATZ: Right, right.

DR. MAURO: And I believe that also has a home here.

MR. KATZ: Yes, that will have a home here, right.

DR. MAURO: But it is not -- I just wanted to make sure I know which -- I
always have problems with which ones belong where. But, okay, this one has a lot of sites, then. This Work Group has got more than any other sites that they are dealing with.

MR. KATZ: Yes, you're right, John. So, that will come here.

DR. MAURO: Okay.

CHAIRMAN ANDERSON: Okay. Otherwise, I don't have any other issues.

MR. KATZ: We are adjourned.

CHAIRMAN ANDERSON: We are adjourned.

MR. KATZ: Thank you, everyone.

(Whereupon, the above-entitled matter went off the record at 2:01 p.m.)